6.3 Faculty Empowerment Strategies

6.3.3 Average number of professional development /administrative training programs organized by the institution for teaching and non teaching staff during the last five years

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1. 2019 – 20

1. FDP on Blockchain by CSED

About The College

Viswajyothi College of Engineering and Technology (VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education. Established in the year 2001 as a self financing Engineering College affiliated to Mahatma Gandhi University, Kottayam. Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trend setter in Engineering and Management Education. The college now offers six B.Tech Degree Programmes in ECE, CSE, IT, ME, EEE & CE, three M.Tech Programmes in highly specialized areas under the departments of ECE, CSE & ME and an MBA programme under the Department of Management Studies.CSE, CE, ECE and ME programmes are now accredited by NBA. The Institute has been continuously striving for excellence in education and research with an introduction of Research and Development Centre in the campus. Vision

Moulding Professionals par excellence with integrity, fairness and human values

Mission

- We commit to develop the institution into a Centre of Excellence of International Standards.
- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

About CSE Department

Started in the year 2001, the department of Computer Science & Engineering offers undergraduate (B. Tech.) program. The CSE department runs under the invaluable guidance of the HOD, Mr.Arun Austine. The annual intake of the B. Tech. program is 120 students. The department provides its students an environment that stimulates their intellectual growth and personality development. Infrastructure facilities are excellent with well-equipped computer labs, classrooms and libraries. We also have high speed leased line Internet connection and online access to all IEEE journals. A team of well qualified faculty that keeps their knowledge up to date by attending conferences and workshops on a regular basis is a major asset of the department. Department of Computer Science is accredited by NBA.

Resource Persons:

1. Mr.Adarsh S (Research Scholar, IIITMK- Technopark)
2. Mr. Sakeer M A (Research Engineer & Corda Team leader, KBA)
3. Mr. Franklin John (Research Scientist, Kerala Blockchain Academy, IIITMK- Technopark)
4. Mr. Praveen S. (Research Scientist, Kerala Blockchain Academy, IIITMK- Technopark)

Registration

Click here for registration:

https://forms.gle/JAzZ7ZwPG18TNrQi9

Course Coordinator

Mrs. Bitty Jacob, Assistant Professor (CSE)

Ph : 9605130051 Main

Course Contents

1) Blockchain and Bitcoin Networks
2) Cryptographic Concepts & Features of Blockchain
3) Protocols in Blockchain
4) Blockchain Versions
5) Ethereum World Computer & smart contracts
6) Distributed Ledger Technology

Programme Objectives

- Obtain a deep insight into various aspects of block chain techniques
- Equip faculty to have a exposure to the Bitcoin networks
- To have a hands on training on Ethereum - Lab

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

REPORT

ATAL FDP On Blockchain

19/10/20 – 23/10/20: Viswajyothi College of Engineering & Technology, Vazhakulam

ATAL FDP on Blockchain

BLOCKCHAIN FDP

Blockchain 5-Days AICTE sponsored FDP was conducted from 19th to 23rdOctober 2020 in which around 100 participants from different parts of the country participated.

The speakers for the 5-day FDP on "BLOCKCHAIN" were:

Mr.Adarsh S , Research Scholar, IIITMK,Technopark,Trivandrum

Education

- Pursuing PhD atIIITMK-Technopark,Thiruvananthapuram
- M. Tech. in Software Engineering from CUSAT ,Cochin(2012)
- B. Tech.in CSE form CUSAT ,Cochin(2010)

Experience

- 2019 to till date – Research Scientist, Kerala BlockchainAcademy
- 2012 - 2015 - Assistant Professor, Sree Buddha College of Engineering, Alappuzha
- 2011 - Guest Lecturer (Part-time), TKM Institute of Technology,Kollam

ATAL FDP on Blockchain

Mr. ANANTHAN R, Research Engineer, Kerala Blockchain Academy, IIITMK

Education

- M.Phil. Computer Science from CUSAT,Cochin
- M.Sc. Computer Science from University of Kerala.

Experience

- 2016 to till date – Research Engineer, Kerala Blockchain Academy,IIITMK

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Ms. LEKSHMI M B, Research Engineer, Kerala Blockchain Academy, IIITMK

Education

- M.Phil. Computer Science from CUSAT,Cochin
- M. Tech. in Computer Science & Engineering from College of Engineering ,Trivandrum(2018)
- B.Tech Information Technology from LBS Institute of Technology for Women, Trivandrum(2006)

Experience

- 2018 to till date – Research Engineer, Kerala Blockchain Academy, IIITMK.
- July 2016 to August 2016, February 2016 to May 2016 –Programmer, Information Kerala Mission, Trivandrum, India.
- March 2014 to July 2014- Project Engineer, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum.
- September 2007 –September 2010- Project Engineer-Contract, C-DAC,Trivandrum,

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Mr. NIKHIL V CHANDRAN, Research Scholar, Kerala Blockchain Academy, IIITMK

Education

- Pursuing PhD in Computer Science at CUSAT,Cochin
- M.Phil in Computer science from CUSAT,Cochin
- M. Tech. in Computer science from MAHE
- B. Tech.in CSE from M.G University

Experience

- Research Fellow Kerala Blockchain Academy

Mr. PRAVEEN S, Research Scientist, Kerala Blockchain Academy, IIITMK

Education

- Pursuing PhD in Computer Science at CUSAT,Cochin
- M.Phil in Computer science from CUSAT ,Cochin
- M. Tech. in Computer science from MAHE
- B. Tech.in CSE from M.G University

Experience

- April 2019 to till date- Research Scientist, Kerala Blockchain Academy
- August 2015 to April 2015-Senior Engineer,Infosys Ltd.

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Mr. FRANKLIN JOHN, Research Scientist, Kerala Blockchain Academy, IIITMK

Education

- M.Phil in Computer Science from CUSAT.
- M. Sc. in Computer Science from University of Calicut.
- B. Sc.in Computer Science from University of Calicut

Experience

- 2019 to till date – Research Scientist, Kerala BlockchainAcademy
- 2015 Jan - 2018 - Assistant Professor, St. Thomas College (Autonomous), Thrissur

Mr. SAKEER M A, Research Engineer, Kerala Blockchain Academy, IIITMK

Education

- M.Tech. in Software Engineering fromCUSAT.
- B. Tech. in Computer Science fromCUSAT.

Experience

- February 2019 to till date – Research & Development Engineer, Kerala Blockchain Academy
- January 2012 – January 2019 - Assistant Professor, VKCET, Kollam.
- June 2008-August 2010- Programmer, Green Technologies, Ernakulum

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Mr. SETHU RAMAN O, Research & Development Engineer, Kerala Blockchain Academy, IIITMK

Education

- M.Sc. in Computer Science from IITM, Kerala (2019).
- B. Sc. in Computer Science from CUSAT (2017).

Experience

- February 2020 to till date – Research & Development Engineer, Kerala Blockchain Academy
- January 2012 – January 2019 - Assistant Professor, VKCET, Kollam.
- June 2008-August 2010- Programmer, Green Technologies,Ernakulam

Schedule of the workshop was as below-

Days / Sessions	9:45 AM	Session-1 10:00 AM - 11:30 AM	Session-2 12:00 PM - 1:30PM	Session-3 2:30 PM - 4:00 PM
19-Oct-2020	Inauguration	Introduction to Blockchain & History of Blockchain and Bitcoin Networks **Mr. Adarsh S** **Research Scientist, KBA**	Overview of Cryptographic Concepts & Features of Blockchain **Mr. Praveen S** **Research Scientist, KBA**	Working of Bitcoin & Transaction life cycle **Mr. Sethu** **Research Engineer, KBA**
20-Oct-2020	Consensus Protocols in Blockchain - Proof of Work & Proof of Stake **Mr. Franklin John** **Research Scientist, KBA**		Consensus Protocols in Blockchain - PBFT, PoET & PoA **Mr. Franklin John** **Research Scientist, KBA**	Blockchain Variants & Overview of Various Blockchain Networks **Mr. Sakeer M A** **Research Engineer, KBA**
21-Oct-2020	Ethereum World Computer **Mr Nikhil** **Research Fellow ,KBA**		Introduction to smart contracts **Mr Nikhil** **Research Fellow, KBA**	Writing smart contract using Ethereum – Lab **Mr Ananthan** **Research Engineer, KBA**
22-Oct-2020	Distributed Ledger Technology - Linux Foundation Hyperledger Umbrella Projects **Mrs. Lekshmi M B** **Research Engineer, KBA**		Hyperledger Fabric -Lab **Mr. Sethu** **Research Engineer, KBA**	**(2:00 PM - 3:00 PM)** Stress Management with Yogic Practice **Mr. Guruprasad J** **Director,SwasthaSchool of Yoga**
23-Oct-2020	Blockchain for Enterprises **Mr. Sakeer M A** **Research Engineer, KBA**		Research Areas in Blockchain **Mr. Adarsh S.** **Research Scientist, KBA**	Online Evaluation & Valedictory

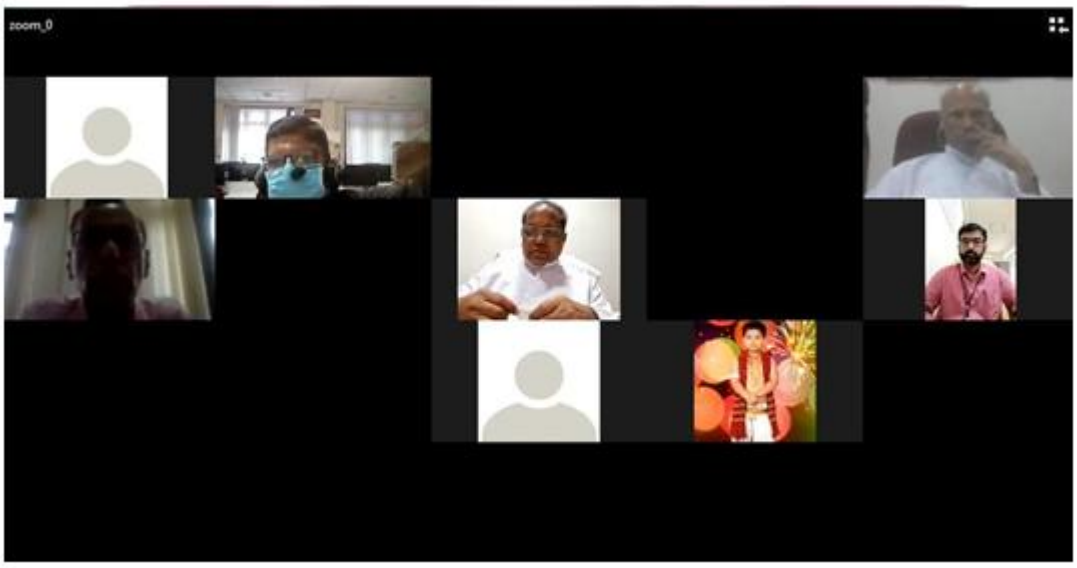
ATAL FDP on Blockchain

The inauguration was held on 19th October 2020 online at 9:45 am. Msgr.Dr. Cherian Kanjirakombil (Manager, Viswajyothi College of Engineering & Technology), Rev.Fr. Paul Nedumpurathu (Director, Viswajyothi College of Engineering & Technology), Dr. K. K. Rajan (Principal, Viswajyothi College Of Engineering & Technology). Mr.Amel Austine (HOD, Viswajyothi College of Engineering & Technology) and Coordinator chaired the function. Also, Directors of different academies were also present with the participants.

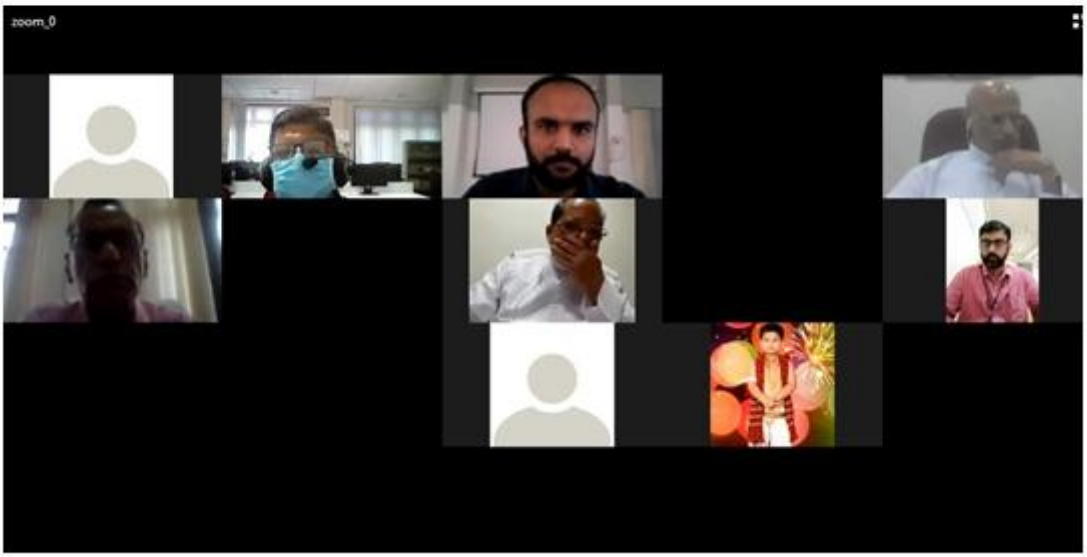
Manager inaugurated the FDP with his message. Director also addressed the participants. Principal, Dr. K. K. Rajan addressed the participants about online FDP and various initiatives by ATAL Academy Mr.Amel Austine talked about IIIT Roles and Responsibility in technical education. Discussed about various FDP initiatives.

Mrs. Ritty Jacob, Coordinator proposed the Vote of Thanks.

Some screenshots of the inaugural function are as below.



ATAL FDP on Blockchain



ATAL FDP on Blockchain

The list of participants was:-

Sl.No	Name	Organization	Mobile	Email id
1	Mr. M.BASKARAN	J.K.K.Nattraja College of Engineering and Technology	8344554262	baskaran.m@jkkn.ac.in
2	Mr. G.A.SENTHIL	VI INSTITUTE OF TECHNOLOGY	9444566947	senthilga@gmail.com
3	Dr. P Phanindra Kumar Reddy	Annamacharya Institute of Technology and Sciences, Rajampet	8712314387	phanindra.44u@gmail.com
4	Dr. Ananda kumar S	Vellore Institute of Technology	9629541493	s.anandakumar@vit.ac.in
5	Dr. M MARAGATHARAJAN	Kalasalingam Academy of Research and Education	9003613484	maragatharajanm@gmail.com
6	Mr. SAKTHIVEL S	MAHENDRA ENGINEERING COLLEGE AUTONOMOUS NAMAKKAL	8148185484	yesyessakthi63@gmail.com
7	Miss G. Radha Devi	Sri Satya Sai University of Technology and Medical Sciences	7702217767	radha.g08@gmail.com
8	Dr. Vishal Dilip Chavan	Rajeev Gandhi College Of Management Studies Ghansoli Mumbai	9867935157	yeswishall123@gmail.com
9	Miss B MANJU BASHINI	mahendra institute of technology	9789737815	manjumahendra6116@gmail.com
10	Mr. Murthy D H R	Presidency University, Bangalore	9611160318	murthydhr@presidencyuniversity.in
11	Mrs. Shikha Arya	SRMS Bareilly	9458704934	shikha.srms@gmail.com
12	Mrs. D. Saveetha	SRM Institute of Science and Technology	9444022933	Saveethd@srmist.edu.in
13	Mr. Muralidhara S	MVJCE	9482422473	dhara.me.uvce@gmail.com
14	Mrs. Shubha G Sanu	KLS GOGTE INSTITUTE OF TECHNOLOGY	8277198716	sgsanu@git.edu
15	Dr. Sivaramane	ICAR-NAARM	9573552003	sivaramane@naarm.org.in
16	Mr. Prashant H Gutte	Government Polytechnic Hingoli	9987013773	pshant.g@gmail.com
17	Mr. AJEET KUMAR RAWAT	Shambhunath Institute of Engineering and Technology	7607745777	rawatak22@gmail.com
18	Mrs. Kavitha Mykal	GITAM(Deemed to be University), Hyd	8217381168	kavitha.mykal1@gmail.com
19	Mr. Ajeesh G Krishnan	Toc H Institute of Science & Technology	9847017436	ajeesh.g.krishnan@gmail.com

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20	Dr. Sangeetha V	Sai Vidya Institute of Technology	9844026680	sangeetha.v@saividya.ac.in
21	Dr. KURINJIMALAR.R	SRI MANAKULA VINAYAGAR ENGG COLLEGE	9488511516	saihariharanep@gmail.com
22	Mrs. Gulfishan Mobin	Adamas University	6290498125	gulfishan@adamasuniversity.ac.in
23	Mr. SUMESH A K	Amrita School of Engg	8903915212	ak_sumesh@cb.amrita.edu
24	Miss Vandana Babu P	Rajiv Gandhi Institute of Technology, Kottayam	7306146780	vandanababu007@gmail.com
25	Mr. Dhruv Kishore Bo	State Institute Of Hotel Management	9104063514	dhruvkishorebole@gmail.com
26	Mr. Balaji Patil	St. Peter's Engineering College	8801373373	balajipatil3373@gmail.com
27	Mr. SHYAM MOHAN	SCSVMV	9092501181	jsshyammohan@kanchiuniv.ac.in
28	Mrs. Kavitha Margre	Sri Krishna College of Technology	9994282327	kavithamargret.m@skct.edu.in
29	Miss Soundarya	St Peters Engineering College	9177854541	soundaryab792@gmail.com
30	Mrs. R.Sathya	SRM TRP Engineering College	9344114433	sathya.r@trp.srmtrichy.edu.in
31	Mr. SHARANKUMAR	S.V.E.R.I's college of Engineering Pandharpur	9113516677	smkumbhar@coe.sveri.ac.in
32	Mr. Vinay Shivajirao	S. B. Patil College of Engineering	7972697227	vinaynalawade2007@gmail.com
33	Mr. Azeem Faizi	JAMIA MILLIA ISLAMIA	8303411252	faiziazeem@yahoo.com
34	Mrs. Mona Mulchan	Jhulelal Institute of Technology	9405582722	mona.mulchandani@jit.org.in
35	Mr. SATHEESH KUMA	SSM Institute of Engineering & Technology	7867080819	satheesh5361@gmail.com
36	Mr. Rakesh N	PRESIDENCY COLLEGE	8884301246	v.rakesh71094@gmail.com
37	Miss Nourin naushad	Rajiv Gandhi institute of technology Kottayam	9074448799	nourinnaushad29@gmail.com
38	Mr. KONDA HARI KR	SRI VASAVI ENGINEERING COLLEGE	9490247527	khk396@gmail.com
39	Dr. Muthumanickam	Kongunadu College of Engineering and Technology	9443201267	muthumanickam@kongunadu.ac.in

40	Mr. KARTHIKEYA RAJA, S	THIAGARAJAR COLLEGE OF ENGINEERING, MADURAI -15	9443061104	skrarch@tce.edu
41	Mr. naveen mukkapati	RVR & JC CE	9177998345	naveenkumar105@gmail.com
42	Mr. Bhakti Bhusan parida	National power training Institute	9953061607	bhakti.parida@gmail.com
43	Mr. Tandel SandipKumar Kanjibhai	Sitarambhai naranji Patel institute of technology umrakh bardoli	7600059120	Sandy.tandel@gmail.com
44	Miss Barkha Kakkar	I.T.S	9911709600	barkhavijh@gmail.com
45	Mr. GHULAM AHMAD RAZA	Siwan Engineering & Technical Institute	8051001905	ahmadraza.ece@gmail.com
46	Mr. B. Mahender Reddy	Siddhartha Institute of Engineering and Technology	8464809441	mahi.503@gmail.com
47	Dr. RUDRANARAYAN SENAPATI	KIIT University	9861292507	rsenapatifel@kiit.ac.in
48	Mr. GUJJULA DEEPAK	Kamala Institute of Technology and Science	9966554744	gujjuladeepak@gmail.com
49	Mrs. Anusha kuntham	B V Raju Institute of Technology	9703273650	anusha.k@bvrit.ac.in
50	Miss Prachi Anil Joshi	Deogiri Institute of Engineering & Management Studies,Aurangabad	9850870335	prachijoshi@dietms.org
51	Mr. Faraz Masood	Department Of Computer Science, Aligarh Muslim University	9808709888	ffarazs@gmail.com
52	Mr. LAWRANCE C A	Jyothi engineering College	9446393693	lawranceca@jecc.ac.in
53	Mr. P.KOTESWAR RAO	ST.MARY'S GROUP OF INSTITUTIONS,HYDERABAD.	7386800998	ksr_p15@yahoo.co.in
54	Mr. Naveen kumar	Panipat Institute of engineering and technology, panipat	9896151316	naveensaini.cse@piet.co.in
55	Miss Barkha Narang	Jagannath International Management School	9971253940	barkha.narang@jagannath.org
56	Mr. Omprakash A Jaisinghani	Sipna College of Engineering & Technology Amravati	8275541142	oajsipna@gmail.com
57	Mr. Yash Jain	Ganpat university	9687114020	Yash21ja@gmail.com
58	Mr. Sanjeev kumar dwivedi	IIITNR	7987073205	Laado1327@gmail.com
59	Mrs. Shubhangi Vijay Urkude	ICFAI university, Hyderabad	8978463713	ushubhu@ifheindia.org

ATAL FDP on Blockchain

60	Mr. MOHD KALEEM	Shambhunath Institute of engineering and technology Prayagraj	9795778332	kaleemmmmec786@gmail.com
61	Mr. Jasvant Mandloi	Government Polytechnic Daman	9893700161	tpogpdaman@gmail.com
62	Miss CHAGANTI REVATHI	AANM and VVRSR POLYTECHNIC COLLEGE	9959336542	revathichows@gmail.com
63	Miss Ruchita Kale	Prof.Ram Meghe Institute of Research, Badnera	9665205079	rakale@mitra.ac.in
64	Mr. Jahangeer Ali	National Institute of Technology Srinagar 190006	9797769490	jehangirnit@gmail.com
65	Dr. MOHD AFJAL	Amity University Mumbai	9012355712	afzalmfc@gmail.com
66	Miss M.Monica	CMR Technical Campus	9652127920	monica.ece@cmrtc.ac.in
67	Mr. Vikas Kumar Tiwari	ITM University, Raipur	8770489947	Vikastiwari87@gmail.com
68	Mr. Antony John	Don Bosco College, Angadikadavu	9400730874	tjantonysdb@gmail.com
69	Mr. Ravi Kumar Tirandasu	Koneru Lakshmaiah Education Foundation (KLEF)	7507976799	ravi.tirandasu@gmail.com
70	Mr. Rohit Chhabra	Maharishi Arvind Institute of Engineering & Technology	9667233924	Rohitengineer14@gmail.com
71	Dr. Durgadevi Velusamy	M.Kumarasamy College of Engineering	9487947809	mvdurgadevi@gmail.com
72	Mrs. Sarika S.Kadam	PCCOE Pune	7350009656	sarikapccoe123@gmail.com
73	Dr. HARIHARA GOPALAN S	Sri Ramakrishna Engineering College	9655307007	hs@srec.ac.in
74	Dr. M JOGENDRA KUMAR	KL UNIVERSITY	8328331255	jogendra.cse@gmail.com
75	Dr. N.RAGHAVENDRA SAI	KL UNIVERSITY	9701899946	nallagatlaraghavendra@gmail.com
76	Mr. Shijin Knox G.U	Gec Barton Hill	9961395039	shijin.gecbh@gmail.com
77	Mr. Suyash Chandrakar	Government engineering college bilaspur	9827392714	suyashchandrakar20@gmail.com
78	Dr. Manoj V. Thomas	Vimal Jyothi Engineering College, Chemperi	9495951408	manojkurissinkal@vjec.ac.in
79	Mrs. P. SHEELA RANI	panmialar institute of technology	9498448287	rpsheelarani2014@gmail.com

ATAL FDP on Blockchain

80	Mr. Jobin	Viswajyothi College of Engineering and Technology Vazhakulam	9645679379	jobin16981@gmail.com
81	Mr. Anil Kumar K M	SJCE	9945633380	anilkm@sjce.ac.in
82	Mrs. Anju S Oommen	St.Thomas College of Engineering and Technology	9495356899	anjusoommen@gmail.com
83	Mrs. Soubhagya V N	Government engineering college Sreekrishnapuram	9037819085	soubhagya.sbg@gmail.com
84	Mr. Yogesh Kushwaha	SRM Institute of Science & Technology	9871577844	yogeshr@srmist.edu.in
85	Mr. R Krishna Nayak	Vignan institute of management and technology	7330860359	Ramavath.Krishna@gmail.com
86	Mr. A. Pavan Kumar	KLEF	9182301668	pavanoncourse@gmail.com
87	Mr. NARESH SAMMETA	RMK COLLEGE OF ENGINEERING AND TECHNOLOGY	9710668556	dm.cse@rmkcet.ac.in
88	Mr. Amitkumar Ashokrao Shinde	SVERI'S COE, Pandharpur	9922398765	aashinde@coe.sveri.ac.in
89	Miss diksha rani	gulzar group of institutes	9530564458	dikshathakur501@gmail.com
90	Dr. Pooja Sapra	The NorthCap	9810455454	dr.pujasapra@gmail.com
91	Miss Ashritha R Murthy	JSSS&TU	9901223371	ashrithar.murthy@sjce.ac.in
92	Mr. MURALI MOHAN KOTHA	SREE VIDYANIKETHAN DEGREE COLLEGE, TIRUPATI	9490264274	kotha_mm@yahoo.com
93	Mrs. Nimmy George	Viswajyothi College of Engineering & Technology,Vazhakulam	9744302845	nimmy4ever@gmail.com
94	Mr. Andrews Jose	VJCET	9895987155	andrewsjoz@gmail.com
95	Mrs. Sabitha Raju	Viswajyothi College of engineering and technology	9496278828	sabithakraju@gmail.com
96	Mrs. Dona Jose	VJCET	9567846525	donanjose@gmail.com
97	Mrs. REMYA PAUL	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY	9645956950	remyap@vjcet.org
98	Mrs. Alphonsa Kuriakose	Viswajyothi College of Engineering and Technology Vazhakulam	9947594660	alphonsakuriakose2014@gmail.com
99	Dr. Anishin Raj M M	Viswajyothi College of Engineering and Technology	9497794433	anishinraj@vjcet.org

ATAL FDP on Blockchain

100	Mrs. Mayadevi P A	Viswajyothi College of Engineering and technology	9074629073	maya@vjcet.org
101	Mrs. Anu Jose	VJCET	9497679807	anujose@vjcet.org
102	Mrs. ANNIE JOSE	GOVT. POLYTECHNIC COLLEGE, VECHOOCHIRA	9447606695	annie.kjose@gmail.com
103	Mr. Prince kurian	Vjcet	9846952048	princekurian2000@gmail.com
104	Dr. Maddula Prasad	Bonam Venkata Chalamayya Institute of Technology and Science	9959234235	prasads.maddula@gmail.com
105	Dr. Ruchi Lal	Amity Law school	7042080343	lal.ruchi1@gmail.com
106	Mrs. SILPA JOSEPH	Viswajyothi College of Engineering & Technology	9495543913	silpa@vjcet.org
107	Mr. Joe Mathew Jacob	VJCET	9497818504	joemj@vjcet.org
108	Mr. Amel Austine	Viswajyothi College of Engineering and Technology	9847671025	amel@vjcet.org
109	Mrs. Neenu Daniel	Viswajyothi College Of Engineering and Technology ,Vazhakulam	9633333614	neenudaniel@gmail.com
110	Mrs. Joicy K Jose	Viswajyothi College of Engineering & Technology	9961139734	joicy@vjcet.org
111	Mrs. Neethu Joseph	Viswyajyothi College of Engineering and TechnologiesVazhakulam	9495675128	neethujosepht@gmail.com
112	Mrs. sheepa cyriac	Viswajyothi College of Engineering & Technology	9446746352	sheepac@yahoo.com
113	Miss MUSKAN KUMARI	JVWU, Rajasthan	9193329937	muskanbharadwaj987@gmail.com
114	Mr. Vinod Jagannath Kadam	Dr Babasaheb Ambedkar Technological University	8408855351	vjkadam@dbatu.ac.in
115	Mrs. Tripti C	Rajagiri School of Engineering and Technology	9895930245	triptic@rajagiritech.edu.in
116	Mrs. MILI ELS JOSE	VISWAJYOTHI COLLEGE OF ENGG. AND TECH,VAZHAKULAM	9447240274	mili@vjcet.org
117	Mr. Titty Jacob	Model Engineeeing College	9446037221	ttjacob@mec.ac.in
118	Miss Roja Thomas	Kottayam Institute of Technology and Science	9207680580	rojathomas1995@gmail.com
119	Mrs. Cinita Mary Mathew	Viswajyothi College of Engineering and Technology	7025110480	cinita@vjcet.org

ATAL FDP on Blockchain

120	Miss Shabna m	MGM college of engineering valanchery	8086776706	shabnamachigal@gmail.com
121	Miss SHINZEER C K	CCSIT THALIKULAM,THRISSUR	9495567748	shinzeer@gmail.com
122	Miss Pooja Sadanand Kawle	Sanjivani College of engineering, Dept of MBA, Kopargaon	7020500091	pujaskawale@gmail.com
123	Mr. YOGESH BHAVIKDAS GAWALI	G H Raisoni Institute of Engineering & Technology	7709829141	yogesh.gawali@raisoni.net
124	Mr. Abin Oommen Philip	Toc H Institute of Science and Technology	9809238007	abinphilip1987@gmail.com
125	Mrs. Jyoti Singh	Institute Of Advanced Management & Research, Ghaziabad	9810381294	asst.prof.jyotisingh@gmail.com
126	Mr. Manoj R	Manipal University Jaipur	9740288939	manoj.ramachandaran@jaipur.manipal.edu
127	Mr. Jitesh singh Chauhan	IIT Guwahati	8959305353	jsinghchauhan91990@gmail.com
128	Miss Swagatika	IIT	8895206144	swagatikasun12@gmail.com
129	Mr. SUSHIL LEKHI	RGI ROPAR CAMPUS	9463824390	lekhi2312@icloud.com
130	Miss LINCY GOLDA CARELINE	Dr.MGR Educational and research institute	8072169393	lincygoldacareline@gmail.com
131	Mr. BILLY D	EASWARI ENGINEERING COLLEGE	7358337065	billyandrew2@gmail.com
132	Mrs. Smita Kansal	Institute of Technology & Science	9650050771	smitakansal@its.edu.in
133	Mrs. BENCY CLEETUS	Viswajyothi College of Engineering and Technology	9961519929	bencycleetus@gmail.com
134	Dr. Richa Mishra	ASET	9999084108	rtiwari3@amity.edu
135	Mrs. Maria Joy	KMEA Engineering College	9497278540	mjy.cs@kmeacollege.ac.in
136	Dr. S.Jayalakshmi	Vels Institute of Science, Technology and Advanced Studies	9962695872	jai.scs@velsuniv.ac.in
137	Mrs. KEERTHANA. I. P	Ahalia School of Engineering and Technology, Palakkad	8593916878	keerthanaprakash3@gmail.com
138	Dr. P. Ajitha	Sathyabama	9884488462	ajithaponnupillai@gmail.com
139	Mrs. Aswathi p v	Ahalia school of engineering and technology	7353708510	aswathi.pv@ahalia.ac.in

ATAL FDP on Blockchain

140	Mrs. E.Brumancia	Sathyabama Institute of Science and Technology	9003401468	easpinbrumancia@gmail.com
141	Mr. Sivadas Nair	Viswajyothi College of Engineering and Technology	9447349948	t_sivadasnair@yahoo.com
142	Mrs. Sruthy Sukumaran	AHALIA SCHOOL OF ENGINEERING AND TECHNOLOGY	8075806480	sruthy.sukumaran@ahalia.ac.in
143	Mr. AJMAL E B	KMEA ENGINEERING COLLEGE	9747139149	cgpu@kmeacollege.ac.in
144	Mr. Alok Chauhan	Rajiv Gandhi College of Engineering	9970468839	alok.chauhan@rgcer.edu.in
145	Dr. SWATI NIKAM	Dr.D.Y.Patil Institute of Technology	9373306201	swanikam146@gmail.com
146	Mr. SOMY P. MATHEW	Viswajyothi College of Engineering & Technology, Vazhakulam	9048104565	somy@vjcet.org
147	Mr. Devinder Kumar Sharma	Ozone3	8837525998	ozone3pkl@gmail.com
148	Mr. Nihar Ranjan	Spintronic Technology & Advance Research	9439704102	akhil121281@gmail.com
149	Mrs. SUPERNA VENAIK	AMITY LAW SCHOOL, AMITY UNIVERSITY	9818788598	venaiksuperna@gmail.com
150	Mrs. ArshaJK	Viswajyothi College of	9567966176	arshakrishnamtech@gmail.com
151	Mrs. Sindhu Jose	Viswajyothi College of engineering and technology	9847126306	sindhu.jose@yahoo.com

It was a great Initiative by ATAL Academy. I am thankful to AICTE for giving me this opportunity to conduct online FDP for faculty members of technical institute of India free of cost. I got huge response for registration as well as lots of compliment of arranging the online workshop, content and hands on.

1.2 5th National Conference on Security, Parallel Processing, Image Processing and Networking (SPIN 2020) by CSED

1.3 FDP on Geo-Hazards and Disaster Mitigation by CED

Expected Resource persons

- Dr. P P. Anil Kumar, Professor& Head, Department of Architecture, NIT Calicut
- Dr. Divya P.V, Assistant Professor, IIT Palakad
- Dr. Jaya V, Professor & HOD, GEC, Barton Hill, Trivandrum
- Er. Reji Zachariah, Structural and Geo- technical consultant, S&R Consultants, Cochin
- Er. Minimol S Korulla, Vice President, Macafferi India Pvt.Ltd, Delhi
- Dr. K. Balan, Vice Principal, Rajadhani Institute of Engineering & Technology, Trivandrum

TA/DA and Accommodation

No TA/DA will be paid to the participants. Accommodation can be availed at nominal rates on prior intimation. Lunch and tea/coffee will be provided for the participants.

For further details contact:

Prof. Vishnu Krishnan
Assistant Professor, CED
VJCET, Vazhakulam-686670
Mob:-7 206306096
Email: vishnukrishnan9@gmail.com
College Website: http://www.vjcet.ac.in

ELIGIBILITY

Faculty members from KTU Affiliated Colleges/Institutions can apply. Total no. of participants is restricted to 30. Selection will be on first-come-first-served basis and will be intimated through e-mail latest by 9th December 2019. All further communication will be through e-mail only.

REGISTRATION:

The completed Registration form should reach the course coordinator (by Post or email) on or before 5th December 2019 (No registration fee)

Important Dates

Last date of Registration :5th December 2019
Intimation of Selection :9th December 2019

"Moulding Professionals par Excellence with Integrity, Fairness and Human Values"

KTU Sponsored
FACULTY DEVELOPMENT PROGRAMME
on
GEO-HAZARDS AND DISASTER MITIGATION
12th - 14th DECEMBER 2019
Organized by
Department of
CIVIL ENGINEERING
In association with
R & D Centre &

VISWAJYOTHI COLLEGE OF ENGINEERING & TECHNOLOGY

About the College

Viswajyothi College of Engineering and Technology (VJCET) is yet another hallmark of the commitment and experience of Catholic Diocese of Kothamangalam in the field of education. Established in the year 2001 as a self-financing Engineering College affiliated to Mahatma Gandhi University, Kottayam, presently, it is affiliated to APJ Abdul Kalam Technological University. Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trendsetter in Engineering and Management education. The college now offers six B.Tech. Degree programs in ECE, CSE, IT, ME, EEE & CE; three M. Tech. programmes in highly specialised areas under the departments of ECE, CSE & ME and an MBA program under the Department of Management Studies. The institute has been continuously striving for excellence in education and research with an introduction of research and development centre in the campus. Presently, all the UG programmes of the institute are accredited by NBA.

About the Department

The Department of Civil Engineering has been in existence since the inception of VJCET in 2001 and has emerged into a full-fledged department with the commencement of Civil Engineering branch in 2010. B.Tech Civil Engineering program was accredited by NBA in June 2018 for three years. It is trailblazed by highly competent, dedicated, well qualified and experienced faculty who are determined to instill in their students the right amount of confidence, knowledge and ethics to build our world.

Department Vision & Mission

VISION

"Building Professionally Competent and Motivated Engineers in the Arena of Civil Engineering with High Professional Ethics."

MISSION

- To promote a better teaching learning process through academically proficient faculty, full-fledged laboratories and excellent infrastructure facilities.
- To equip the graduates with knowledge, research and practical skills in modern construction practices and techniques.
- To inculcate knowledge of sustainability in various domains of Civil Engineering.
- To nurture Civil Engineers into ethically strong and responsible leaders to address global challenges through quality education.

Programme Objectives

The KTU sponsored Faculty Development Program on " Geo-Hazards and Disaster Mitigation." is intended to provide a platform for the dissemination of knowledge in the fields of

- Geohazards, Challenges and mitigation
- Numerical modeling and use of Geo-synthetics in slope stabilization

Course contents

- Smart and environmentally sensitive Land use allocation evaluation framework for Coastal urban areas
- Tackling slope failures with geo-synthetic reinforced soil structures
- Geotechnical failures and challenges
- 6 Dimensional approach in construction management
- Physical and numerical modeling in geotechnical engineering
- Performance of different softwares
- Real time applications for Geo-synthetics for hazard mitigation
- Natural geo textiles for slope stability

Convenor : Prof. Shine George, HOD, CED
Course Co-ordinator : Prof. Vishnu Krishnan, AP, CED

KTU Sponsored FDP
on
GEO-HAZARDS AND DISASTER MITIGATION
December 12-14, 2019

REGISTRATION FORM**

Name :
Designation :
Organization :
KTU ID :
Mailing Address :
Mobile :
Email :
Qualification & Specialization:
Experience :
Accommodation in Campus :Yes/ No
Signature of the Applicant:
Signature of the Head of the Institution:
Institution Seal

(IMPORTANT: By signing the above, the Head of the Institution certifies that the applicant is a faculty member of an Engineering college affiliated to KTU)

**To be completed and sent to the cause coordinator as to reach before 5th December 2019.

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

A Report

on

APJ Abdul Kalam Technological University

Sponsored

Faculty Development Program

on

Geo-Hazards and Disaster Mitigation

Organized by

Civil Engineering Department

of

Viswajyothi College of Engineering and Technology,

Vazhakulam, Kerala

CONTENTS

1. INTRODUCTION

Faculty Development Programme on "GEO-HAZARDS AND DISASTER MITIGATION" under the sponsorship of KTU was held at the Department of Civil Engineering of Viswajyothi College of Engineering &Technology, Vazhakulam, from 12thDecember to 14thDecember, 2019.The FDP aims to provide opportunities to faculty members to enrich their teaching skill and research in the field of Geo-Hazards and Disaster Mitigation.

1.1 Programme Objectives

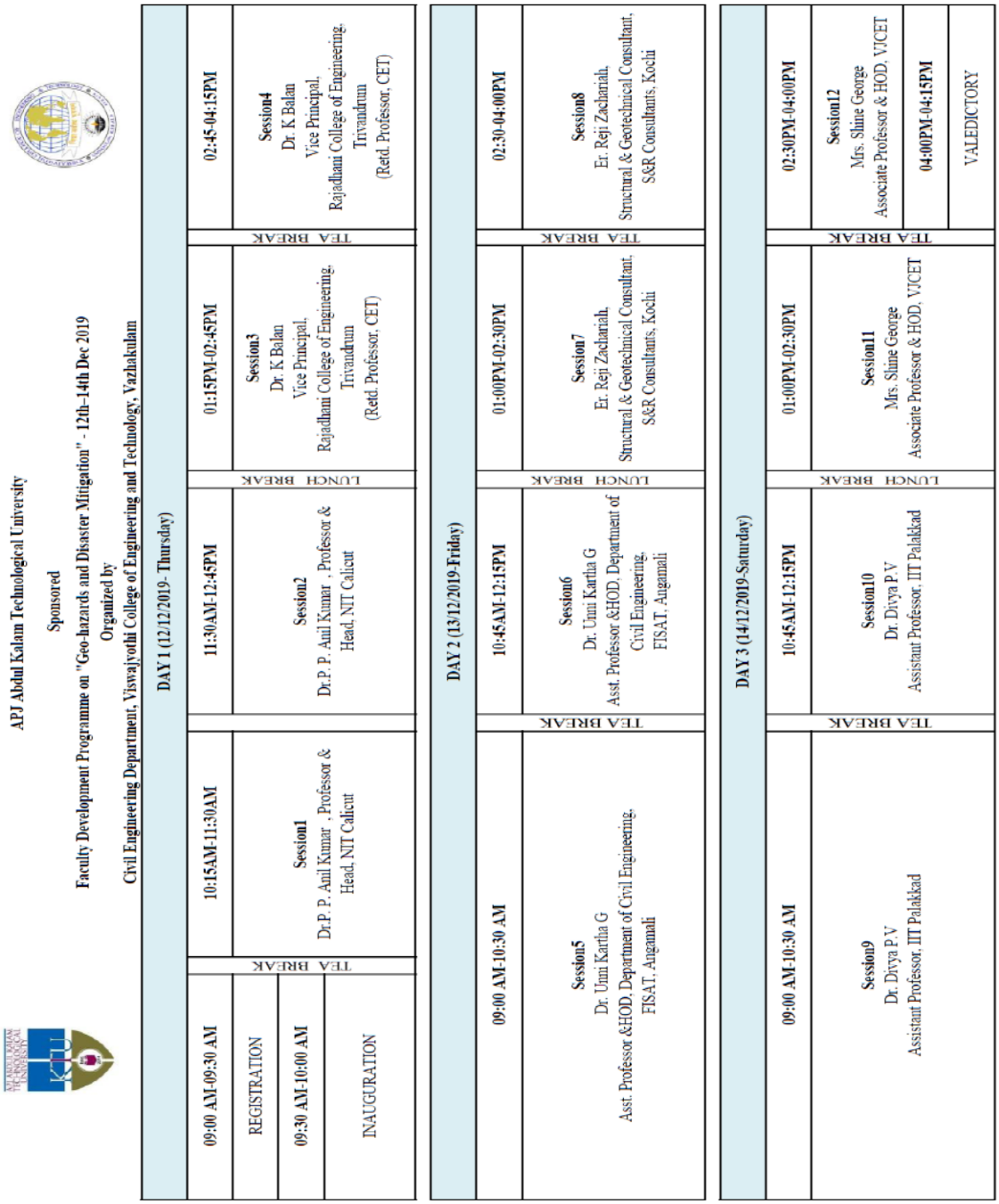
The KTU sponsored Faculty Development Program on "Geo-Hazards and Disaster Mitigation." is intended to provide a platform for the dissemination of knowledge in the fields of

1. Geohazards, Challenges and mitigation
2. Numerical modeling and use of Geo-synthetics in slope stabilization

Course Contents

Session 1 & 2	Dr. PP Anil Kumar, Professor & Head, Dept. of Architecture, NIT Calicut	Smart and environmentally sensitive Land use allocation evaluation framework for Coastal urban areas
Session 3	Dr. K Balan, Vice Principal, Rajadhani College of Engineering, Trivandrum (Retd. Professor, CET)	Geo-Hazards and solutions
Session 4		Coir Geotextiles- An eco friendly Civil Engineering Material
Session 5&6	Dr. Unni Kartha G, Asst. Professor &HOD, Department of Civil Engineering, FISAT, Angamali	Soil Liquifaction and its mitigation
Session 7&8	Er. Reji Zachariah, Structural & Geotechnical Consultant, S&R Consultants, Kochi	6-Dimensional approach to construction
Session 9&10	Dr. Divya P.V, Assistant Professor, IIT Palakkad	Tackling slope failures with geosynthetic reinforced soil structures
Session 11&12	Mrs. Shine George, Associate Professor & HOD, CED, VJCET	Disaster preparedness in the Indian context

2. SCHEDULE



APJ Abdul Kalam Technological University

Sponsored

Faculty Development Programme on "Geo-hazards and Disaster Mitigation" - 12th–14th Dec 2019

Organized by

Civil Engineering Department, Viswajyothi College of Engineering and Technology, Vazhakulam

DAY 1 (12/12/2019- Thursday)

09:00 AM-09:30 AM	10:15AM-11:30AM	11:30AM-12:45PM	01:15PM-02:45PM	02:45-04:15PM
REGISTRATION				
09:30 AM-10:00 AM				
INAUGURATION	**Session1** Dr.P. P. Anil Kumar , Professor & Head, NIT Calicut	**Session2** Dr.P. P. Anil Kumar , Professor & Head, NIT Calicut	**Session3** Dr. K Balan Vice Principal, Rajadhani College of Engineering, Trivandrum (Retd. Professor, CET)	**Session4** Dr. K Balan Vice Principal, Rajadhani College of Engineering, Trivandrum (Retd. Professor, CET)

TEA BREAK | LUNCH BREAK | TEA BREAK

DAY 2 (13/12/2019-Friday)

09:00 AM-10:30 AM	10:45AM-12:15PM	01:00PM-02:30PM	02:30-04:00PM
Session5 Dr. Unni Kartha G Asst. Professor &HOD, Department of Civil Engineering, FISAT, Angamali	**Session6** Dr. Unni Kartha G Asst. Professor &HOD, Department of Civil Engineering, FISAT, Angamali	**Session7** Er. Reji Zachariah, Structural & Geotechnical Consultant, S&R Consultants, Kochi	**Session8** Er. Reji Zachariah, Structural & Geotechnical Consultant, S&R Consultants, Kochi

TEA BREAK | LUNCH BREAK | TEA BREAK

DAY 3 (14/12/2019-Saturday)

09:00 AM-10:30 AM	10:45AM-12:15PM	01:00PM-02:30PM	02:30PM-04:00PM
Session9 Dr. Divya P.V Assistant Professor, IIT Palakkad	**Session10** Dr. Divya P.V Assistant Professor, IIT Palakkad	**Session11** Mrs. Shine George Associate Professor & HOD, VJCET	**Session12** Mrs. Shine George Associate Professor & HOD, VJCET
			04:00PM-04:15PM
			VALEDICTORY

TEA BREAK | LUNCH BREAK | TEA BREAK

3. RESOURCE PERSONS

3.1
Dr. P P Anil Kumar,

Professor& Head, Department of Architecture, NIT Calicut

Dr.P.P.Anilkumar works as Professor in the Department of Architecture and Planning at the National Institute of Technology Calicut, Kerala and has about 28 years of teaching experience. At present he is also heading the Department. He received PhD in the area of 'Sustainable Coastal Cities' from IIT Chennai, Masters in City planning from IIT Kharagpur and Bachelors in Architectural Engineering from NIT Calicut. He has authored the only major reference text book in the area of Smart cities in India, titled 'Introduction to Smart Cities', published by Pearson Education.

He has about 80 publications to his credit as papers published in various conferences and journals and book chapters. He has received awards for his publications at NIT Calicut, in renowned international conferences and from the Institution of Engineers, India for his professional eminence. He is a Fellow of Institution of Town planners India, and Institution of Engineers India and Member of a number of professional bodies. He is reviewer for a number of reputed international journals and served as member in various expert committees. In reputed International conferences in India and abroad, he had delivered invited lectures, keynote addresses and chaired sessions.

He is actively involved in consultancy projects in the area of Urban Planning, Architecture, and Engineering and has extensive experience in managing them. His research interests are in the area of Sustainable Cities, Urban development and Sprawl, Smart cities and Urbanization Impacts. He has guided PhDs, actively involved in research projects and has conducted a number of national and international conferences and workshops. He writes popular articles on planning related topics in dailies and magazines. As a Planning enthusiast, he has travelled to more than 20 countries and visited about 50 major cities in the developed and developing world. He is the author of the book, 'Introduction to Smart Cities' published by Pearson Education.

Educational Qualifications

- Architectural Engineering, NIT Calicut
- Master of City Planning (MCP), IIT Kharagpur
- Ph.D (Sustainable Coastal Cities), IIT Madras

Academic and Related Achievements

- First Rank in B.Tech in Calicut university
- Scored 7th rank in Architecture GATE, Post Graduate Engineering entrance examination in 1990 conducted for postgraduate admission into the IITs, with a percentile of 98.63
- 2nd rank in Master's programme (MCP at IIT Kharagpur).
- Completed all courses in PhD in 'S' (excellent) grade.
- Guided about 15 B.Tech and 85 B.Arch projects/theses ranging from Music academy to Software Technology park.
- Complted 1 PhD, Submitted 1 and currently guiding 6 PhD students in Land valuation, Disaster Management Green Buildings, Environmental Management, Built space management etc.

AWARDS

Received the Eminent Architectural Engineer Award instituted by Institution of Engineers, India in recognition of the eminence and contribution to the profession of Architectural Engineering, from P.K.Maity (Chairman, IE Division, Calcutta) and Dr. Umamaheswara Rao (Director, NIT Suratkal) during the 34th National Convention of Architectural Engineers on 24th November at NIT Suratkal.

BEST PAPER AWARDS

1. The paper titled 'Formulating a coastal zone health metric for landuse impacts in urban coastal zones', has won the **'Award for the best Publication of the year'** from amongst the entire faculty of NITC in the year 2010. The paper is published in the highly reputed international journal of Elsevier titled 'Journal of Environmental Management' in its November 2010 issue. It is one of the highest regarded international journal in the field of Environmental sciences, which publishes only original and seminal work.
2. Received **the Best paper award** in the International conference on 'Society, Technology and Sustainable Development' (ICSTSD 2011), jointly organised by the Amrita Institute, UNESCO, State University of New York Buffalo and Deiken university Melbourne Australia, that was held in Amritha Institute of Medical Sciences (AIMS) Kochi, from 3rd to 5th June 2011, for the paper titled as ' Traditional and Vernacular Practices in Architecture- a Roadmap to Sustainable Development' About 60 papers from around 18 countries were personally presented in the conference. Award was sponsored by Deiken University of Melbourne, Australia and carried a cash award, a memento and a certificate.
3. Received the Best Paper Award for the paper titled 'Landuse based modeling of Solid waste generation for Sustainable residential development in small/medium scale Urban areas' in the 5th International conference on Solid Waste Management, 'IconSWM 2015' that was jointly organised by Indian Institute of Science, Bangalore and Jadavpur University at the Indian Institute of Science Bangalore from November 25-27,2015.
4. Received **the Best paper award** for the paper titled 'Residential location search Algorithm with Multi criteria' in the session on 'Landuse based Applications' of the International Conference on Geospatial technologies and applications ('Geomatrix')

jointly organized by IIT Bombay and 'Inria' from 26th to 29th February 2012 at IIT Mumbai.

5. Awarded a fellowship by the International Urban Planning and Environment Association (IUPEA) USA to attend the 7thUPE at Kasaetsart University Bangkok in the year 2007.

OTHER RECOGNITIONS

1. Member of the INTBAU board (International Network for Traditional Building, Architecture and Urbanisation, an International organisation patroned by HRH, **The Prince of Wales**) Island States chapter, Mauritius.
2. Given an Invited Lecture at the National Technical University of Athens (NTAU), Greece on the topic 'Planning Urban areas/spaces in India; A case study of the city of Calicut in Kerala, India' on 18th October 2016.
3. Given a keynote address in the 4th International Congress on 'Urban and Environmental Issues organized by Aksaray University, Turkey at Dedeman, Istanbul during October 20th -22nd October 2016on the topic 'Smart and environmentally sensitive Landuse allocation evaluation framework for Coastal urban areas'.
4. Member of the 3 member expert panel that evaluated the Architectural designs for the **Cyberpark in Kozhikode,** which was a 100 crore project to begin with. Around 7 nationally renowned architectural firms participated in the final round of the said competition and we were to choose the winner who will be the project architect.
5. Reviewer for the ICT programme of MHRD anchored by IIT Kharagapur, for the subject **'Structural systems'** for Architecture programs all over India**.** Faculty of BIT Meshra constitutes the team.
6. Invited to deliver an expert lecture titled 'Sustainability, climate responsiveness and energy efficiency dimensions of natural stones' during the International conference of Global stone Technology forum at Jaipur during 15-16th December 2012. The international conference was jointly organized by Centre for Development of Stones (CDOS), Govt. of Rajastan and Federation of Indian Chambers of Commerce and Industry (FICCI). The speakers were all renowned Architects across India.
7. Former Head, Department of Architecture, NIT Calicut
8. Chaired sessions in Reputed International conferences at IISc Bangalore and NIT Calicut.

Membership in Fellow Bodies

- Fellow- Institution of town Planners India FITP
- Fellow- Institution of Engineers India FIE
- Member- Society of Architectural engineers India MISAE
- Member- Indian Society of Technical Education MISTE
- Member- Institute of Indian Interior Designers III

3.2

Dr. K. Balan,

Vice Principal, Dean (Research), Head of the Department Civil Engineering, Rajadhani Institute of Engineering and Technology, Trivandrum

He completed B.Sc (Engg.) in Civil Engineering and post graduation in Geotechnical Engineering from Kerala University and his PhD in geotechnical engg from IIT Delhi. He retired from his post as Professor in Civil Engg from College of Engg Trivandrum.

He is the Director of Centre for Engineering Research and Development (CERD) of KTU (Kerala Technological University).

He is also Governing Body Member of National Coir Research and Management Institute, Trivandrum.

Chairman, Indian Geotechnical Society, Trivandrum Chapter.

Ex. Managing Director, Kerala State Coir Corporation Ltd. Alleppey.

He was the ISTE National Award Winner for Best Engineering College Teacher in Kerala 2013.

He won the Life Time Achievement Award for the contribution of Development of Coir Geotextile in India from Central Board of Irrigation and Power, Indian Chapter of International Geo synthetics Society.

He has research publications of more than 100 papers in Journals and Conference to his credit.

Professional Experience

Teaching : 28 years of Teaching Experience in Various Government Institutions, 3 years Teaching Experience in RIET,

Industrial : 7 Years Industrial Experience on Various Governmental Agencies

3.3

Dr. Unni Kartha G,

AssistantProfessor & HOD, Civil Engineering Department, Federal Institute of Science & Technology, Angamaly.

Dr. Unni Kartha G completed his B.Tech in Civil Engineering from NSS College of Engineering Palakkad and ME in Civil Engineering with specialisation in Structural Engineering from Government College of Technology, Coimbatore and his PhD from CUSAT. After completing his M.E, he started his career as Lecturer in Civil Engineering at Amrita Institute of Technology and Science, Kollam, Kerala in 2002. Since 2004, he is working as Assistant Professor in Civil Engineering at Federal Institute of Science and Technology, Angamaly. He currently has the charge of the Head of the Department of Civil Engineering at FISAT. His research interests are Soil Structure Interaction, Earthquake Geotechnical Engineering, Finite Element Method, Parallel Computing, Teaching Learning Process. He is actively involved in consultancy works related to structural engineering and material testing. He is also a strong supporter of the Free Software movement and promotes the use of Free Software.

3.4

Er. Reji Zachariah,

Structural and Geo- technical
consultant, S&R consultants, Cochin

Mr. Reji Zacharias completed his (B.Tech) in civil engineering from M.A college of Engineering, M.S in Geotechnical engineering from IIT madras and MBA from Cochin University of Science and Technology.

He started his career as Design Engineer in Kuwait and worked at Al Jazera and Recafco.
He is currently the Chief Executive Officer at S & R Consultants, Kochi, Kerala and has completed more than 1200 projects in the field of Structural & Geotechnical designing, detailing of Industrial, Commercial and residential buildings managing more than 70 ongoing projects presently. He has developed a software system (Aadspro) fully integrating AutoCAD, tabs, STAAD and design modules which has now reached an ERP level.

His fields of interest are

- Structural designing and detailing and Training of MTech Students.
- Construction Management and Training of MTech Students.
- Geotechnical consultancy and report writing
- Engineering software development.
- Software development in construction management

He is an Executive Member of Indian Geotechnical Society and President of Structural and Geotechnical consultants, Kerala.

3.5

Dr. Divya P.V,

Assistant Professor, Civil Engineering
Department, IIT Palakad

Dr. Divya P V completed her B.Tech in Civil Engineering. & M.Tech in Geotechnical Engineering from College of Engineering, Trivandrum. She got her PhD in Geotechnical and Geoenvironmental engg from IIT Bombay. She has about 15 publications to her credit in National and International journals and conferences. Her research interests are Reinforced Earth Walls and slopes, Geosynthetics, Rainfall triggered slope failures and subsidence, Ground Improvement techniques, Environmental geotechnics.

Her ongoing projects are Landslide repair Rainfall induced subsidence Soil Piping and Rainfall induced slope failures and landslides - Internal erosion and soil piping.

3.6

Mrs. Shine George,

Associate Professor & HOD, Civil Engineering Department, Viswajyothi College of Engineering & Technology, Vazhakulam

1. Name : SHINE GEORGE
2. Date of Birth : 30.05.1966
3. Highest Qualification : Ph.D.(pursuing)
4. Designation : Associate Professor and HOD
5. Academic Performance (Descending Order)

S.No	Degree	University/ Institution	Year of Pass	% of Marks	Class
1	Ph.D. (pursuing)	National Institute of Technology, Calicut (NITC)	Commenced in 2015	**9.5** (CGPA for course work)	First Class with Distinction
2	M.Tech. (Housing Planning)	CEPT University/School of Planning & Architecture, Ahmedabad	1992	62.5%	First Class
3	B.Tech.(Civil Engineering)	M.G. University/M A college of Engineering, Kothamangalam	1989	77.7%	First Class with Distinction
4	Pre- Degree	Kerala University/ Assumption College, Changanacherry	1984	76.4%	First Class with Distinction
5	X	State Board St. Joseph's Convent G.H.S Changanacherry	1981	88.2%	First Class with Distinction

6. Total Years of Experience : 24 years- 8 months- (10 years of industrial experience & 15 years - of teaching experience)

Sl. No.	Period		Organization / Institution	Position Held
	From	To		
1	1992	2002	George& George Constructions, Thodupuzha	Principal Engineer
2	2002	present	Viswajyothi College of Engineering and Technology, Vazhakulam	Head &Asso. Professor, Civil Department

Details of Professional body memberships	1. Associate member of the Indian Institute of Planners ITPI / 2000-74 2. Approved Valuer - Indian Institute of Valuers F-9186. 3. Chartered Engineer-Associate Member of the Indian Institute of Engineers.AM /087005/9 4. K.U.D.F.C. panel member –Engineer / Town Planner – Reg.No.067 5. Licensed Engineer with the Directorate of Municipal Administration, Kerala, Reg. No. **G6/216/09/81/EA** 6. Approved Engineer of the Housing Co-operative Federation, Kerala 7. Joint Secretary of the Engineers' Forum –Thodupuzha Chapter during 1999-2000 8. ISTE Life member –LM 59218 9. IGBC Member vide - IGBC - INP - 1340 Membership Category: Institutions & Non Profit Organisations

1. INAUGURAL FUNCTION

The faculty development programme inaugurated on 12th December 2019 at 09:00 AM by Dr. P P Anil Kumar. The dignitaries on the stage were Rev. Dr. George Thanathuparambil, Director, VJCET, Dr. Josephkunju Paul C., Principal, VJCET, Mrs. Shine George, Head of the Civil Engineering Department, VJCET, Dr. Anoop C. K. Assistant Professor Civil engineering Department and Mr. Vishnu Krishnan Assistant Professor Civil Engineering Department & FDP coordinator.

There were 20 external participants from different colleges and institutes including NIT Suratkal, NSS Palakad, MITS, ICET etc..and 10 internal participants from Viswajyothi College of Engineering and Technology, Vazhakulam.

Opening remarks for the FDP were given by Mrs. Shine George, which was followed by an introduction to the programme by Dr. Anoop C. K.The esteemed guest Dr. P P Anilkumar inaugurated the function by lighting the lamp and gave the inaugural address. Honorable director Rev. Dr. George Thanathuparambil and Principal Dr. Josephkunju Paul C.were addressed the function. Mr. Vishnu Krishnan delivered the conclusional remarks of the inaugural ceremony.

Fig 4.1 Dr. PP Anilkumar inaugurating the FDP by lighting the lamp

1. TECHNICAL SESSIONS

5.1 First Day (12/12/19) Forenoon Session:

The 1st session started at 10:15 am by Dr. P. P. Anil Kumar in which he introduced the basics of geohazards and mainly focused on the Smart and environmentally sensitive Land use allocation evaluation framework for Coastal urban areas. He spoke on the vast applications of modern tools for the prediction and mitigation of disasters.

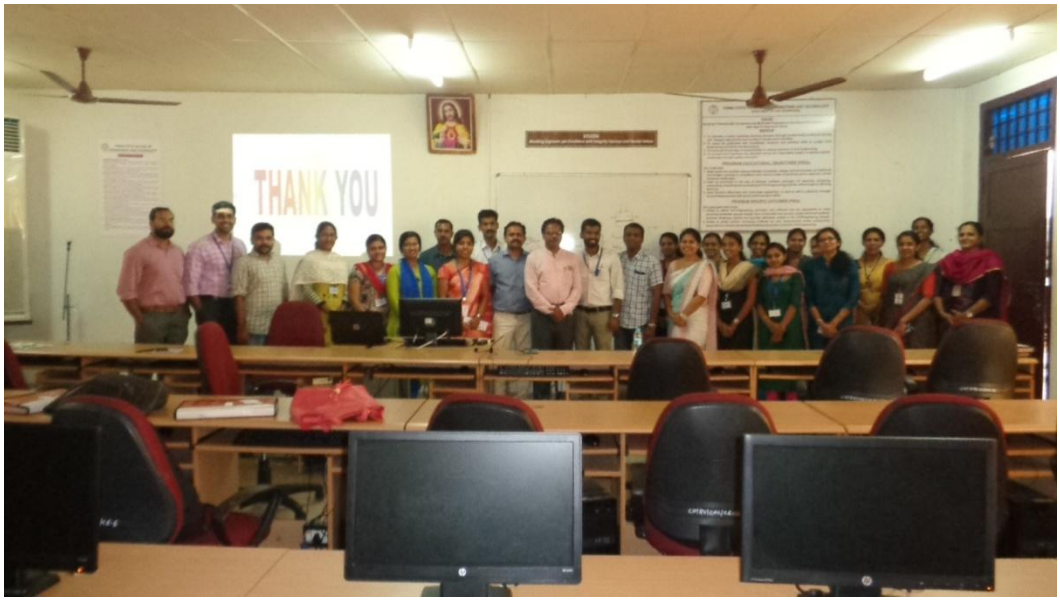
Technical talk by Mr. P. P. Anil Kumar

Group photo with the participants

5.2 First Day (12/12/19) Afternoon Session:

The Afternoon session started at 01:30 pm by Dr. K. Balan in which he mainly focused on geohazards and their solutions. He also extended his lecture onto his experiences of using coir geotextiles in stabilization of natural slopes. Several case studies of hazards pertaining to the 2018 Kerala flood were also discussed.

Technical talk by Dr. K. Balan



Group photo with the participants

5.3 Second Day (13/12/19) Forenoon Session:

The session started at 9.00 am by Dr. Unni Karta G in which he discussed on the disasters that might arise due to soil liquefaction. He explained ways to analyse the liquefaction potential at a site and also its mitigation measures. Various case studies were also reviewed.

Technical talk by Dr. Unni Kartha G.

Group photo with the participants

5.4 Second Day (13/12/19) After Noon Session:

The session started at 1:15 pm by Er. Reji Zaccariah in which he mainly focused on the material wastage in the construction industry and he projected the same to be a man-made disaster due to the tremendous wastage of time and money. He also explained a 6 dimensional approach in the construction management stream for minimizing such wastages.

Technical talk by Er. Reji Zachariah

Group photo with the participants

5.5 Third Day (14/12/19) Fore Noon Session:

The session started at 9:00 am 12:15 pm by Dr. Divya P.V in which she mainly focused on the applications of reinforced soil for minimizing the landslide hazards during monsoon. She also explained the applications of various softwares for numerical modeling of several geotechnical problems. She also added the relevance of utilizing the geosynthetic materials for the slope stabilization.

Technical talk by Dr. Divya P. V.

Group photo with the participants

5.6 Third Day (14/12/19) After Noon Session:

The session started at 1:15 pm to 4:15pm by Mrs. Shine George, in which she mainly focused on the area of disaster preparedness in the Indian context. She spoke on the various factors that might affect the hazard potential and vulnerability to any disaster and described the importance to coin separate disaster preparedness index for a better disaster response.

Technical talk by Mrs. Shine George

Group photo with the participants

VALEDITORY CEREMONY

The valedictory for the Faculty Development Programme has started at 4:00 PM on 14th December 2019. The dignitaries on the stage were Mrs. Shine George, Resource person &HOD, CED, VJCET, Dr. Anoop C.K, Associate Professor, Centre Coordinator and Mr. Vishnu Krishnan, Assistant Professor, Civil engineering Department & FDP coordinator. Mrs. Shine George handed over certificates for the participants. Dr. Anoop C.K gave the concluding remarks for the FDP. Mr. Vishnu Krishnan rendered the vote of thanks.

Mrs. Shine George distributed the certificate of completion to the participants

ANNEXURE

6.1 LIST OF PARTICIPANTS

Internal Participants

Sl.No	Name	Designation	College	Email	Mobile	KTU ID
1	Dr.Anoop C.K	Associate Professor	VJCET,Vazhakulam	anoop4281@gmail.com	9497189607	ktu-f25556
2	Tina Jose	Assistant Professor	VJCET,Vazhakulam	tinatresajose@gmail.com	9495675447	ktu-f6922
3	Bijimol Joseph	Assistant Professor	VJCET,Vazhakulam	bijimol@vjcet.org	9744960145	ktu-f9092
4	Minu C Joy	Assistant Professor	VJCET,Vazhakulam	minnu2@yahoo.co.in	9447376717	ktu-f9236
5	Neena M Joseph	Assistant Professor	VJCET,Vazhakulam	neenmariya@yahoo.co.in	9447876078	ktu-f10363
6	Lins Paul Kuriakose	Assistant Professor	VJCET,Vazhakulam	linskuriakose@gmail.com	9847101711	ktu-f6962
7	Anu Paul	Assistant Professor	VJCET,Vazhakulam	anupaul1986@gmail.com	9846907585	ktu-f6991
8	Daniel A.V	Assistant Professor	VJCET,Vazhakulam	daniel.av85@gmail.com	9895143580	ktu-f9625
9	Nivya Mary Abraham	Assistant Professor	VJCET,Vazhakulam	nivyamary@yahoo.co.in	9446965347	ktu-f9198
10	Nisa Ann Mathew	Assistant Professor	VJCET,Vazhakulam	nisamathew@gmail.com	9446414826	ktu-f33701

External Participants

Sl.no	Name	Designation	College	Email	Mobile	KTU login
1	Ranjan Abraham	Assistant Professor	ICET, Mulavoor	ranjanabraham@icet.ac.in	9447023675	ktu-f15440
2	Linu Elizabeth Peter	Assistant Professor	MGMCET, Pampakuda	lpr.ce@mgmcet.ac.in	7353227505	ktu-f38095
3	Varsha Susan Thomas	Assistant Professor	MGMCET, Pampakuda	vst.ce@mgmcet.ac.in	9745429207	ktu-f36656
4	Eldhose Cheriyan	Assistant Professor	MITS, Varikoli	eldhosecherian@mgits.ac	9496334078	kty-f5691
5	Sneha Mole Jacob	Assistant Professor	MITS, Varikoli	snehamolejacob@mgits.ac.i	8281749199	ktu-f38180
6	Athira Suresh	Assistant Professor	ICET, Mulavoor	athira2846@gmail.com	8547591990	ktu-f27715
7	Anjali Baby	Assistant Professor	IES College of Engineering,		9048082860	ktu-f27513
8	Lidiya Jose	Assistant Professor	IES College of Engineering,	lidiyajose93@gmail.com	9048560396	ktu-f38096
9	Ammu Thomas	Assistant Professor	MBITS, Nellimattom	aammuthomas@gmail.com	9037649075	ktu-f25031
10	Divya P Paul	Assistant Professor	MBITS, Nellimattom	divya29061990@gmail.com	8594060254	ktu-f21541
11	Aswathi Ravi	Assistant Professor	MBITS, Nellimattom	raviaswathi@gmail.com	9947443225	ktu-f34355
12	Sumayyath MM	Assistant Professor	ICET, Mulavoor	Sumayyathmm4u@gmail.cor	7034315761	ktu-f38654
13	Vidya Vijayan	Assistant Professor	MBITS, Nellimattom	vidyavijayan2131@gmail.cor	8943011755	ktu-f11755
14	Shaji M Jamal	Assistant Professor	ICET, Mulavoor	shaji@icet.ac.in	9400278349	ktu-f17578
15	Binol Varghese	Assistant Professor	MGMCET, Pampakuda	Eng.buc@gmail.com	9400970961	ktu-f27405
16	Elba Helen George	Assistant Professor	Toc-H, Arakkunnam	elbaheleng@tistcochin.edu	9633010700	ktu-f3439
17	Anju Paul	Assistant Professor	Toc-H, Arakkunnam	anjupaul2010@tistcochin.ec	9995907604	ktu-f3384
18	Dr.Vasudev R	Assistant Professor	Toc-H, Arakkunnam	vasu.vasudev@gmail.com	8304897606	ktu-f3339
19	Basil Baby	Assistant Professor	NIT, Surathkal	basilpisharathu@gmail.com	9446789585	ktu-f20416
20	Rohini G Nair	Assistant Professor	NSS,Palakad	rohinignair81@gmail.com	9961109714	ktu-f16024

6.2 FEEDBACK FORMS

6.3 BUDJET AND BILLS/RECEIPTS

6.4 COURSE MATERIAL

https://drive.google.com/file/d/1yzdebVbZuRC3Qyxoqk8CHHXadrYeSB73/view?usp=sharing

6.5 MEDIA COVERAGE

2019 ഡിസംബർ 16 • തിങ്കളാഴ്ച മാതൃഭൂമി

വിശ്വജ്യോതി കോളേജിൽ ആരംഭിച്ച അധ്യാപക പരിശീലന പരിപാടിയുടെ ഉദ്ഘാടനം പ്രൊഫ. പി.പി. അനിൽകുമാർ നിർവഹിക്കുന്നു

അധ്യാപക പരിശീലന പരിപാടി

വാഴക്കുളം: കേരള സാങ്കേതിക സർവകലാശാലയുടെ സഹകരണത്തോടെ വിശ്വജ്യോതി കോളേജ് സിവിൽ വിഭാഗത്തിന്റെ നേതൃത്വത്തിൽ മൂന്ന് ദിവസത്തെ അധ്യാപക പരിശീലന പരിപാടി ആരംഭിച്ചു.

കോഴിക്കോട് നാഷണൽ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് ടെക്നോളജിയിലെ പ്രൊഫ. പി.പി. അനിൽകുമാർ ഉദ്ഘാടനം നിർവഹിച്ചു. കോളേജ് ഡയറക്ടർ ഡോ. ജോർജ് താനത്തുപറമ്പിൽ, പ്രിൻസിപ്പൽ ഡോ. ജോസഫ് കുഞ്ഞുപോറ്റം, സിവിൽ വിഭാഗം മേധാവി പ്രൊഫ. ഷൈൻ ജോർജ്, പ്രോഗ്രാം കോ - ഓർഡിനേറ്റർ ഡോ. അനൂപ് സി.കെ. എന്നിവർ പ്രസംഗിച്ചു.

6.6 GROUP PHOTO

1.4 SES - International Workshop on Artificial Intelligence by ITD

SES-INTERNATIONAL WORKSHOP ON ARTIFICIAL INTELLIGENCE

3-13 December, 2019

NBA Accredited

Organized by

SES Senior Experten Service
DER WELT EXPERTEN DIENST

DEPARTMENT OF INFORMATION TECHNOLOGY
&
VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
VAZHAKULAM, MUVATTUPUZHA
ERNAKULAM, KERALA 686 670
INDIA

Moulding Professionals Par Excellance With Integrity, Fairness and Human Values

Patron
Mar. George Madathikandathil,
Bishop of Kothamangalam

Manager
Very Rev. Msgr. Dr. Cherian Kanjirakompil

Director
Rev. Dr. George Thanathuparambil

Principal
Dr. Josephkunju Paul C.

Convenor
Ms. Anju Susuan george
Head, Information technology Department

Organising Committee Members

Dr. Sheela. V. K, Assistant Professor, IT Dept. VJCET
Mr. Prince Kurian, Assistant Professor, IT Dept. VJCET

SES EXPERT

Dipl.-Wirt.-Ing.Hartmut Dopel

SES-INTERNATIONAL WORKSHOP ON ARTIFICIAL INTELLIGENCE
3rd -13th December, 2019, R & D LAB VJCET
REGISTRATION FORM

Name: .....
Designation: .....
Institution: .....
Address for Communication: .....
.....
.....
.....PIN:.....
Phone No: .....
Mobile No: .....
Email: .....
I would like to participate in the workshop in the following category:
Academician/Industry delegate, Research Scholar, PG Students
Payment Details:
DD No: .....
Date: .....
Bank: .....
Amount: ..... Place: .....

Signature of Participant
CONTACT DETAILS
The Convenor,
SES-INTERNATIONAL WORKSHOP ON Artificial Intelligence
Information technology Department
Viswajyothi College of Engineering & Technology, Vazhakulam, Ernakulam, Kerala 686 670 India.
Phone: 0485 - 2262211, 2262255, Fax. 0485 – 2262211.

ABOUT THE COLLEGE

Viswajyothi College of Engineering and Technology (VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education.

Established in the year 2001 as a self-financing Engineering College affiliated to Mahatma Gandhi University, Kottayam, Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trend setter in Engineering and Management Education. The college now offers six B.Tech Degree Programmes in ECE, CSE, IT, ME, EEE & CE; three M.Tech Programmes in highly specialised areas under the departments of ECE, CSE & ME and an MBA programme under the School of Management Studies. The Institute has been continuously striving for excellence in education and research with an introduction of Research and Development Centre in the campus.

The College is situated in a sprawling campus of 26 acres, nestled among lush greenery over a hillock on the side of State Highway No.8, about 5 kms from Muvattupuzha, en-route to Thodupuzha, 40km from International Airport and Major Railway Stations Aluva & Ernakulam.

DEPT. VISION

To be a centre of excellence in IT learning and provide value based training to mould students as successful IT professionals

DEPT. MISSION

1. To provide an intellectually stimulating and academically vibrant learning environment for students and train them in the basic as well as advanced concepts, knowledge, technology and skills of IT
2. To promote a nurturing and caring environment and prepare students to achieve their academic and career goals in a globally competitive marketplace.
3. To mould students into ethical and competent professionals who will contribute to the betterment of the community.
4.

ABOUT SES

The SES is Germany's leading volunteering organisation for experts and executives who are either retired or taking some time off work

At present, the SES has access to the knowledge and experience of over 12,000 experts from all professional spheres. Since 1983, the SES has completed more than 45,000 voluntary expert assignments in over 160 countries, with approximately a third of the placements being in Germany.

The main beneficiaries of the SES network's expertise are small and medium-sized businesses, public authorities, professional and business associations, social and medical facilities, and institutions which provide basic education or vocational training. In Germany, there is a special focus on supporting the development of young people at school or in training.

All SES assignments follow the principle of helping people to help themselves. Their aim is to share knowledge and experience in order to improve other people's future prospects.

OBJECTIVES

1. To understand the latest trends and innovations happening in the area of Artificial Intelligence.
2. To conduct lecturers and practical sessions in various algorithms and techniques of AI.
3. To understand the importance of AI in real world applications and automation process.

OUTCOMES

1. Interaction with international experts from industry
2. Participant will get an in depth knowledge into various algorithms and techniques used in the field of AI
3. Understand the importance and practical applications of AI
4. Get an opportunity to know the latest trends and innovations in the field of AI

REGISTRATION :

Admission to the programme is open to the faculty members from the KTU affiliated Engineering Colleges in Kerala. The number of participants is limited to the maximum of 35. Registration will be done on 'first come first served' basis.

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY, VAZHAKULAM

DEPARTMENT OF INFORMATION TECHNOLOGY

SES- INTERNATIONAL Workshop on Artificial Intelligence

3/12/2019 to 13/12/2019

DATE : **3rd -13th December 2019**

VENUE : R&D COMPUTER LAB

TIME : 9.30 AM (3/12/2019)

PROGRAMMME SCHEDULE

1. Prayer
2. Welcome Address : Prof. Anju Susan George (HOD, IT DEPARTMENT)
3. Presidential address : DIRECTOR (Rev. Dr. George Thanathuparambil)
4. ADRESS BY PRINCIPAL : PRINCIPAL (**Dr. Josephkunju Paul C.**)
5. Introduce SES expert

   (Lighting the lamp)
6. Felicitation by SES Expert : Mr. Hartmurt Dopel
7. VOTE OF THANKS :

SES- INTERNATIONAL Workshop on Artificial Intelligence

3/12/2019 to 13/12/2019

Organized by Department of Information Technology, VJCET, Vazhakulam

&

SES German

Committee List

For the smooth conduct of **SES- international workshop on artificial intelligence** on 3/12/2019 to 13/12/2019 , the following committees are formed.

Organizer

Ms. Anju Susuan George

Co-ordinator

Dr. Sheela.V.K

Organizing Secretary

Mr. Prince Kurian

Registration Committee

Mrs. Tiny Molly V

Mrs. Ann Preetha Jose

Invitation Committee

Mrs. Diana Baby

Brochure and General Arrangement Committee

Mr. Santhanu P Mohan

Hall Arrangement Committee

Mrs. Salini Dev.P.V

Mrs. Jesline Joseph

Certificate Committee

Ms. Juliet A Murali

Mrs. Anju Susan George

(HOD - IT)

Student committees

Technical Committee

Invitation Anchoring Committee

Nekha Bose

Motty Thomas

Abhirami A

Soniya Sunny

General Arrangements & Registration Committee

Anitta Joseph

Hisana Thasneem

Anita Joy

Artificial intelligence (AI) is wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. AI is an interdisciplinary science with multiple approaches, but advancements in machine learning and deep learning are creating a paradigm shift in virtually every sector of the techindustry. Machine learning feeds a computer data and uses statistical techniques to help it "learn" how to get progressively better at a task, without having been specifically programmed for that task, eliminating the need for millions of lines of written code. This Faculty DevelopmentProgramme (FDP) on “Artificial Intelligence” providing an opportunity toenhance the knowledge about the latest technologies pertaining to Artificial Intelligence and Machine Learning. This FDP would provide participants with the guidelines to explore the area of Artificial intelligence and

its applications. The participants would learn to develop methods for solving problems related to diverse computational fields.

Objectives:

The emphasis of the course is more on gaining a holistic understanding of the AI algorithms - how they work, when to use the technique, and how to interpret the results. This FDP focused on hands-on implementation of various algorithms to deliver practical skill to participants.

Outcome:

Provide an introduction of artificial intelligence

Provide an introduction to theoretical aspects of machine learning and its possible managerial/business applications

Hands-on experience in developing small scale, in-classroom AI applications

Provide an understating of impact of AI on future of work and organizations

1.5 Two-week International Workshop on On-Grid Photovoltaic power generation system organized by EEED in association with Senior Experten Services (SES), Germany

DECLARATION

I, hereby declare that the details furnished above are true to the best of my knowledge and belief and agree to abide by the rules and regulations governing the conduct of workshop.

Name and Signature of Applicant

SPONSORSHIP CERTIFICATE

Certified that Sri/Smt._____
_____
is working as_____
at_____
_____in
_____ Department. If selected he/she will be permitted to attend the self-financing International Workshop in On-Grid Photovoltaic Power Generation System in association with Senior Experten Serveice (SES), Germany.

Place:

Date:

Head of the Institution

(Office Seal)

Who Can Attend
Teaching / technical faculty members of engineering colleges and polytechnique.

Registration
Interested participants are requested to inform the coordinators mentioned below over telephone and conform their participation

Advisory Committee

Mar. George Madathikandathil, Patron
Msgr. Dr. CherianKanjirakombil, Manager
Rev. Dr. George Thanathuparambil, Director
Rev. Fr. Paul Nedumpurath, Secretary of the Trust
Dr. Josephkunju Paul C., Principal

Organizing Committee

Prof. Dr. B Aruna, H.O.D, EEE Dept.
Dr. K. K. Rajan, Professor,EEE Dept.
Mr. Sharone Varghese, Asst. Professor, EEE Dept.

For further details contact:

Prof. B. Aruna
Ph# 9072964416
Email: baruna@vjcet.org

Mr. Sharone varghese
Ph# 9895784663
Email: sharone@vjcet.org

INTERNATIONAL
Faculty Development Program on
ON-GRID PHOTOVOLTAIC POWER GENERATION SYSTEM
9th TO 16th DECEMBER, 2019
Organised by

DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING

In Association With

Senior Experten Service, Germany

SES
Senior Experten Service
DER WELT EXPERTEN DIENST

VISWAJYOTHI
COLLEGE OF ENGINEERING AND TECHNOLOGY
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala – 686670
Website: http://www.vjcet.org
e-mail: vjcet@vjcet.org

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

REPORT

Two Weeks Faculty Development program

on

ON-GRID PHOTOVOLTAIC POWER GENERATION SYSTEM

Organized by

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Viswajyothi College of Engineering and Technology, Vazhakkulam

In association with

SES
Senior Experten Service
DER WELT EXPERTEN DIENST

Senior Experten Service (SES), Germany

Vazhakulam P.O., Muvattupuzha
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Email:vjcet@vjcet.org
www.vjcet.org

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY

Viswajyothi College of Engineering and Technology (VJCET) established in the year 2001, is affiliated to M.G. University and APJ Abdul Kalam Technological University and has earned the reputation as a trend setter in Engineering Education. Presently Viswajyothi College of Engineering and Technology offers six B. Tech Engineering Degree courses and four Post Graduate Courses. The building complex of the College is situated in a sprawling campus of 26 acres, nestled among lush greenery over a hillock on the side of the Ernakulam, Thodupuzha State Highway, in central Kerala.

Institute Vision

"Moulding Professionals par Excellence with Integrity, Fairness and Human Values"

Institute Mission

- We commit to develop the institution into a Centre of Excellence of International Standards.
- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technology and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

The Department of Electrical and Electronics Engineering –accredited by National Board of Accreditation, is established in the year 2004 with well equipped state of art laboratories. The Department has a fine blend of renowned as well as young and dynamic personalities as faculty members, who have been motivating the students for getting the best out of them. The department offers under graduate program in electrical and electronics engineering with an intake of 60 students. The department focuses on overall development of the students by encouraging them to take part in student's association activities, internships and industrial training. The department secured Six University Ranks since its inception.

Department Vision

"Mould globally competent Electrical and Electronics Engineers."

Department Mission

1. To provide the best academic ambiance.
2. To develop technical and soft skills to cope up with the emerging global scenario.
3. To enhance knowledge by industry and alumni interaction.

Program Educational Objectives (PEO)

- Graduate shall have the foundation in mathematical, analytical and scientific skills to design technically and economically viable engineering solutions.
- Graduate shall have the culture and attitude of team work, to help in upbringing socially committed Entrepreneurs engaged in lifelong learning.
- Graduate shall have professional communication skills, social values and work ethics.

Program Specific Outcome (PSO)

- Students will be able to apply the concepts of circuit analysis and design in the areas of electric power generation, transmission and distribution from conventional and nonconventional sources.
- Students will be able to develop Control and Power Electronic application circuits.
- Students will be able to design and interface microcontroller-based embedded systems.

Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

ADVISORY COMMITTEE

Mar. George Madathikandathil, Patron

Msgr. Dr. Cherian Kanjirakombil, Manager

Rev. Dr. George Thanathuparambil, Director

Rev. Fr. Paul Nedumpurath, Secretary of the Trust

Dr. Josephkunju Paul C., Principal

Dr. Ashok S, Professor, NIT, Calicut

Dr. Udaya Kumar, Professor, IISC, Bangalore

Prof. Paul Antony, Rtd. Professor, VJCET

ORGANIZING COMMITTEE

Prof. Dr. B. Aruna, HOD, Dept. of EEE

Prof. Dr. K. K. Rajan, Professor, Dept. of EEE

Mr. Sharone Varghese, Assistant Professor, Dept. of EEE

VISWAJYOTHI
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Email:vjcet@vjcet.org
www.vjcet.org

Principal's Message

The Electrical & Electronics Engineering Department of Viswajyothi College of Engineering and Technology in collaboration with Senior Experten Service (SES), Germany, organizes Two Weeks Faculty Development Programme on "On-Grid Photovoltaic Power Generation System" from 2nd to 16th December, 2019. The Photovoltaic Energy sources and technologies have potential to provide solutions to the long-standing energy problems being faced by developing country like India. India is increasingly adopting responsible renewable energy techniques and taking positive steps towards carbon emissions, cleaning the air and ensuring a more sustainable future. Today, renewable energy sources account for about 23.39% of the country's total installed generating capacity.

This programme provides a platform to an in-depth discussion on the various challenges and possible remedies which will benefit and bring a positive transformation among the faculty members towards research work and enable the participants to develop competence in understanding recent advances in On-Grid Photovoltaic Technology.

Dr. Josephkunju Paul C.
Principal, VJCET

Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

HOD's Message

I am very glad that the Department of Electrical and Electronics Engineering is hosting a faculty development program on On-Grid solar Photovoltaic Power Generation System.

At present, photovoltaic systems are taking a leading role as the solar based renewable energy sources because of their unique advantages. This trend is being increased especially in grid connected applications as there are many benefits of using renewable energy sources in distributed generation systems. This necessitates the feasibility of incorporating the technology into the utility grid. The main advantage of On-Grid system is its simplicity and low maintenance cost as it does not require a battery backup.

We are immensely fortunate to have Mr. Georg Friedrich Bopp, an internationally recognized solar PV expert from Senior Experten Services (SES), Germany as the resource person for the faculty development program. It is a very rare and unique opportunity to interact with such an international expert which will definitely enhance our knowledge in the design, operation and maintenance of On-Grid solar PV systems

As the Head of the Department, I wish the faculty development program a grant success.

Dr. B. Aruna

H.O.D, EEE Dept

RESOURCE PERSON

Mr. Georg Friedrich Bopp (SES Expert)

Mr. Georg Bopp is a graduate in Electrical Engineer. He has long-time and very comprehensive professional experience as a specialist for off-grid and grid-connected photovoltaic plants, which he has gathered in Germany and abroad. He is also well-versed in imparting his know-how in courses, workshops and training programmes to student, engineers, technicians and craftspeople

Qualification for the Assignment

The SES expert is a graduate electrical engineer. He has long-time and very comprehensive professional experience as a specialist for off-grid and grid-connected photovoltaic plants, which he has gathered in Germany and abroad. He is also well-versed in imparting his know-how in courses, workshops and training programmes to students, engineers, technicians and craftspeople.

Competence and Experience

- Expert in Photovoltaic (PV) systems:
  - Concept design, optimisation and operation of Pico PV systems, Solar home systems, PV hybrid systems for power supply of individual homes and villages and grip-connected PV systems
  - Calculation and reduction of the demand for electrical energy
  - Concept design and planning of PV plant installation
  - Testing and optimisation of plant components, especially of batteries, battery and plant operation management, plant maintenance, electrical safety, contact protection, EMC and lightning protection
- Further training of students, engineers, technicians and craftspeople in specialist courses and training programmes in Germany and abroad
- Project acquisition and project management, guidance of staff

International Experience: Bangladesh, China, Indonesia, Chile

Professional Background

2018	Assignment as SES volunteer in China, training on grip-connected photovoltaic systems
1982 – 2018	Institute Fraunhofer for Solar Energy Systems ISE, Freiburg
2013 – 2018	Direction of the team on Autonomous systems and off-grid systems: Photovoltaic power supply of villages, PV diesel systems
2005 – 2012	Senior Expert for electrification in rural areas: Photovoltaic power supply of rural villages, Solar home systems
2002 – 2004	Fraunhofer Solar Building Innovation Centre SOBIC, Business unit director
1996 – 2001	Head of team off-grid systems: team management, off- grid PV installations in the European Alps, EMC and lightning protection
1982 – 1995	Scientific employee at the Systems technology department: grip-connected and off-the-grid PV installations, inverters
1981 – 1982	University Hospital of Freiburg: Civilian service as teacher at the hospital's school

Initial and Continuing Professional Training

1974 – 1981 University of Stuttgart, course of electrical engineering studies concluding as a graduate engineer (Dipl.-Ing.), with a diploma thesis on Plasma-chemical preparation of amorphous silicon layers for solar cells

Bonn, 21 February 2019

ABOUT THE FACULTY DEVELOPMENT PROGRAM

The Dept. of Electrical and Electronics Engineering is in practice of organizing FDP, Seminars, Conferences which would enhance the faculty member's in the diverse arena of electrical engineering in the modern technology. The main aim of this FDP is to provide a unique opportunity to demonstrate the different aspects of Photovoltaic Energy Generation system. The resource person is Mr. George Mr. Georg Friedrich Bopp, SES Expert, an internationally recognized personalit, who have long years of expertise in the field of Photovoltaic Technology from Germany and abroad. The course content mainly deals with the photovoltaic power generation system, which is the most relevant topic in the recent global power scenario.

OBJECTIVES

To develop the understanding in an On-Grid Photovoltaic Power Generation System.

OUTCOME

The participants will be able to acquire knowledge in the operation of the grid-connected photovoltaic power generation system.

MAIN COURSE CONTENTS

- Photovoltaic system for on-grid applications:
- Solar Cells and modules, Electric Safety (Lightning Protection), On-grid inverter, Grid connection requirements, Battery Design, Technical Specification, Commissioning, Operation, Monitoring and Maintenance.

PARTICIPANTS

Dr.B.Aruna	Dept.ofEEE
Dr. K. K. Rajan	Dept.ofEEE
Dr.SonyKurian	Dept.ofEEE
Ms.CiniK.	Dept.ofEEE
Ms.SeethannaGeorge	Dept.ofEEE
Mr.Aneesh Kurian	Dept.ofEEE
Ms.Smitha Jacob	Dept.ofEEE
Ms.MereyaBaby	Dept.ofEEE
Mr.DIleepKumar P.	Dept.ofEEE
Mr.BabuT.Chacko	Dept.ofEEE
Mr.SharoneVarghese	Dept.ofEEE
Ms.JisJose	Dept.ofEEE
Ms.Neena Skaria	Dept.ofEEE
Ms.Breeza Paulose	Dept.ofEEE
Ms.JaneMariaS.	Dept.ofEEE
Mr.JomuM.George	Dept.ofEEE
Ms. NeenaAlex	Dept.ofEEE
Ms.SeenaPaul	Dept.ofEEE
Dr.Anoop C.K.	Dept. of CE
Mr. VinojK.	Dept.ofME
Ms.ThanoojaAnnJose	Dept. of EEE, M. G. University College ofEngineering,Muttom
Mr.SabuValiamattom	Dept.ofEEE
Mr.DinuPaul	Dept.ofEEE
Ms. Binumoleorge	Dept.ofEEE
Mr.BijuJoseph	Dept.ofEEE
Mr.BijoJospeh	Dept.ofEEE

Mr.DayasM.Edassery	Dept.ofEEE
Mr. GinceKurian	Dept.ofEEE
Mr. ShijiP. Mathew	Dept.ofEEE
Mr.BijoJose	Dept.ofEEE
Mr.Jekson George	Dept. ofECE
Mr.ShajanP.J.	Dept.ofME
Mr.BennySebastian	Dept.ofME
Mr.AkhilrakPR	Dept.ofME
Mr.NixonGeorge	Dept.ofME
Mr.BijuVarghese	Dept.ofME
Mr.RojiMathew	Dept.ofME
Mr.PMSaju	Dept.ofME
Mr.BinuPaul	Dept.ofME
Mr.ManojK.P.	Dept.ofME

Short introduction into Fraunhofer Institute for Solar Energy Systems ISE and Georg Bopp

Georg Bopp
georg.bopp@web.de
Senior Expert Service

Till April 2018
Fraunhofer Institute for
Solar Energy Systems ISE
Freiburg, Germany

SES
Senior Experten Service
DER WELT EXPERTEN DIENST

Fraunhofer Institute for Solar Energy Systems ISE
At a Glance

Institute Directors:
Prof. Dr. Hans-Martin Henning
Dr. Andreas Bett

Staff:	ca. 1250
Budget 2018:	€ 90 million
Established:	1981


Photovoltaics


Solar Thermal Technology


Building Energy Technology


Hydrogen Technologies


Energy System Technology

2

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Business Area Energy System Technology
Research Topics

Energy system technology, which aims to optimize the interaction between supplier and consumer, belongs to one of the most important research areas of the energy transformation.

- Power Electronics
- Smart Grid Technologies
- System Integration – Electricity, Heat, Gas
- Battery Storage for Stationary and Mobile Applications
- Energy System Analysis


Irrigation with off-grid CPV in Egypt

3

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Department of Electrical Energy Storage

- Battery **Cell** Development
  - New cell types / materials
  - Optimize production processes
- Battery System **Engineering**
  - BMS Development
  - Thermal Management
- Battery **Testing**
  - Functional, electrical and abuse testing and certification of battery cells and battery systems
- Applied Storage **Systems** (leaded till 2017 by Georg Bopp, now Johannes Wüllner)
  - New business models
  - Lighthouse projects
  - Off grid systems
  - Applied research

4

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Activities for Off Grid systems

- Pico-PV, Solar Home Systems, PV Hybrid Systems, PV Diesel Grids, Battery Systems
- System Design, Optimisation and Evaluation
- Development and testing of Components, Energy Management Systems, Battery Management Systems, Operating Strategies
- Simulation studies and analysis
- Demonstration Projects
- System Monitoring and Quality Assurance
- Training of the planning, installation, operation and maintenance staff

5

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Agrophotovoltaic: G.Bopps last project at Fraunhofer ISE

- Agrophotovoltaic means combined production of electricity and biomass on the same land unit

6

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Georg Bopp's activities for SES

- Two Assignments in Xining, Quinghai, China in 2018 and 2019 together with Dr. Hansjoerg Gabler
- Topic: Photovoltaic Power Station Quality Control and Power Generation Improvement Technologies

7

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Prepared lectures

- Solar Resources
- Solar cell technologies
- PV modules and generators
- Electrical safety
- Inverters for grid connected PV
- Grid connection requirements/codes
- Computer aided design and simulation of PV systems
- International standards for monitoring and quality assesment
- Onsite commissionig, inspection and maintenance of PV power stations
- Monitoring and evaluation

Each lecture ends with some questions and suggestions for exercises

8

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Sources for lectures

- Georg Bopp's own experience with solar training courses since 1990
- Experience of several colleagues from Fraunhofer ISE
- "Planning and Installing Photovoltaic Systems, A Guide for Installers, Architects and Engineers", German Solar Energy Society, 2013
  actual price by earthscan from Routledge: 120 USD
- "Photovoltaics - Fundamentals, Technology and Practice", Konrad Mertens, second edition, 2018, John Wiley & Sons Ltd.
  https://textbook-photovoltaics.org/
  actual price by amazon: 25.8 USD
  figures free available: https://textbook-photovoltaics.org/figures.html

- If you have any questions please contact Georg Bopp by email or Whatsapp:
  - georg.bopp@web.de
  - +4915257567471

9

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Solar Resources

Georg Bopp
Fraunhofer ISE; Senior Expert
Service since May 2018

Werner Roth
Fraunhofer Institute for Solar
Energy Systems ISE

Kerala, Vazhakulam, Dec. 2019

Global Solar Energy Resources

- Energy radiated by the sun onto the earth's surface:

  $800 \cdot 10^6$ TWh per year

- Global consumption of primary energy:

  $0.1 \cdot 10^6$ TWh per year

- The supply of solar energy is thus a factor of

  8000

  greater than the global demand for primary energy.

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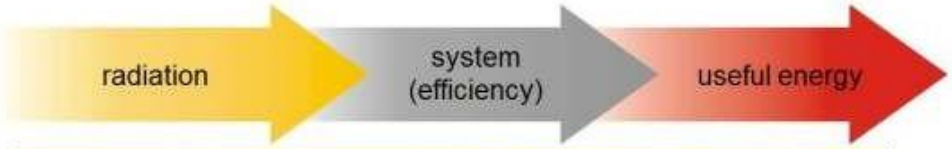
Possibilities for using solar energy



receiver	conversion to	energy form
black metal	heat	thermal energy
biological plants	biomass	chemical energy
solar cell	electricity	electrical energy
solar collector	heat	thermal energy

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Extraterrestrial AM 0 and terrestrial spectrum AM 1.5 of sunlight

AM means air mass, AM 0 outside atmosphere, AM 1.5 inside atmosphere

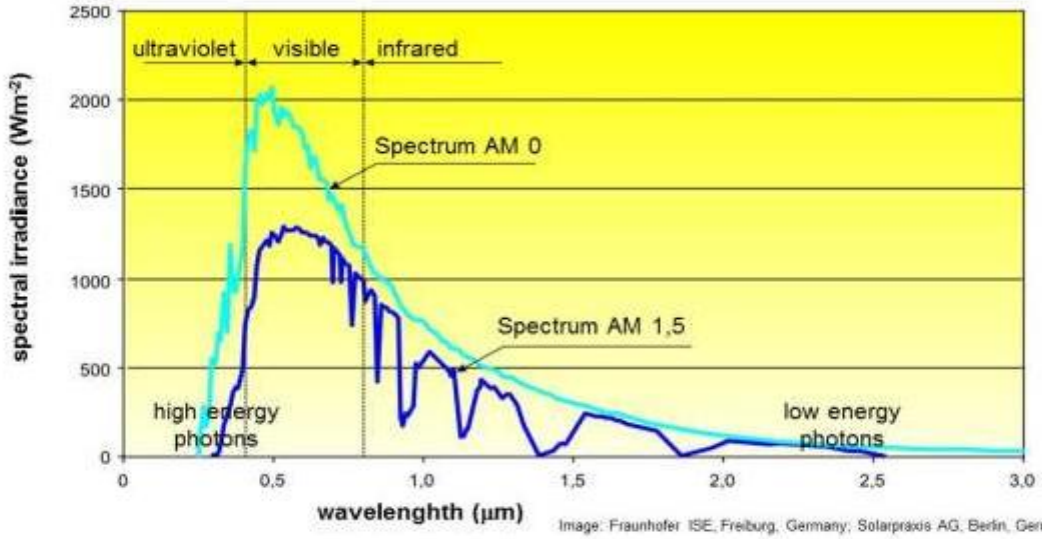

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Colours in the visible range of the solar spectrum

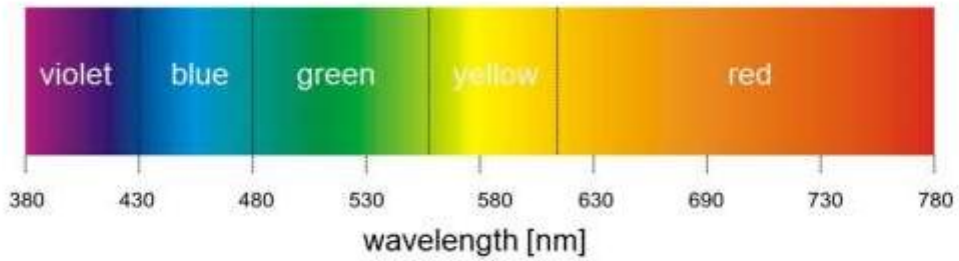

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Terms and units deal with solar radiation

physical quantity	name	units
power	radiation intensity (irradiance)	Wm^{-2}, kWm^{-2}
energy	radiation energy (irradiation)	Whm^{-2}, $kWhm^{-2}$

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Solar Radiation

- **Irradiance:**
  The total specific radiant power, or radiant flux, per area that reaches a receiver surface.
  Irradiance is measured in Wm^{-2}, the symbol is E
- **Irradiation (also called 'insolation'):**
  The integration of the irradiance over a certain time period.
  Irradiation is measured in Whm^{-2}, the symbol is H
- **Illuminance:**
  The analogous quantity to the irradiance for visible light. Mainly used for indoor measurements
  Illuminance is measured in lumen m^{-2} or lux

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Solar Radiation

- **Global Irradiance:**

The so-called global irradiance on a surface on earth consists of the direct and diffuse irradiance.

Definition: $E_g = E_{dir} + E_{dif}$

- **Air Mass (AM):**

If the sun is perpendicular to the earth's surface, sunlight only has to pass through the air mass of the atmosphere once. Therefore, this state is called AM 1. In all other cases, the route of the solar radiation through the atmosphere is longer. The way depends on the sun's angle of elevation.
AM 2 indicates that the way of the sunlight through the atmosphere is twice AM 1. This is the case if the sun is 30° above the horizon.

Definition: $AM = 1 / \sin(\beta)$

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Sunlight on the way through atmosphere

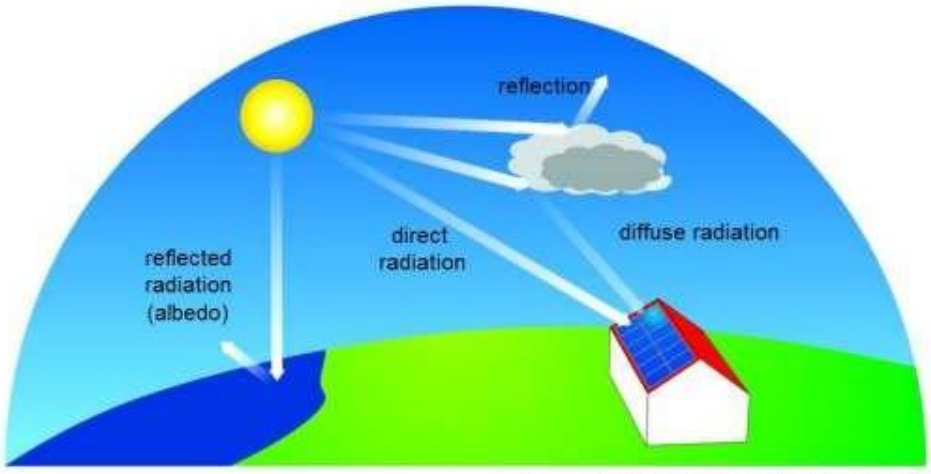

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

Only direct radiation can be focused by lens or mirrors

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Solar irradiation at different locations

location	energy per year [kWhm^{-2}]
Sahara	2200
Israel	2000
Kochi	1900
Freiburg, southern Germany	1200
Hamburg, northern Germany	1000

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Radiation intensity for various weather conditions

sky			
weather	clear blue sky	hazy/cloudy, sun visible as whitish yellow disc	overcast sky, dull day
global irradiance	600 – 1000 Wm^{-2}	200 – 400 Wm^{-2}	50 – 150 Wm^{-2}
diffuse fraction	10 – 20 %	20 – 80 %	80 – 100 %

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Solar irradiation in Khartoum/Sudan/Africa and Freiburg/ Germany/Europe in comparison

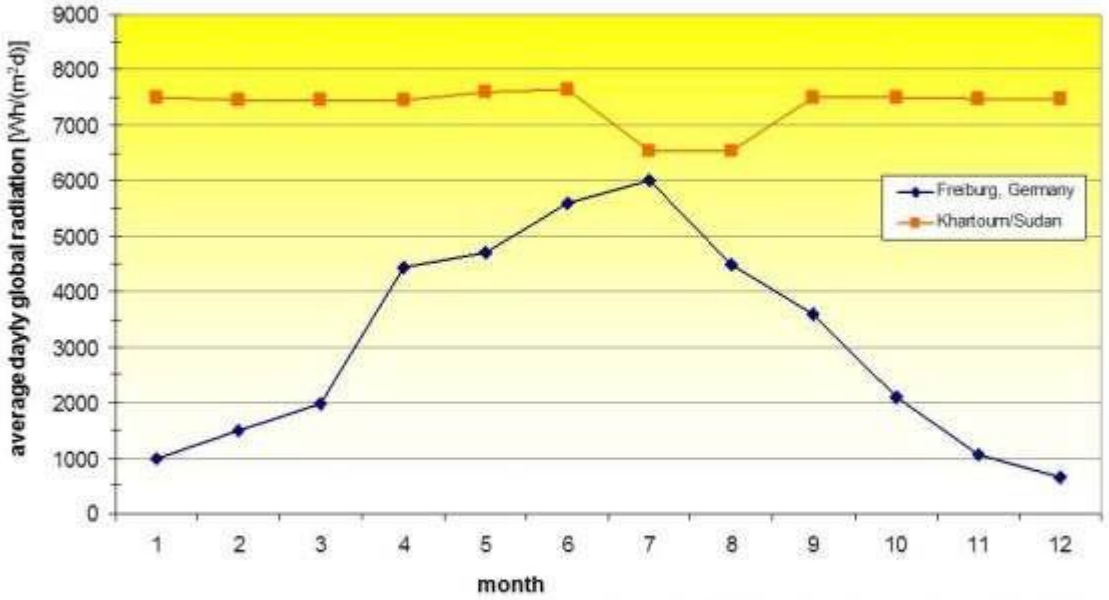

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Annual distribution of direct, diffuse and global solar radiation in Freiburg, Germany

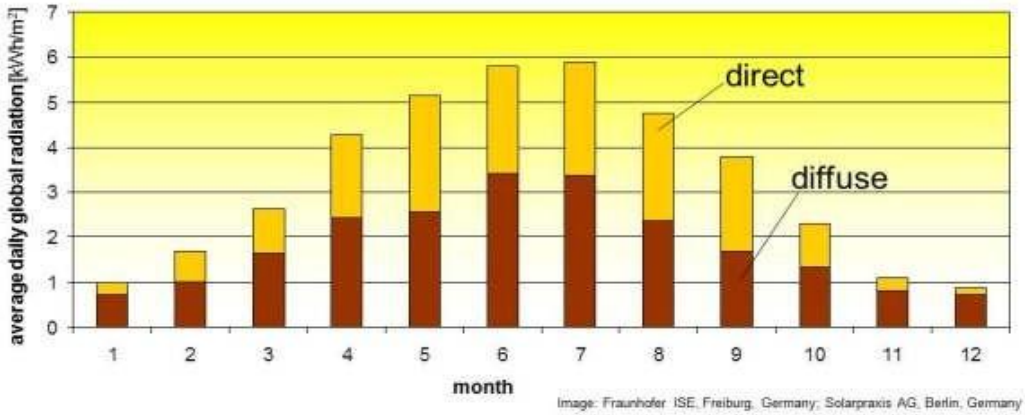

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Irradiance on a horizontal surface in Freiburg, Germany (cloudless days)

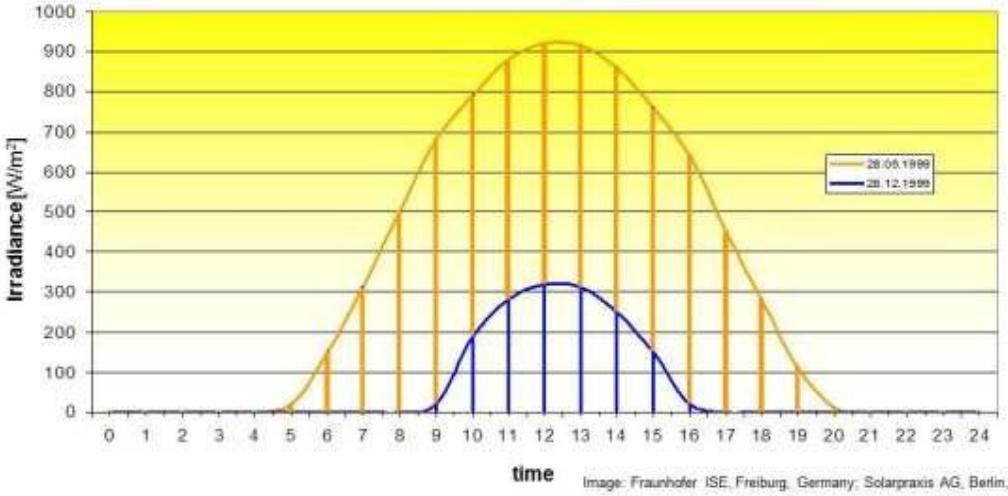

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Direct radiation on a tilted receiver (inclination of receiver optimised for Europe in winter)

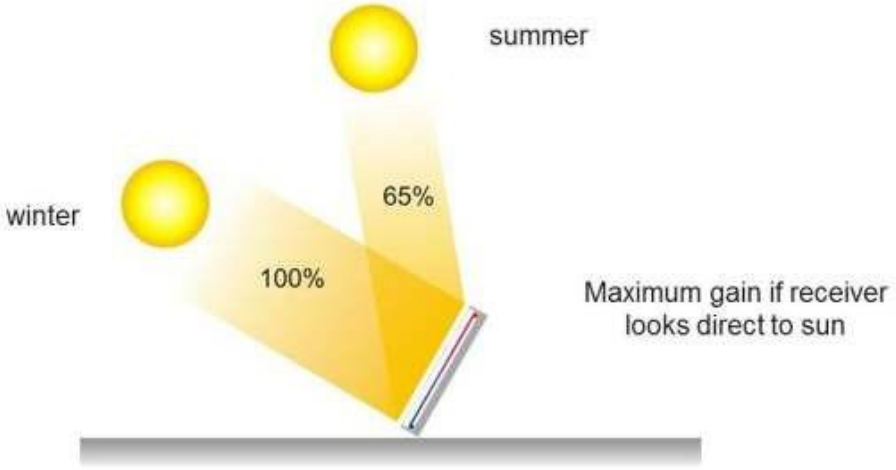

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

Only direct radiation can be focused by lens or mirrors

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Diffuse radiation on a tilted receiver

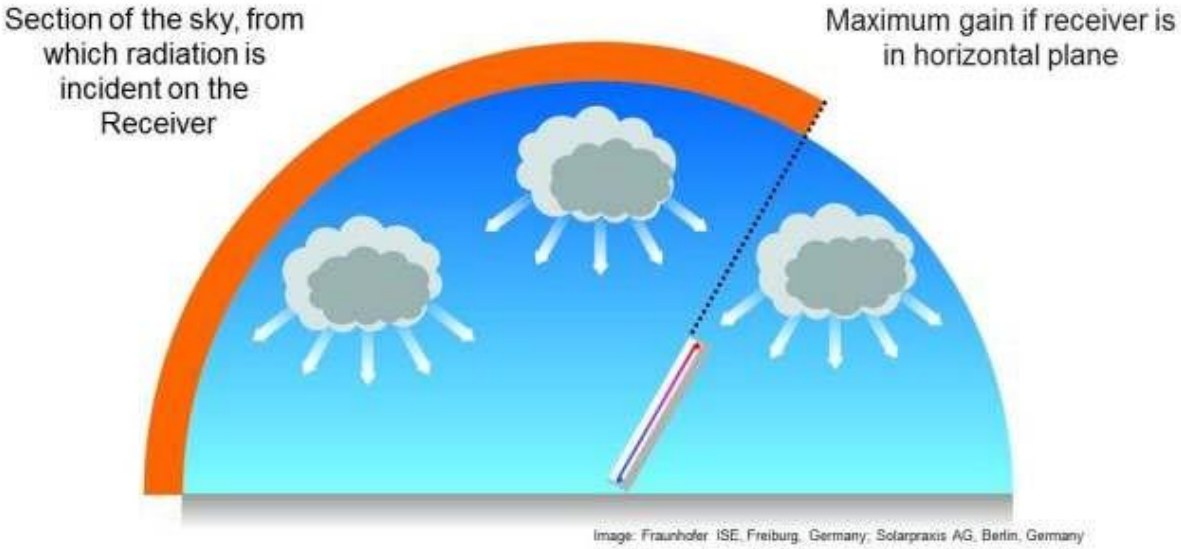

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Receiver tilt angle for different conditions (in Central Europe)

boundary conditions	angle
maximum total annual energy yield	approx. 30°
optimisation for winter months	approx. 60°
good performance in spring and autumn	approx. 45°

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Horizontal solar Radiation

location	Germany[1)]	Kochi[2)]
maximum irradiance	1000 Wm^{-2}	1000 Wm^{-2}
average irradiance	120 Wm^{-2}	220 Wm^{-2}
annual global irradiation	1000 $kWhm^{-2}$	1900 $kWhm^{-2}$

Sources: 1) www.meteonorm.com , 2) https://power.larc.nasa.gov/data-access-viewer

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Solar Radiation

- **Standard Test Conditions (STC):**
  Conditions under which photovoltaic cells and modules are tested.

  Irradiance: 1000 Wm^{-2}

  Cell/module temperature: 25 °C

  Air mass: AM 1.5

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The solar ressource

Data is available from various sources

- Measured by satellite
  - https://mnre.gov.in/india-solar-resource-maps
  - https://power.larc.nasa.gov/data-access-viewer
  - https://re.jrc.ec.europa.eu/pvgis.html
  - www.solargis.info
  - http://www.soda-pro.com
  - www.3e.eu
  - ..
- Measured by instruments on earth
  - www.dwd.de
  - www.meteonorm.com
  - www.meteocontrol.de
  - ..

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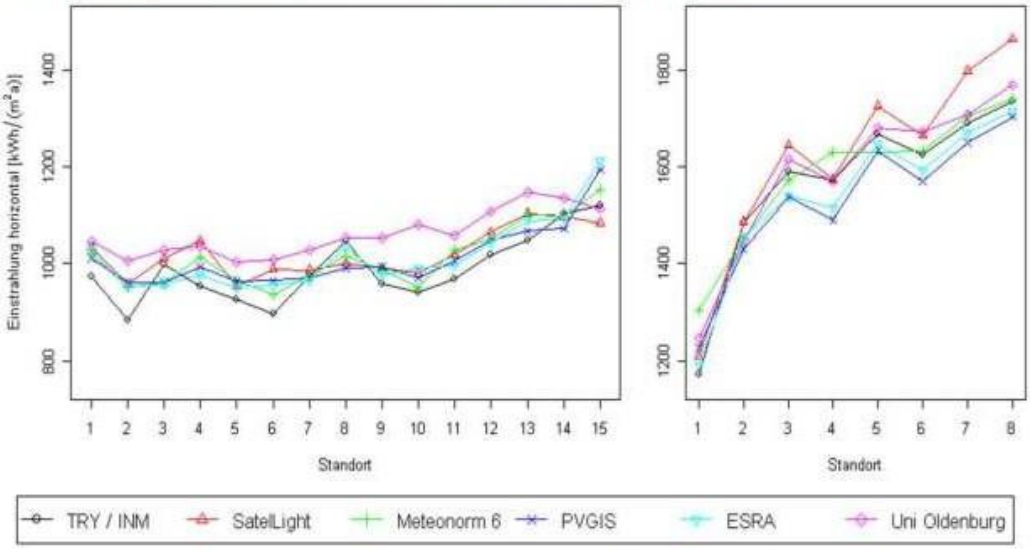
The solar ressource

Irradiation sums differ with different sources



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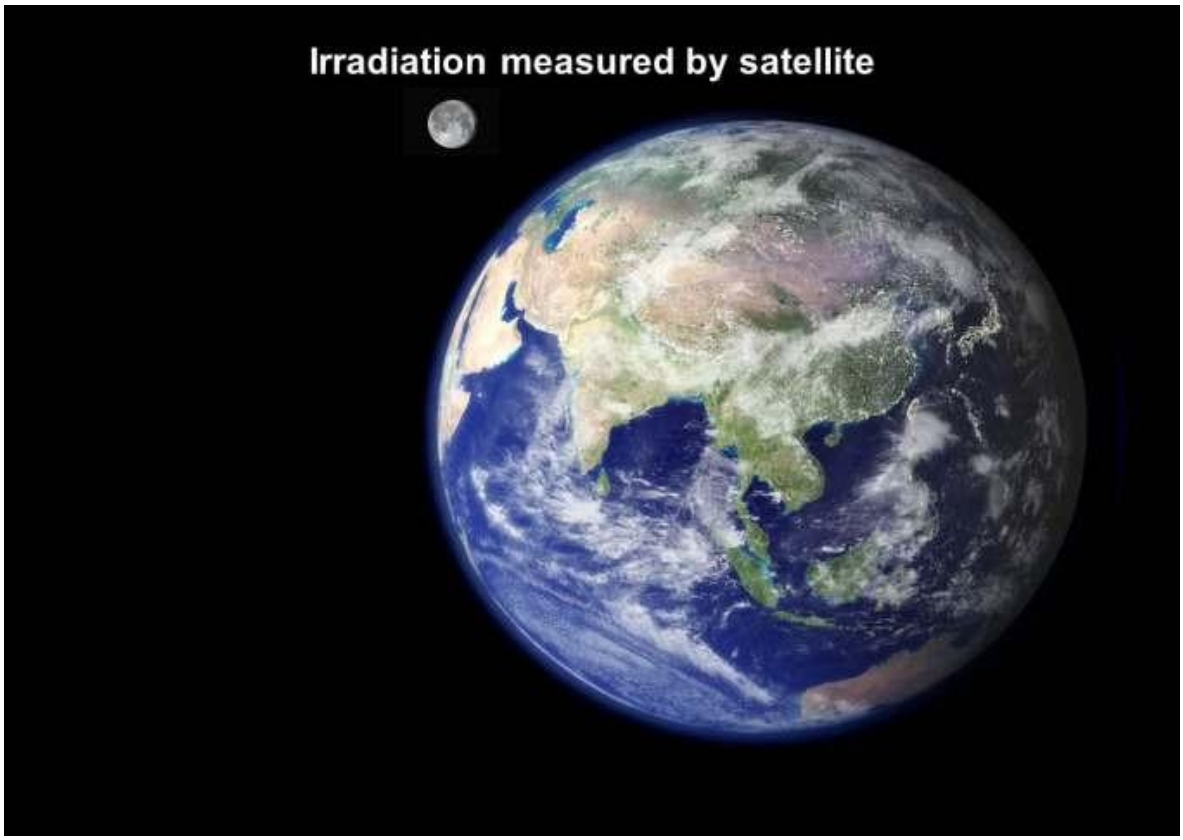
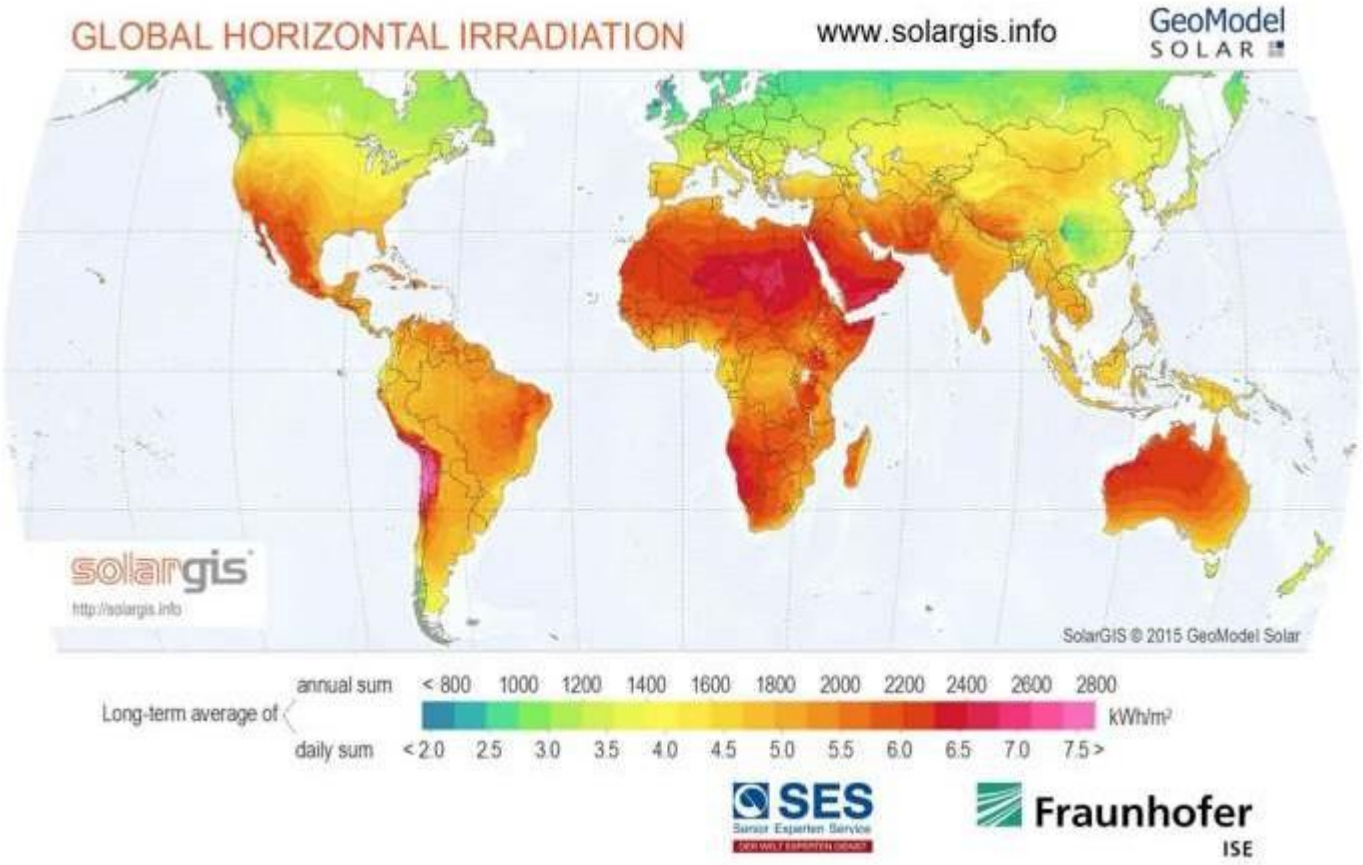

Irradiation measured by satellite


GLOBAL HORIZONTAL IRRADIATION
www.solargis.info
GeoModel SOLAR
solargis
http://solargis.info
SolarGIS © 2015 GeoModel Solar
Long-term average of
annual sum < 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800
kWh/m²
daily sum < 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 >
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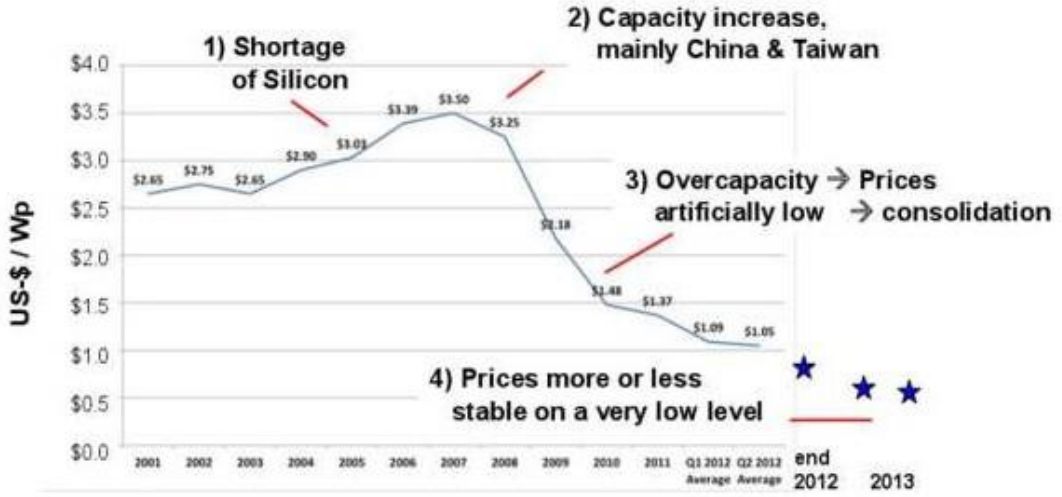
Development of PV module prices over the last decade

PV technology pricing (ASP) of modules to the first buyer



Source: Paula Mints, Solar PV Market Research in partnership with Strategies Unlimited

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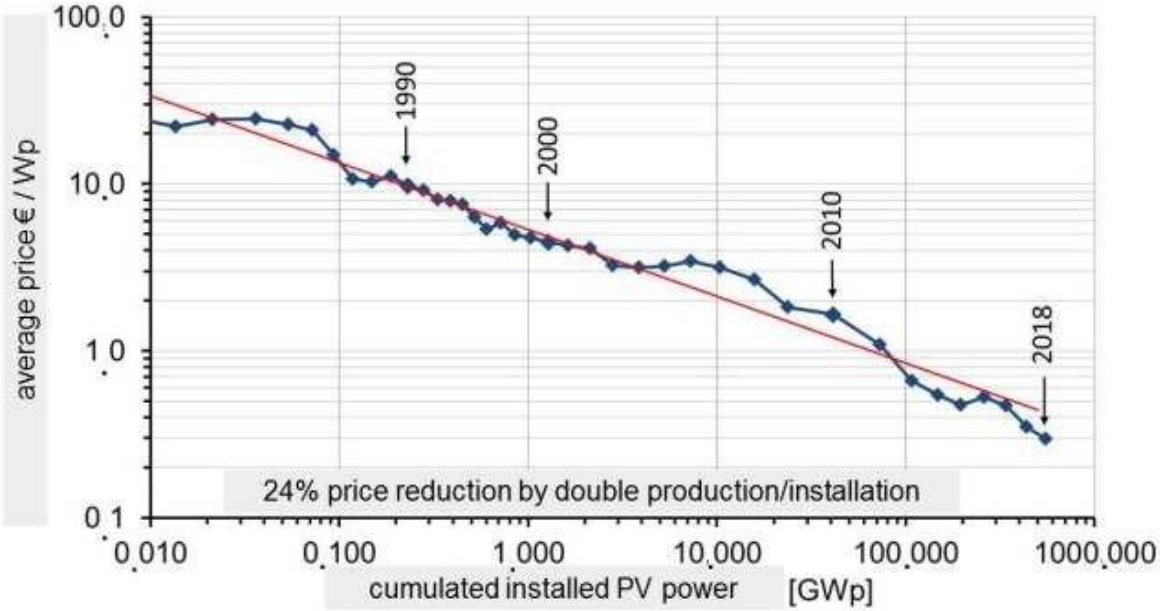
Price learning curve for PV modules, total capacity 2018: 500GW



Source: Strategies Unlimited/Navigant Consulting/EuPD).

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Thank you for your attention!

Any questions?

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Knowledge test:

1. What is the difference between irradiance and irradiation?

2. What is the value of the highest possible irradiance on a horizontal surface?

3. Exercise: -Try to find out on which satellite webside monthly irradiation values for India are available
   -Try to find out on which satellite webside irradiation values for inclined receivers are available

   - https://mnre.gov.in/india-solar-resource-maps
   - https://power.larc.nasa.gov/data-access-viewer
   - https://re.jrc.ec.europa.eu/pvgis.html
   - www.solargis.info
   - http://www.soda-pro.com
   - www.3e.eu

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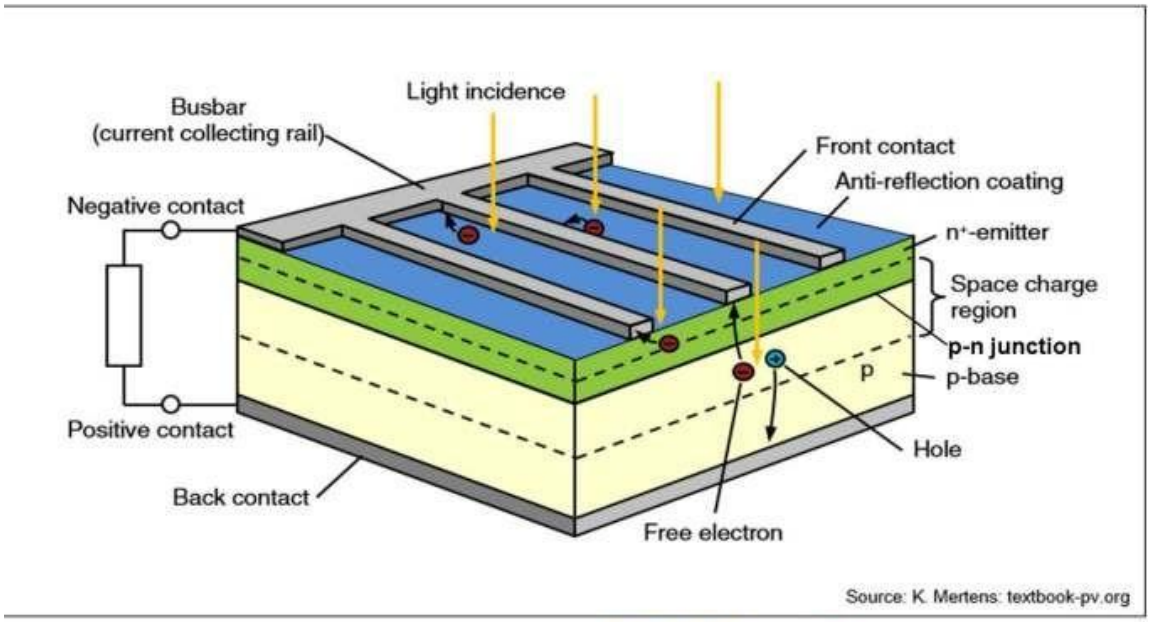
Solar Cell Technologies and their Properties

Georg Bopp
Fraunhofer ISE; Senior Expert
Service since May 2018

Heribert Schmidt
Fraunhofer Institute for
Solar Energy Systems ISE

Kerala, Vazhakulam, Dec. 2019

Principle function of a crystalline silicon solar cell



Source: K. Mertens: textbook-pv.org

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Dark characteristic of a solar cell, diode with big surface

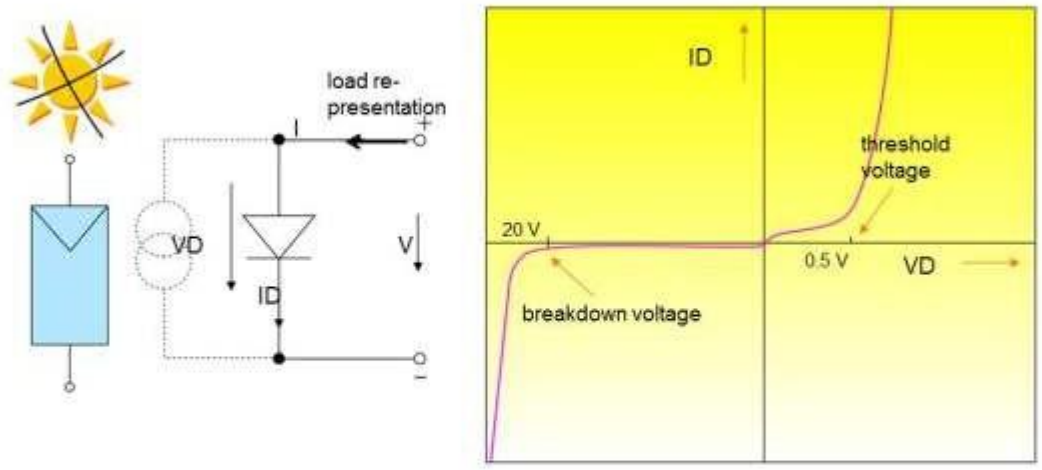

Image: Solarpraxis AG, Berlin, Germany

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Characteristic curve of a solar cell under illumination

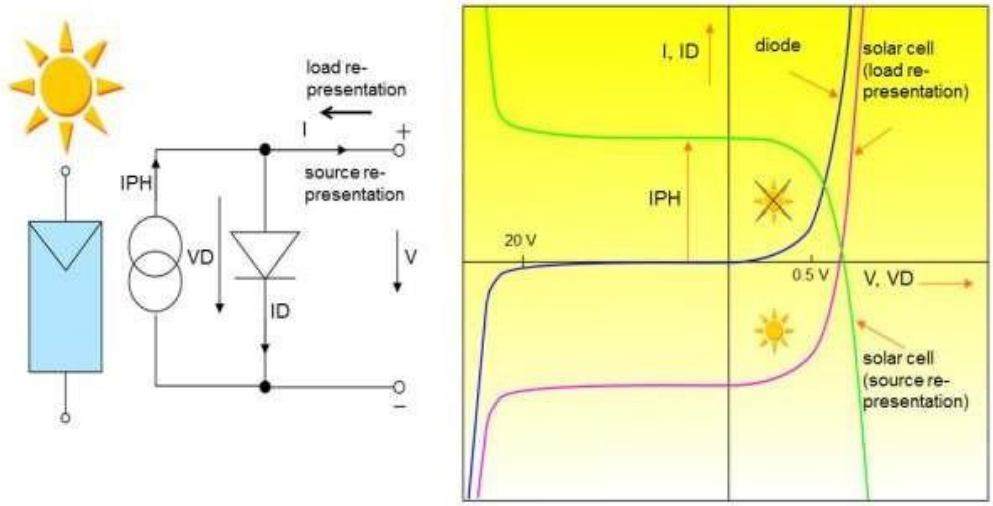

Image: Solarpraxis AG, Berlin, Germany

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Equivalent circuit according to the „one diode“ model

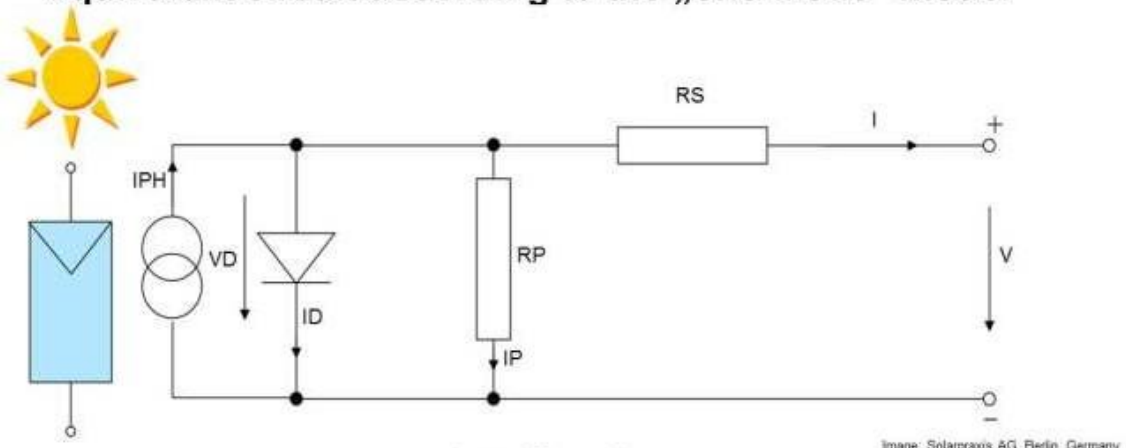

Image: Solarpraxis AG, Berlin, Germany

$$I = I_{PH} - I_o\left(e^{\frac{V+IR_S}{V_T}} - 1\right) - \frac{V+IR_S}{R_p}$$ can only be solved numerically

RP represent recombinations, RS = resistance of semiconductor and grid fingers

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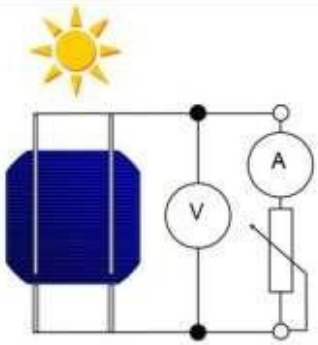
Solar cell power as a function of operating point

Standard TEST conditions STC:
T = 25°C
AM = 1.5
E = 1000 W/m²



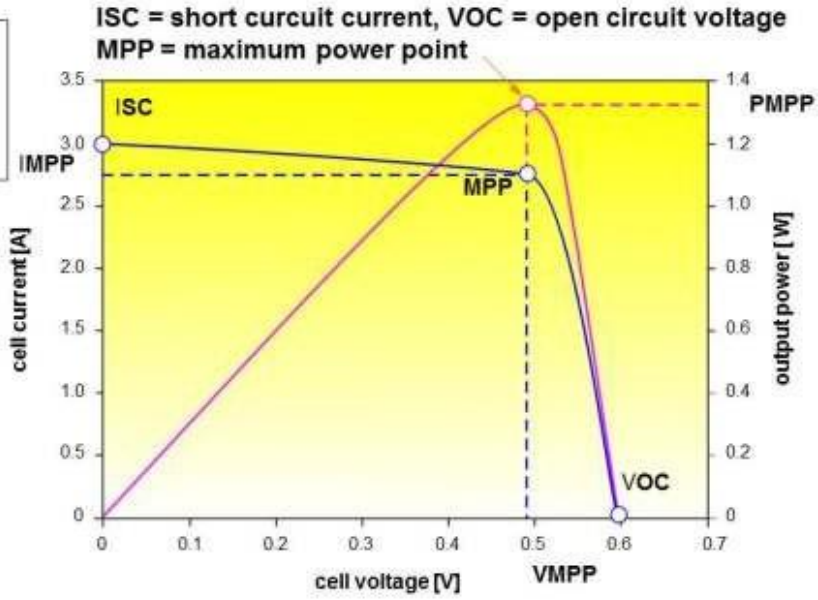


Image: Solarpraxis AG, Berlin, Germany

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Definition of efficiency and the Fill Factor

Not all the power which is radiated to a solar cell is transformed into electricity.

Efficiency = Pmpp/E*area

The power Pmpp in: W
the radiation E in: W/cm²
the area in: cm²

Measured at
Standard TEST conditions STC:
T = 25°C
AM = 1.5
E = 1000 W/m²

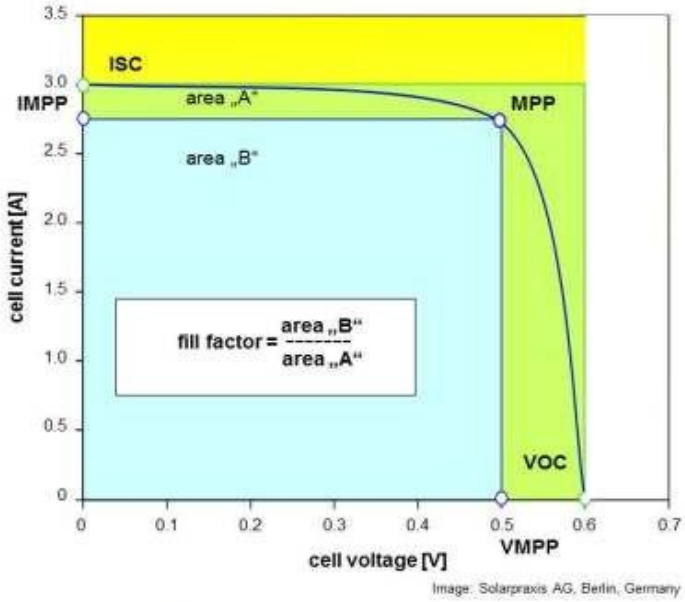

Image: Solarpraxis AG, Berlin, Germany

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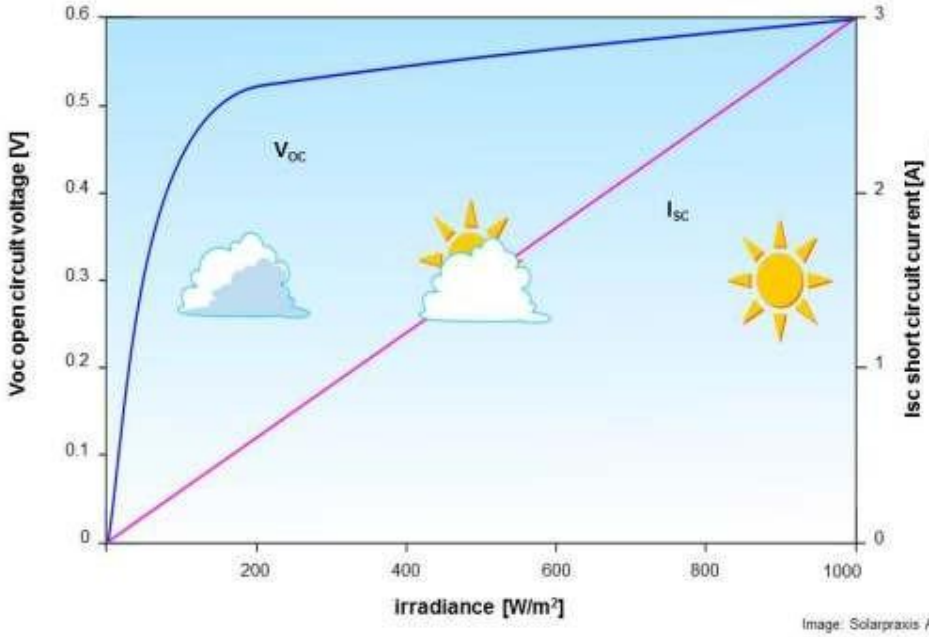
V_{OC} and I_{SC} as a function of irradiance



Voc ~ ln E

Isc ~ E because Iph ~ E

Image: Solarpraxis AG, Berlin, Germany

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I-V-curves of a crystalline silicon module at different irradiance levels and constant cell temperature

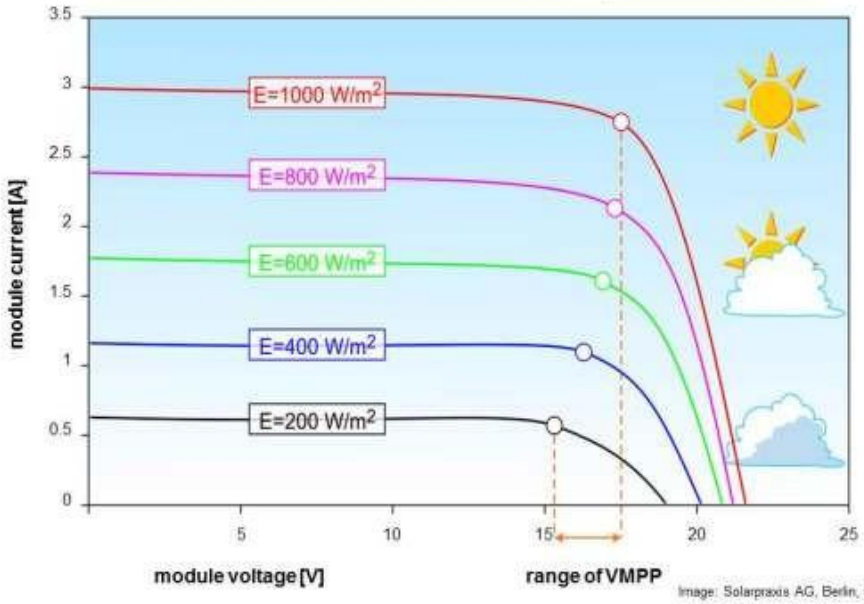

Image: Solarpraxis AG, Berlin, Germany

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I-V-curves of a crystalline silicon module for different cell temperatures at constant irradiance 1000 W/m2

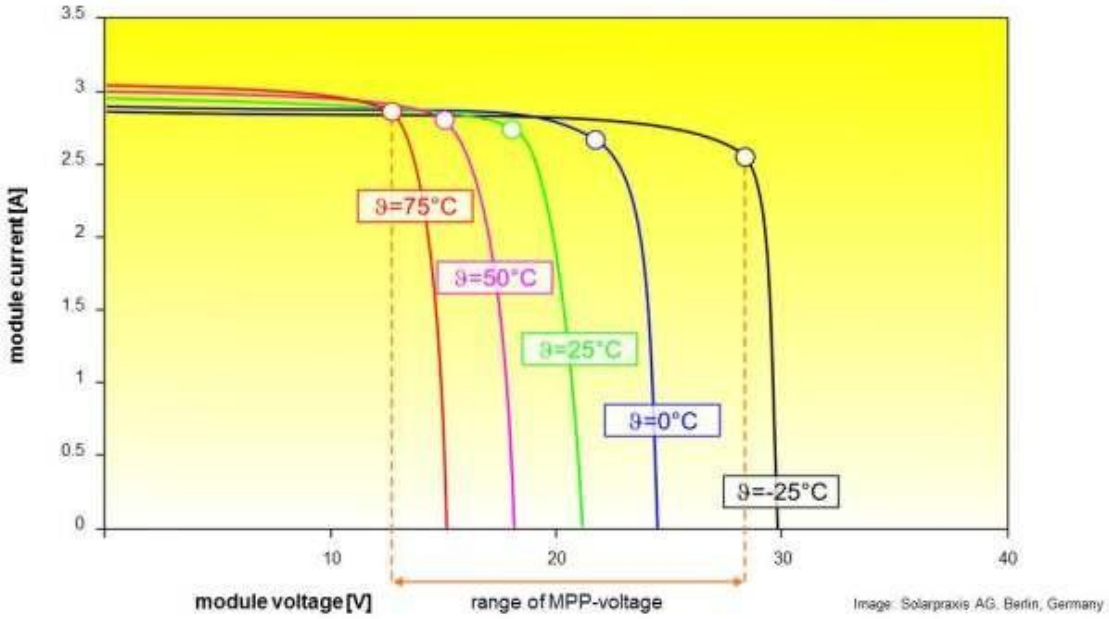

Image: Solarpraxis AG, Berlin, Germany

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Temperature coefficients (TC) of voltage, current and power and fill factor

	Temperature coefficients [%/K] and fill factor			
Type	$TC_{Voltage}$	$TC_{Current}$	TC_{Power}	FF
Crystalline Si	-0.30 ... -0.45	+0.02 ... +0.08	-0.37 ... -0.52	~ 0.8
Amorphous Si	-0.28 ... -0.50	+0.06 ... +0.10	-0.10 ... -0.30	~ 0.7
CIS	-0.26 ... -0.50	+0.04 ... +0.10	-0.39 ... -0.45	~0.75
CdTe	-0.22 ... -0.43	+0.02 ... +0.04	-0.20 ... -0.36	0.75
GaAs	-0.19 ... -0.24	+0.02 ... +0.03	-0.20 ... - 0.24	0.85

Source: Fraunhofer ISE

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Calculation of output power at different temperatures

The temperature of a PV cell/module (glas/cell/glas laminat) can be calculated by a rule of thumb:

$T_{mod} = T_{amb} + 30*E/1000$

T_{amb} = ambient temperature
T_{mod} = module temperature
E = irradiance [W/m²]

The output power at a certain temperature P(T) can be calculated by:

$P(T) = P(25°C) * (1 + TC_{Power} * (T_{mod} - 25))$

Example: T_{amb} = 35°C, E = 1000 W/m², P(25°C) = 350Wp, TC_{Power} = - 0.45% / °C

P(65°C) = 350Wp * (1- 0.45%*40) = 350Wp * (1- 0.18) = 287Wp

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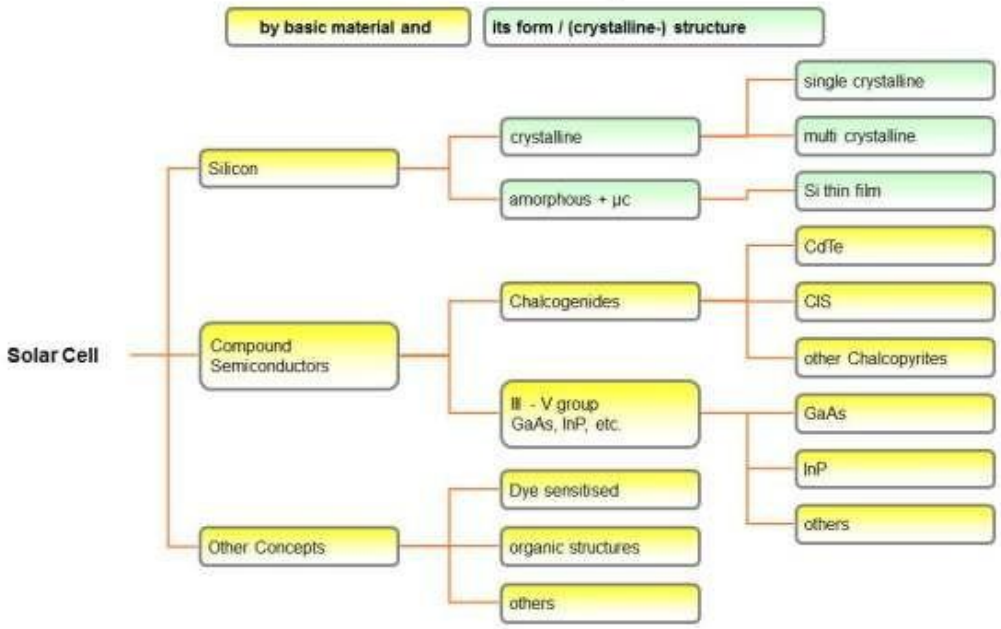
Materials used for the fabrication of solar cells

Classification of Solar Cell types



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Mono- and Polycrystalline silicon cell

typical layer thickness: ~100 – (200) µm

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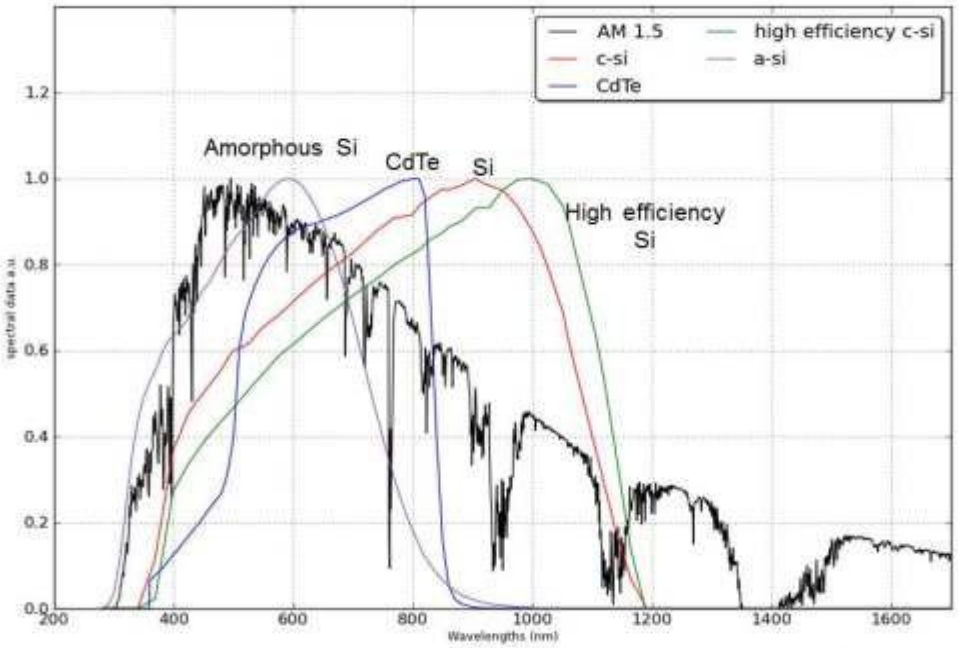
Spektral response of different cell technologies



Source: Fraunhofer ISE

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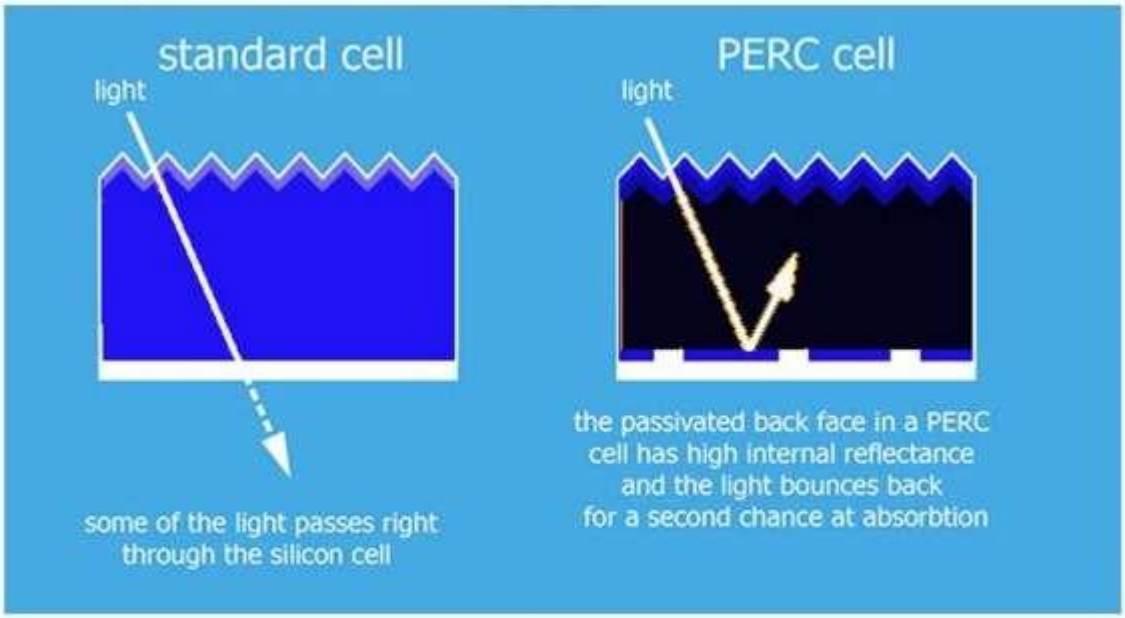
Passivated Emitter and Rear Cell PERC improve the effiency of monocrystalline silicon cells



typical layer thickness: ~100 µm

Image: Orbicsolar.com

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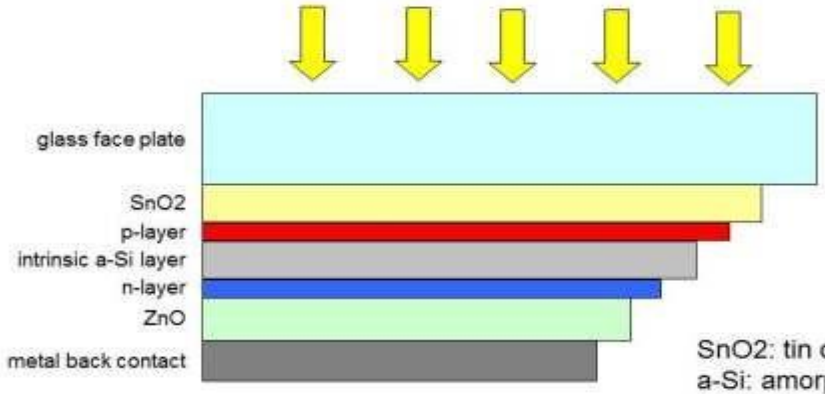
Structure of a single junction p-i-n a-Si solar cell



SnO2: tin oxide
a-Si: amorphous silicon
ZnO: zinc oxide

typical layer thickness: ~1 µm

Image:Fraunhofer ISE, Freiburg, Germany

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Typical vapour deposit machine for producing thin film cells and modules

Image: Centre for Solar Energy- and Hydrogen Research (ZSW)

Structure of a CdTe/CdS solar cell

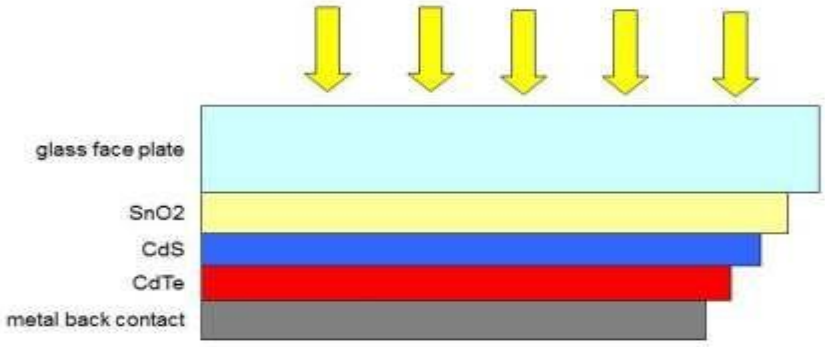
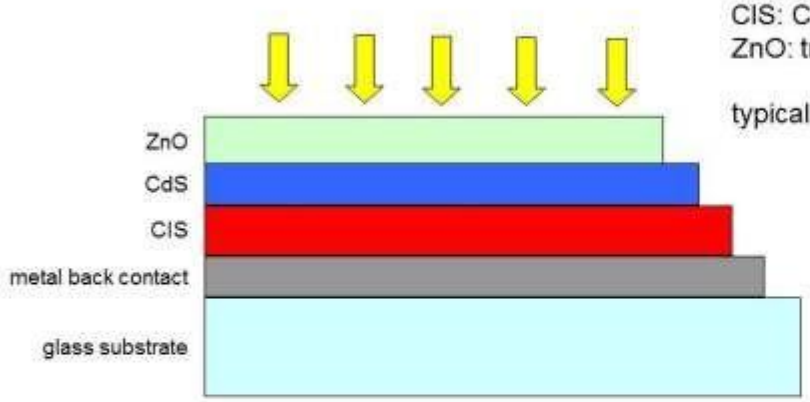


Image:Fraunhofer ISE, Freiburg, Germany

SnO2: Tin oxide
CdS: Cadmium sulfphide
CdTe: Cadmium tellurite

typical layer thickness: ~5 µm

Structure of a CIS solar cell



CdS: Cadmium sulfid
CIS: Copper indium diselenide
ZnO: transparent zinc oxide

typical layer thickness: ~ 3 - 4 µm

Image:Fraunhofer ISE, Freiburg, Germany

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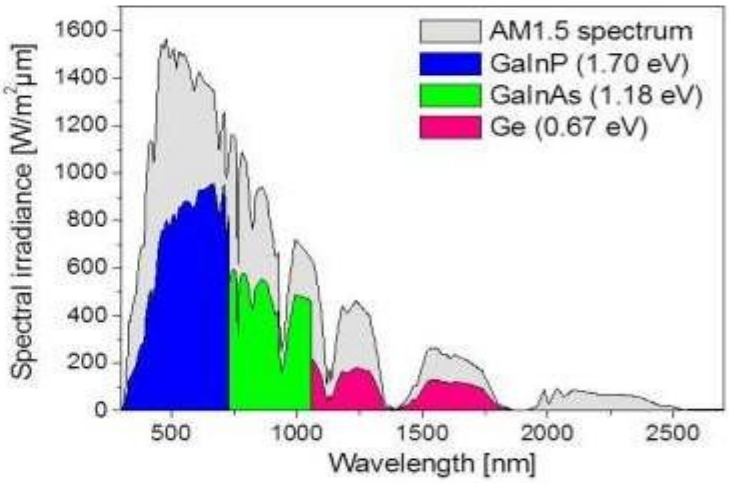
III-V semiconductor Gallium Arsenide Ga As multi bandgap cell

- Each cell use a separate part of light
- With a triple junction compound a theoretical efficiency of 52 % can be achieved
- Best laboratory cell achieve a efficiency of 46 % at 454xAM1.5



Source: Fraunhofer ISE

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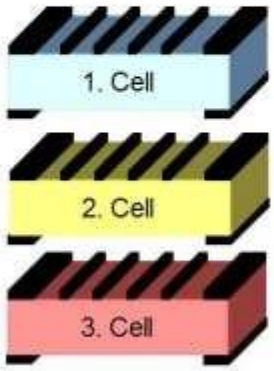
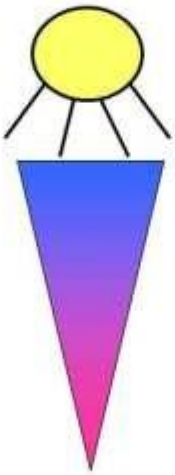
Realisation of a triple junction cell

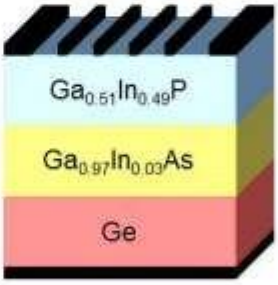
- **Mechanical stacked**
- **multi-terminal**





Source: Fraunhofer ISE

- **Monolytic stacked,**
- **two-terminal**



typical layer thickness: ~1 µm

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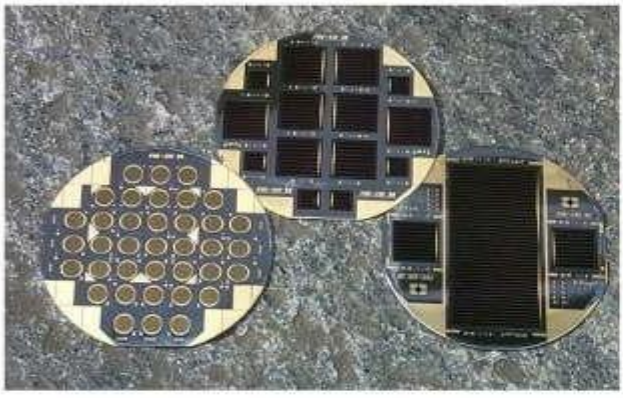
Example Ga0.35In0.65P/Ga0.83In0.17As Tandemcell V



Source: Fraunhofer ISE

Concentrator cell with a active area of 0.1326 cm²

the need of expensive monocrystalline substrates (Ga or Ge) with about ~100 µm thickness cause high production cost.

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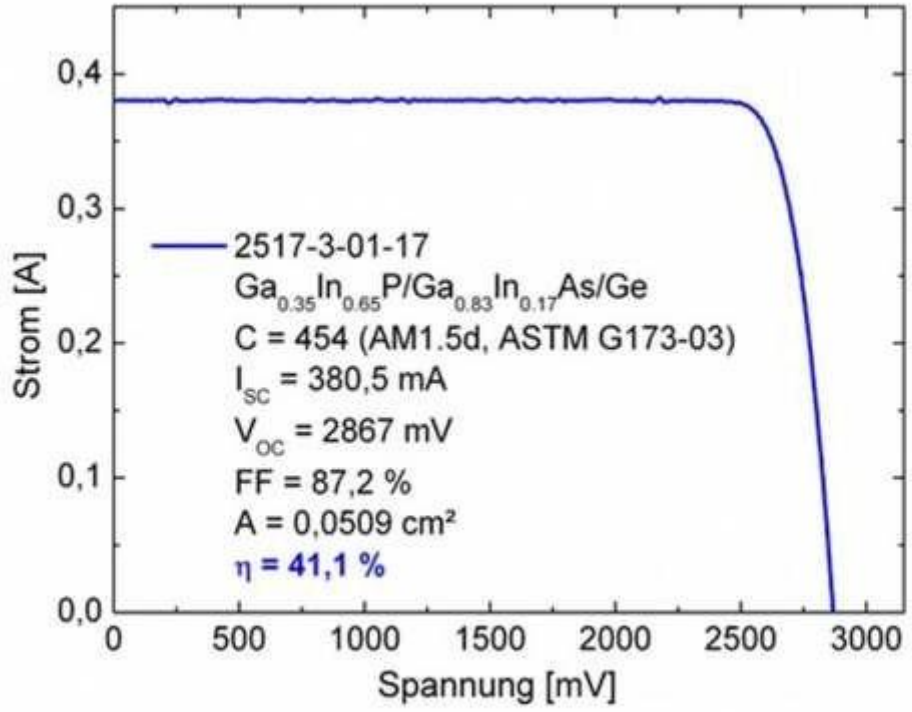
I-V curve of a triple junction cell



Quelle: Fraunhofer ISE

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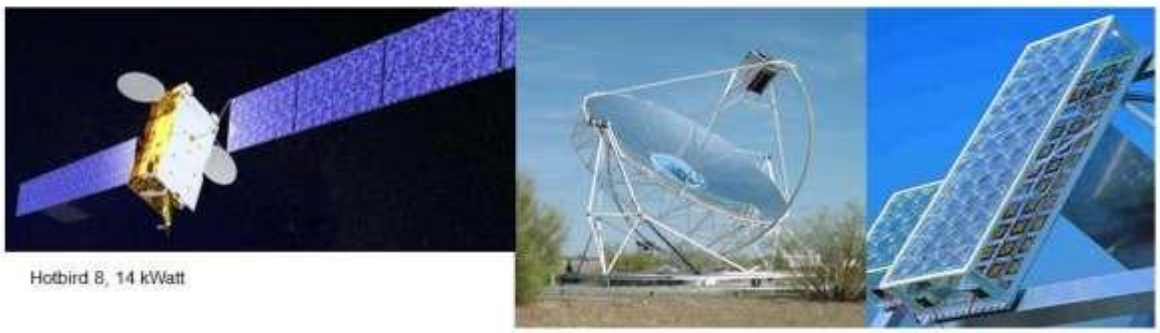
Typical applications of III-V multijunction cells

Space and terrestrial for concentrator systems



Hotbird 8, 14 kWatt

FLATCON, 15 Watt

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Max. cell and module efficiencies in Laboratory and Production (2018)

Technology	Cell laboratory [%]	Cell production [%]	Module production [%]
Mono Si	26	24	19
Poly Si	22	20	17
a-Si	14	8	6
CdTe	22	17	16
CIS	23	16	15
GaInP/GaInAs/Ge	46	40	30

Measured at
Standard TEST conditions STC:
T = 25°C
AM = 1.5
E = 1000 W/m²

Source: Quaschning

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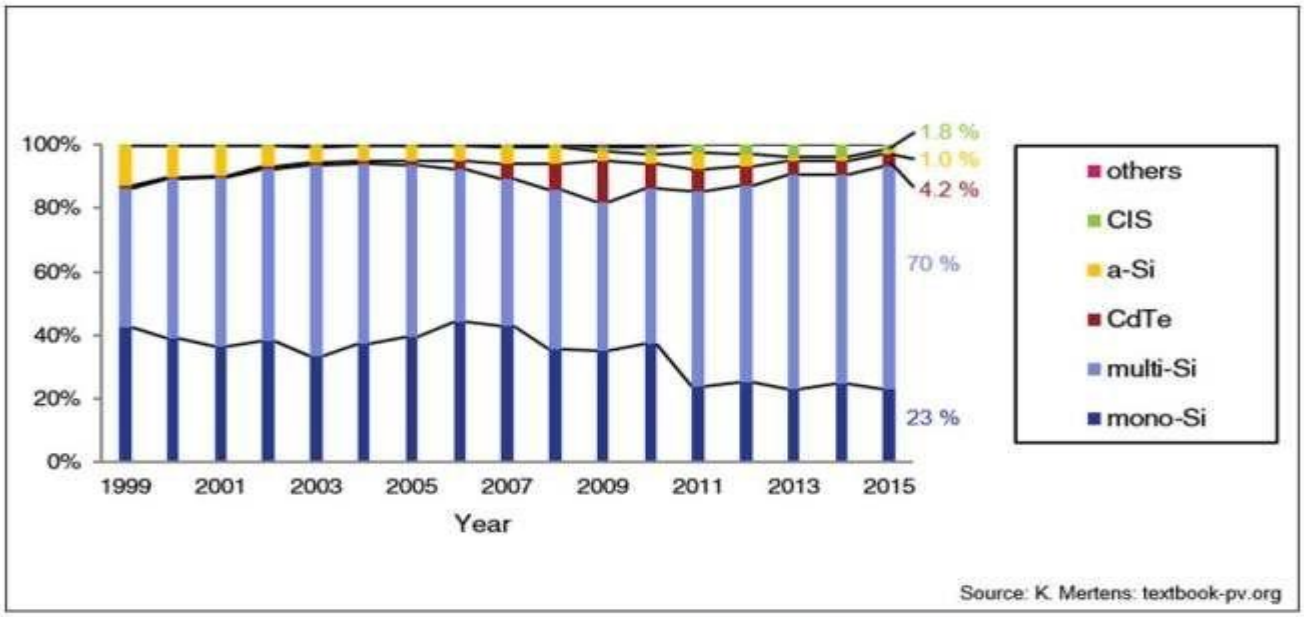
Percent of various cell technologies over the year



Source: K. Mertens: textbook-pv.org

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Knowledge Test:

- Which are the „Standard Test Conditions (STC)" for the measurement of solar cells?
- What is described by the „Fill Factor" of a solar cell?
- Does the solar cell efficiency and power improve at higher cell temperature?
- What is the reason to produce multijunction cells?

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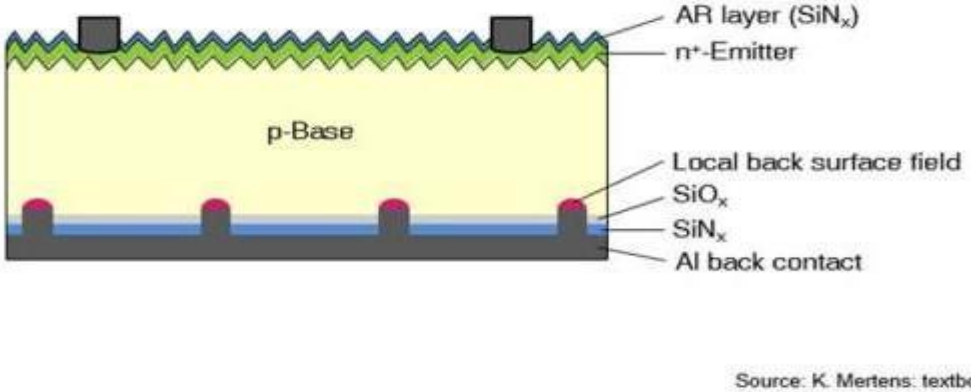
Passivated Emitter and Rear Cell PERC improve the effiency of monocrystalline silicon cells



Source: K. Mertens: textbook-pv.org

typical layer thickness: ~100 – (200) µm

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Photovoltaic Powerstation: Monitoring and Evaluation - how much Energy can be Produced? - Experience from Europe and China

Xining, Qinghai, China, July 2019
Vazhakulam, Kerala, India, December 2019

Georg Bopp
Dr. Hansjörg Gabler
georg.bopp@web.de

Freiburg, Germany
Senior Experts

- Introduction
- How much electricity each year from 1 kW of PV?
- Irradiation data from weather satellites
- Final yield from PV stations in Spain, Europe
- Performance Ratio PR
- Why is the PR smaller 100%

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GongHe, Qinghai, 25 MW

How much electricity/how many kWh does a PV power station deliver?

The official PV statistics 2017 of China's National Energy Administration (NEA) says:

Additional installation 2017:	53.06 GW
Cumulated total installation:	103.25 GW
National annual utilisation = final yield:	1204 hours
National average 'grid curtailment':	6% - 7%
Without grid curtailment 'utilisation':	1288 hours

Curtailment means switching off the PV system because lines are overloaded.
Only for a very small number of systems measured irradiation data available

'utilisation' = 'full load hours' = 'final Yield'

final Yield: $Y_f = E_0 / P_0$

E_0 = electricity delivered to grid [kWh]

P_0 = 'installed power' [kW]

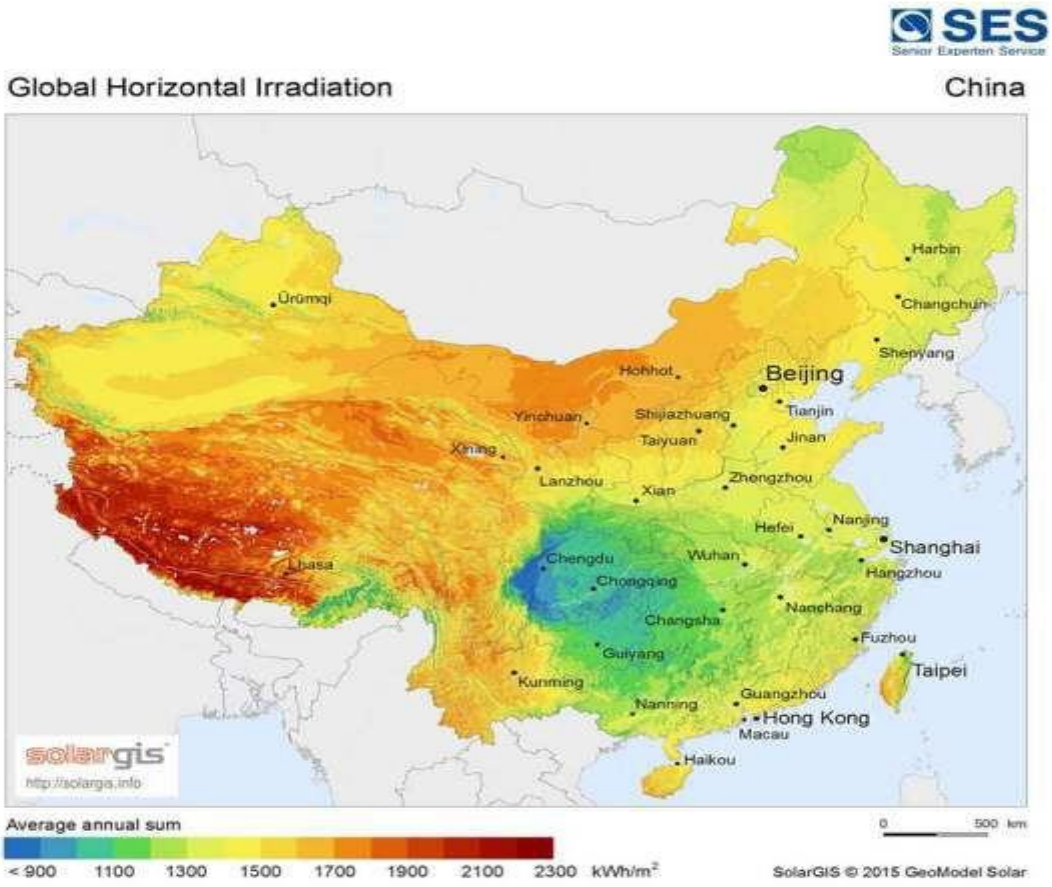
installed power: number of PV modules installed and connected, multiplied by the nameplate power of the module = DC power!

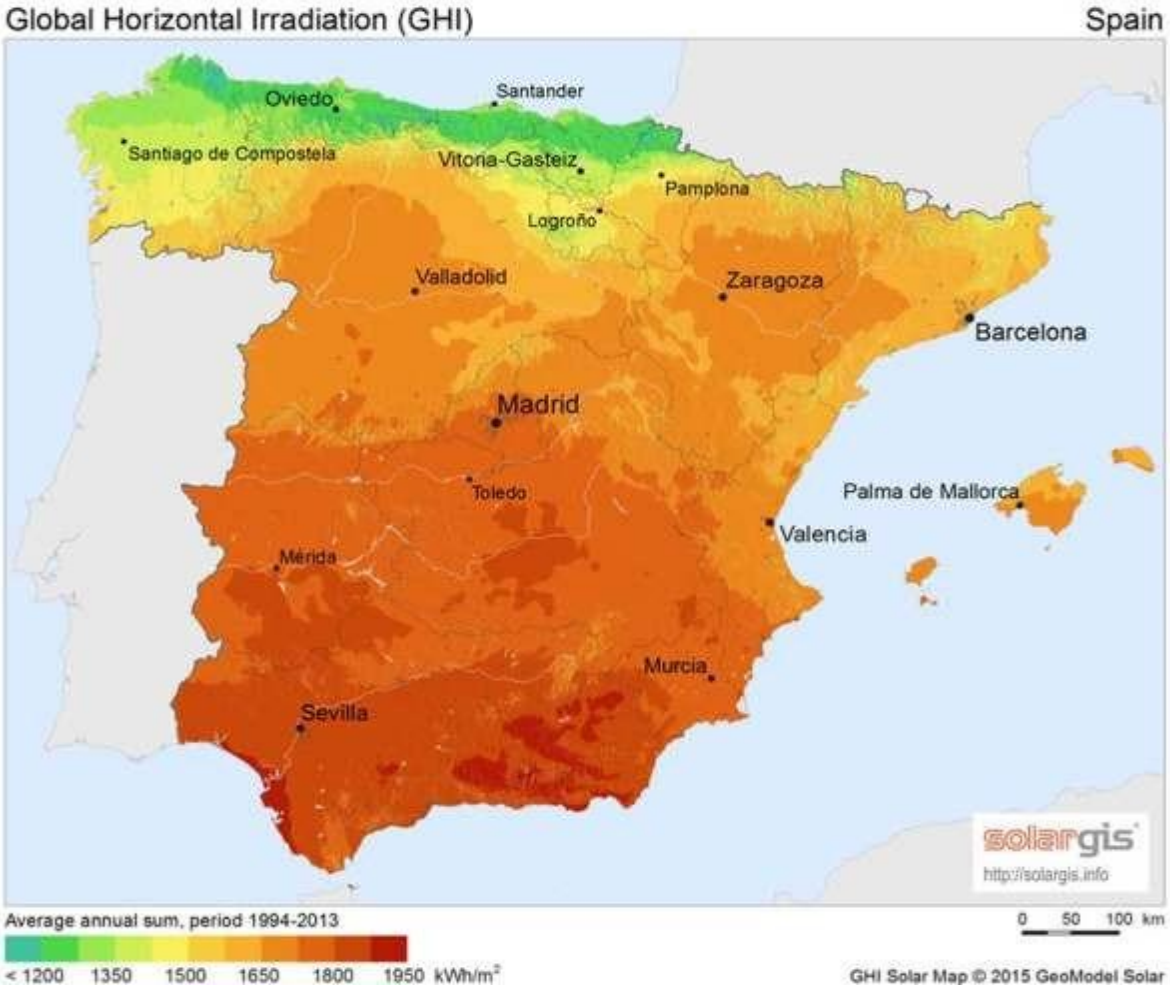
It is part of the standard procedure in PV plant inspection for yield evaluation and yield optimisation to count the number of PV modules

'final Yields' measured for PV systems in Europe

For good comparison with Qinghai/China and Kerala/Indien, we choose a region with comparable Irradiation

To cover large areas, data from weather satellites must be used!





Solar irradiation, horizontal: GHI [kWh/m2]
typically Radiation Maps give: GHI

Solar irradiation, inclined (e.g. 30°south): H_i,
in PV we typically need H_i to calculate PR

Germany, south: GHI = 1150 kWh/m²*a
H_i = 1200 kWh/m²*a

Spain, south: GHI = 1650 kWh/m²*a
H_i = 1800 kWh/m²*a

Xining: GHI = 1650 kWh/m²*a
H_i = 1800 kWh/m²*a

Kochi: GHI = 1930 kWh/m²*a
H_i ~ 2100 kWh/m²*a

For Xining and Kochi no measured GHI available

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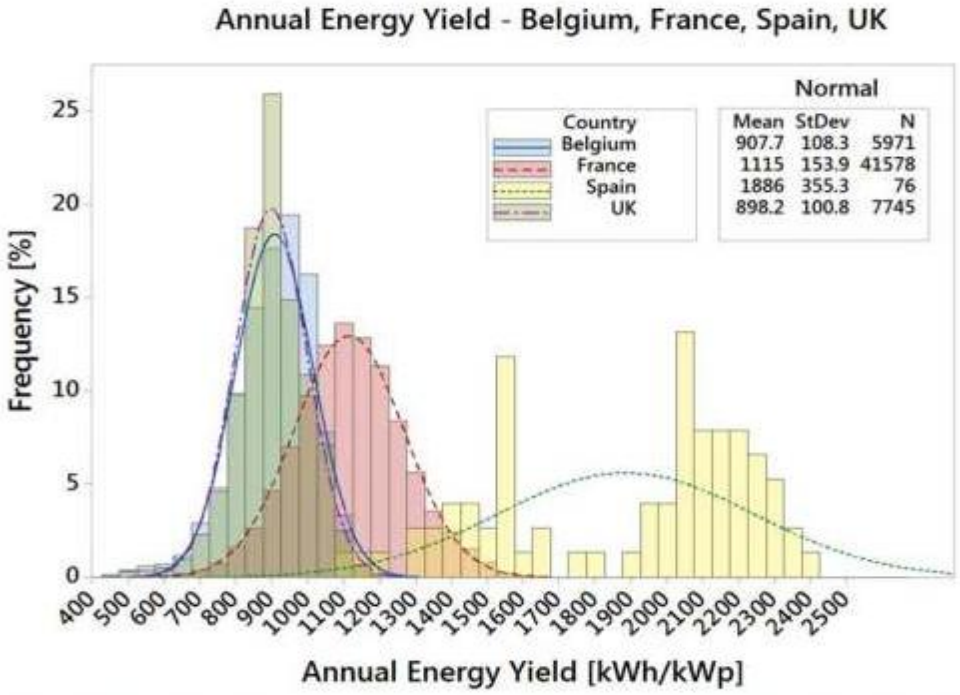
The following results for Spain, Europe, are from:

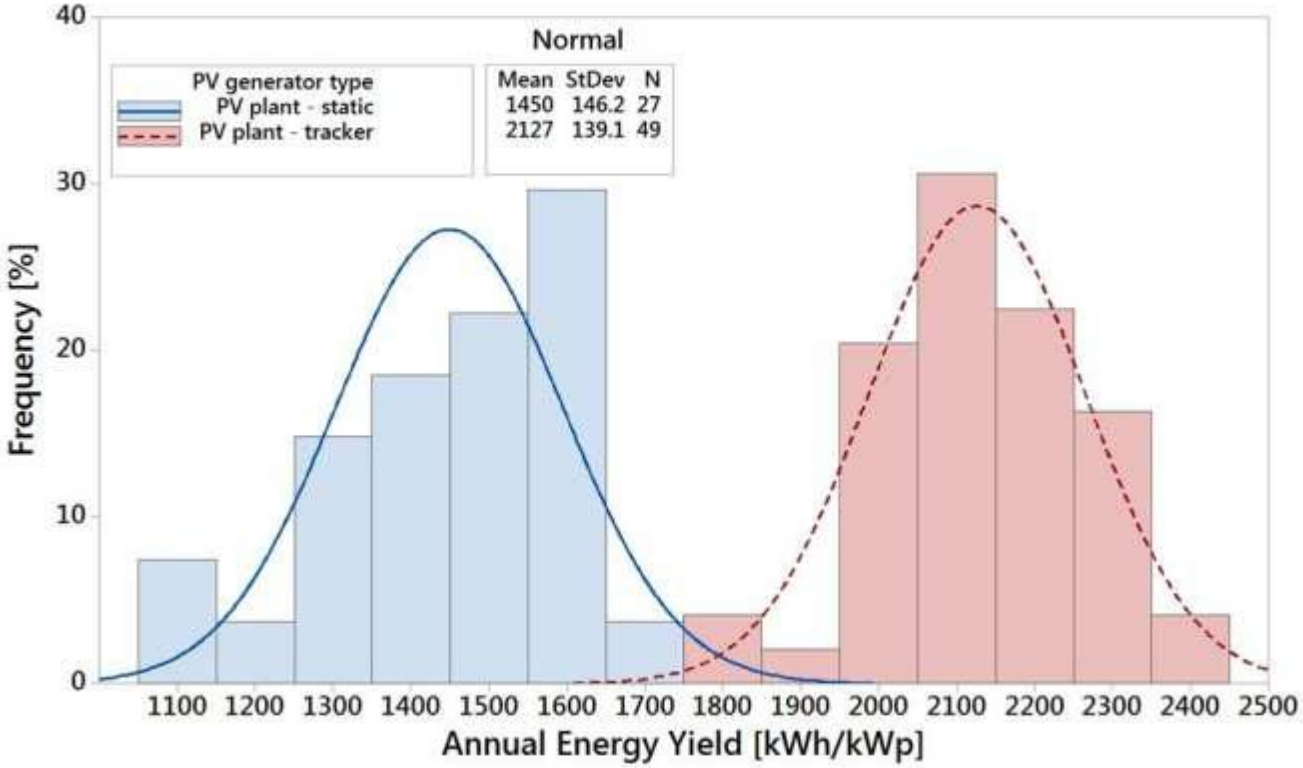
Monitoring 30,000 PV systems in Europe: Performance, Faults, and State of the Art, Jonathan Leloux et al., 31 st EUPVSEC (2015)

- the study includes 24 PV systems in Spain (116 MW),
- the systems were built between 2007 and 2013



Jonathan Leloux et al.

Annual Energy Yield of PV plants in Spain vs static/tracker generator type



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Why do we see different results?

- Irradiation differences inside Spain
- good system quality versus bad system quality
- fixed systems versus tracked systems

blue bars: fixed
red bars: tracked
average gain through tracking is: 47%

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Performace Ratio PR according to IEC 61724:

Systems Final Yield divided by its Reference Yield:

$$PR = Y_F / Y_R$$
$$= (E_{out} / P_0) / (H_i / G_{STC})$$

H_i [kWh/m2] measured Irradiation in 'plane of array' (at the PV panel)

G_{STC} = 1 kW/m2 (= Reference Irradiance for PV module @ STC)

PR unit: hour / hour this means no unit

PR is: system efficiency! Is a most valuable characteristic number!

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Measurement of global solar radiation:

- Pyranometer with thermopile sensor (meteorological standard instrument but relative expensive)
- Cheaper alternative: Calibrated silicon reference cell
- If no radiation measurement is done you can use good satellite data, but to get this data for a special year you have to pay

Source: kip & Zonen, Delft, The Netherlands

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G_i is measured in 'plane of array'

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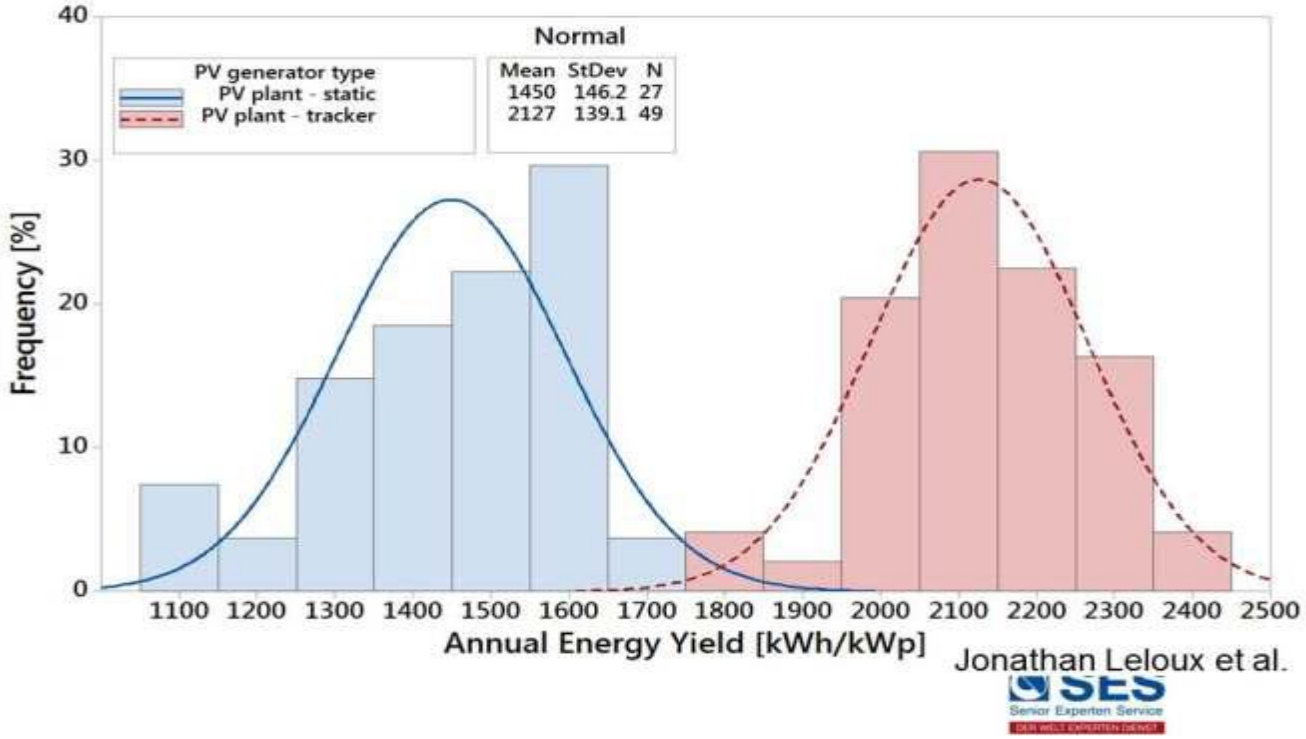
Annual Energy Yield of PV plants in Spain vs static/tracker generator type



Jonathan Leloux et al.

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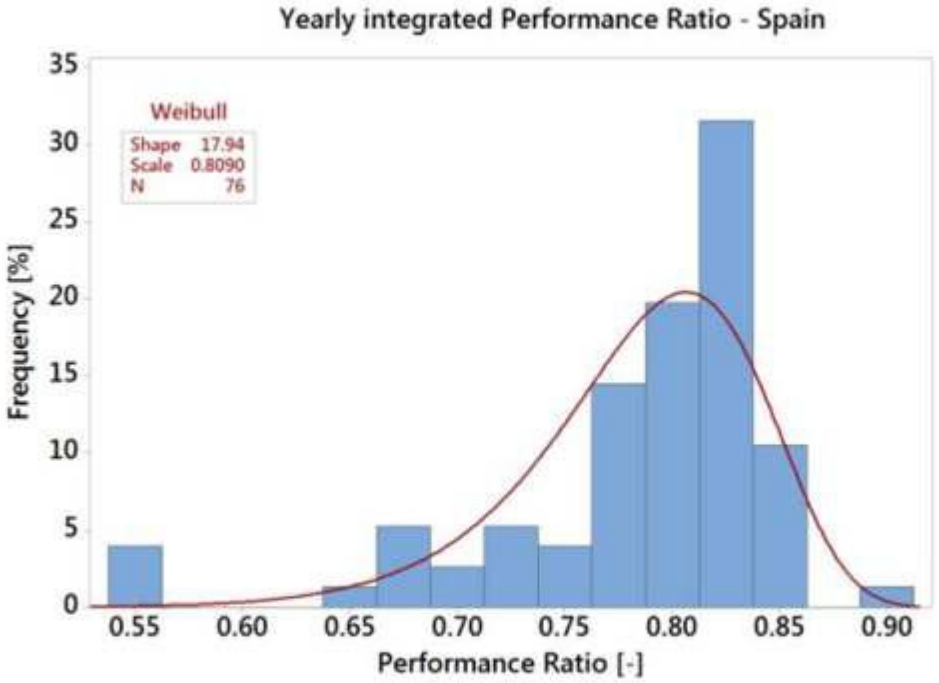
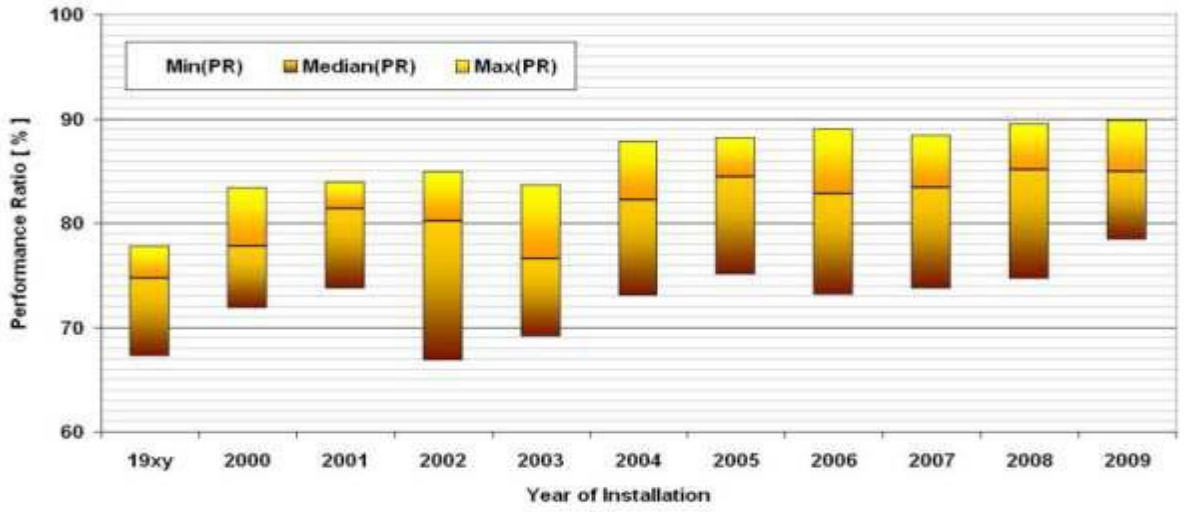
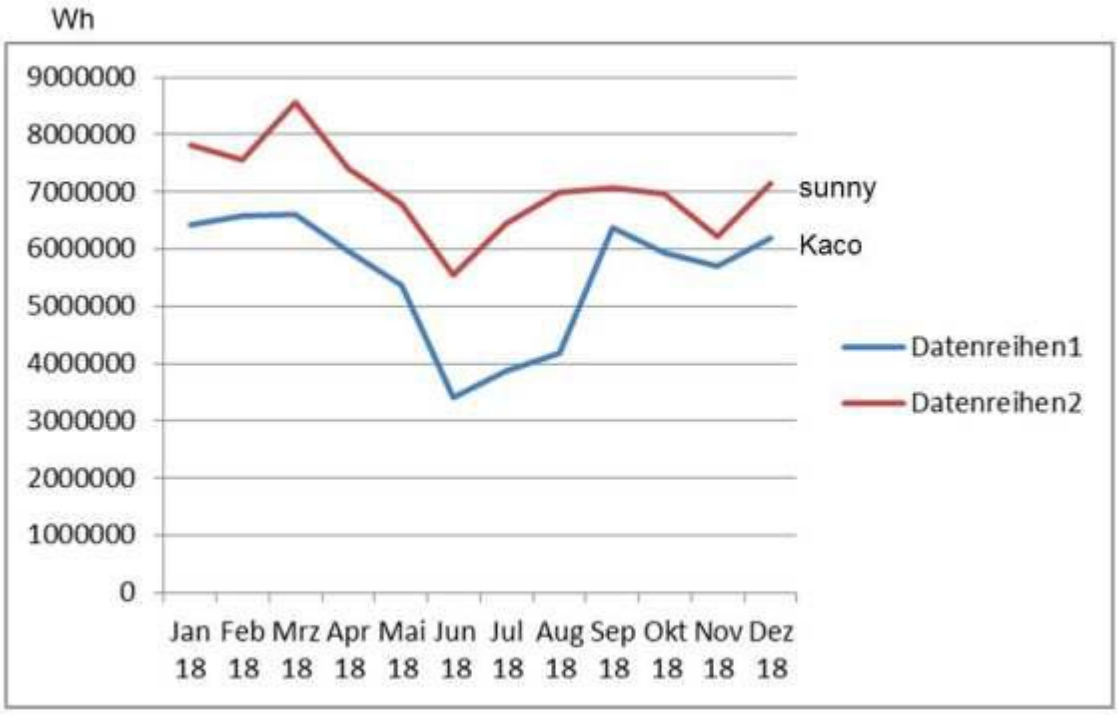


Figure 12: Distribution of the yearly PR for PV plants in Spain. The typical value is 0.81. (Leloux et al.)



Historical development of PR over the past 15 years in Germany
from: International Energy Agency IEA **Report IEA-PVPS T13-03:2014**



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Again:

The 'final Yield' (= 'utilisation hours') of chinese PV installations in 2017 was 1204 hours.

comparable PV installations in Spain show 'final Yields' of 1650 hours, 25% more

China should try to bridge that gap! Only 6% - 7% losses caused by national average 'grid curtailment'

India:

Your Kaco system:	66600 kWh/a; 1333kWh/kW; Vazhakulam; GHI=1930kWh/m²*a??
PVGIS:	75200 kWh/a; 1504kWh/kW; Vazhakulam; GHI=1930kWh/m²*a
Sunny design:	85000 kWh/a; 1700kWh/kW; Thiruvananthapuram; GHI=1980kWh/m²*a

Why such a big difference and how to increase Yield and PR?

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Average annual Performance Ratio PR of about 1 000 000 PV systems in south Germany: 80.0%
(source: Planning and Installing … - 'the blue book')

Utility scale PV plants in Spain:
Average PR: 78%,
typical PR: 81%,
best PR: 90%
(source: Leloux et al.)

References

Monitoring 30,000 PV systems in Europe: Performance, Faults, and State of the Art, Jonathan Leloux et al., 31 st EUPVSEC (2015)

Performance Ratio PR measured in 94 PV systems in Germany in year 2010 from: International Energy Agency IEA Report IEA-PVPS T13-03:2014

W.G.J.H.M. van Sark et al.,Review of PV Performance Ratio Development, 28th EU-PVSEC (2013)

Planning and installing Photovoltaic systems – A Guide for Installers, Architects and Engineers, 3rd edition, 2013

Peter Lechner, PV Module Reliability – Field Test Results, ZSW, Presentation (2015)

Frank Haugwitz AECEA, http://www.aecea.com.de

Energy Performance Results of 250 MW x Year of Spanish Large-Scale PV Plants, M. Moreton, E. Lorenzo, F. Martinez, 31st EUPVSEC (2015)

Knowledge Test:

What is the average Final Yield for grid connected PV Systems in China ?

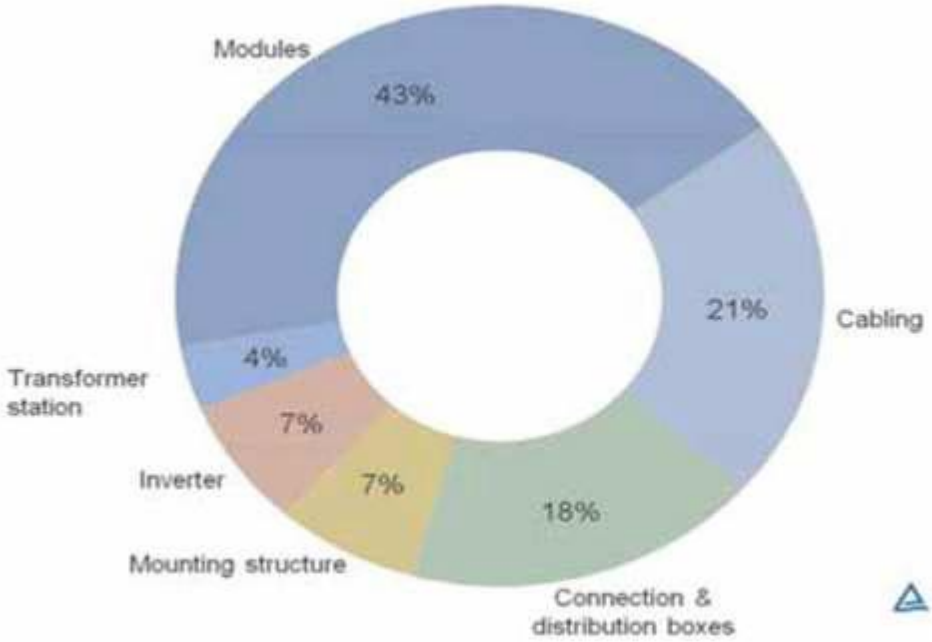
Which Performance Ratio are achieved by the analysed systems in Spain?

Which Performance Ratio may you estimate for a system, working perfectly?

Which typical defects reduce Performance Ratio ?

Exercise: Which energy produce your system per year, lets try to calculate Final Yield and Performance Ratio

Particularly serious defects in PV power plant 2014/2015



From: Minimising Risks from Plant Performance defects, Willi Vaasen, TÜV Rheinland, Cologne, Germany, May 2015, www.pv-tech.org

Why is PR smaller than 100%? (incomplete list)

Defects which can be avoided!

- Defects in PV modules,
- Degradation in PV modules

- Defects in cabling
- Defects in string fuses

- Defects in inverters
- MPP adaptation errors

- shutdown periods for service of the plant (3 days = - 1% PR)

With good knowledge of

- technical specifications of your PV system and its components (PV panels, inverter etc.),

- meteorological conditions at the site of your plant. Do own measurements of irradiance in plane of PV

- limitations to feed in caused by 'grid blackouts'

you can calculate 'final Yield' and PR and compare to the real world measurements!

Differences between calculation and reality tell you, there may problems!

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Why is PR smaller than 100%? (incomplete list)

These 'losses' may be reduced but not completely avoided!

- PV module: real operation conditions deviate from data sheet operation (STC) conditions (temperature, solar spectrum, reflection, lower efficiency at part load)
- Deviation of delivered PV module power from data sheet nominal power. Ask for a flasher list or send some modules to Terri that they measure the output power at STC
- PV module ageing, mismatch
- Soiling, shading

- Losses in DC cabling and junction boxes

- Losses in inverters
- MPP adaptation errors
- Losses in AC cabling
- Losses in transformers

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Onsite inspection and power optimization of PV power stations – best practice in Europe

Georg Bopp

Senior Expert Service
since May 2018

Andreas Steinhüser

Fraunhofer Institute for
Solar Energy Systems ISE

Kerala, Vazhakulam, December 2019

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DER WELT EXPERTEN DIENST

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Difference between commissioning tests and power optimization?

- Both need inspection and testing
- The sequence and the content of the testing steps is a little bit different
- The following presentation will focus on the sequence and content of the testing steps for power optimization in a general way

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Testing steps for power optimization

- Verification of the monitoring system
- Comparison of the as-built and as-planned PV system details, e.g. number of installed PV modules
- Check of module orientation and shading angle
- performance check of the PV power plant
  - Focus on systems with PR < 0,8 and or yield < 1400kWh/kW
  - Compare output power, Umpp, Impp, Uoc, Isc of identical strings/arrays/inverters
- Visual inspection and infrared images of shading, module sub construction, cable management , combiner boxes and inverter installation
- Infrared images IR of the whole PV field or selected arrays
- Measurement of I/V curve of selected PV arrays to verify module power

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Suggested next step

- If you find a difference between actual (measured) and expected yield or PR or
- The output power, Umpp, Impp, Uoc, Isc of identical PV strings/arrays/inverters in the same PV system is different do the following steps
  - Start with Uoc of identical strings by using two multimeters to have a direct comparison if the irradiation is changing, e. g. multimeter 1 is permanently connected to string 1, measure with multimeter 2 one after another string
- Visual inspection of shading, module sub construction, cable management , combiner boxes and inverter installation
- Infrared images IR of cable management , combiner boxes and inverter installation

4

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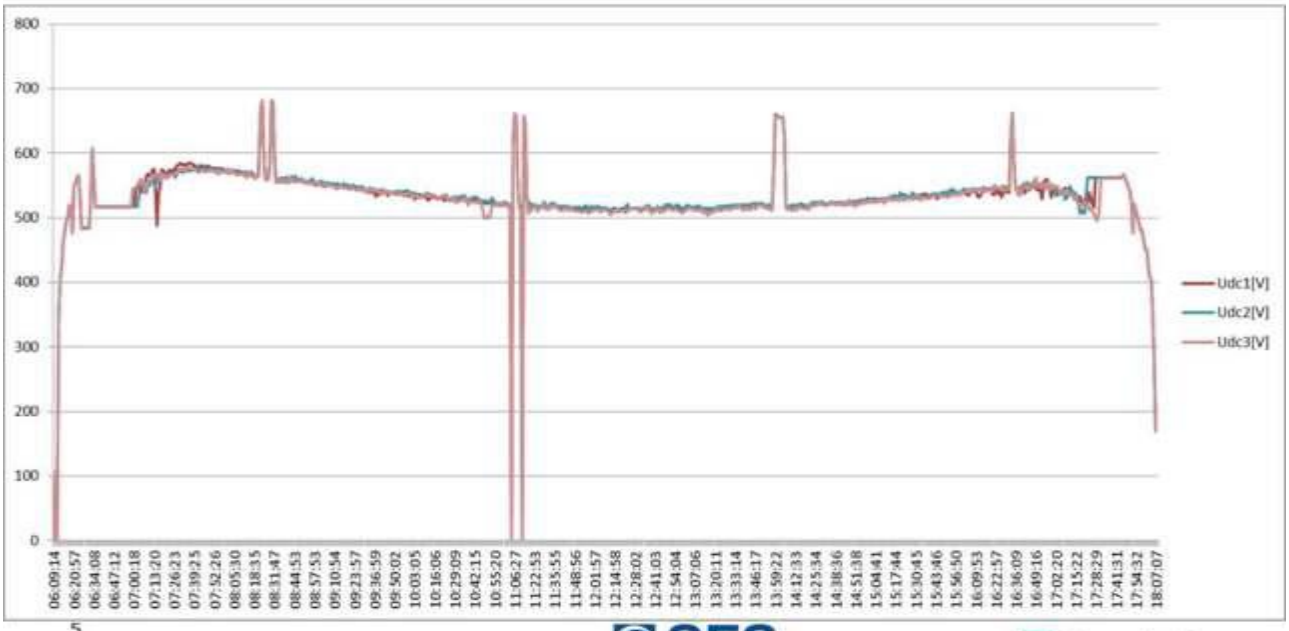
Umpp and Uoc voltage of Kaco inverter at 10.12.2019



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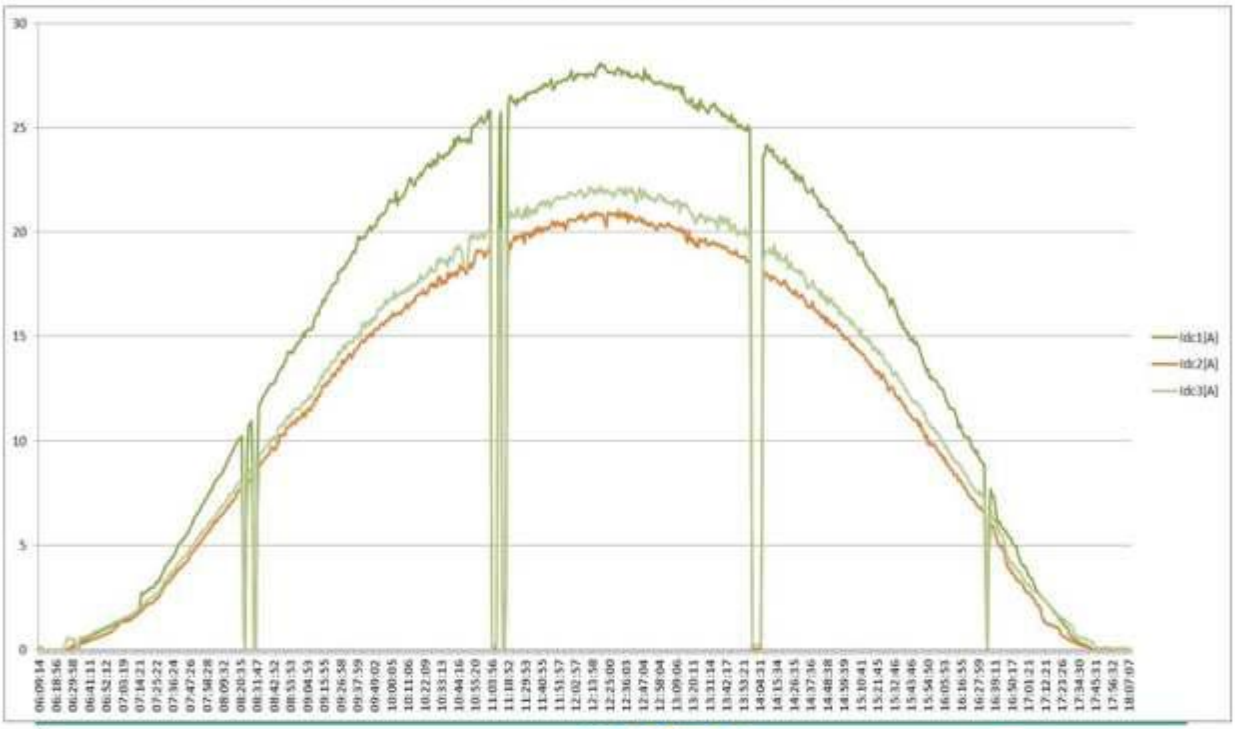
Fraunhofer ISE

Idc current of Kaco inverter at 10.12.2019



6

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What can we see

- The Umpp and Uoc of the three MPPT inputs are all identical
  - All PV modules are connected and no short circuited Bypass diodes
- The Idc currents of the three MPPT inputs are different, if we look to the values at 12:00am we see
  - Idc1 = 27.92A = 127% of Idc3; 4 strings parallel should achieve 4*33% = 133% -> 6% missing
  - Idc2 = 20.87A = 95% of Idc3; 3 strings parallel -> 5% missing
  - Idc3 = 21.95A = 100% per definition; 3 strings parallel -> 1 string = 33%
- Why missing current/power?
  - Shading (dirt at the upper part of modules) ?
  - Insufficient closed connectors/plugs
  - Broken glass of modules
  - Some modules with less power in comparison to the name plate/data sheet

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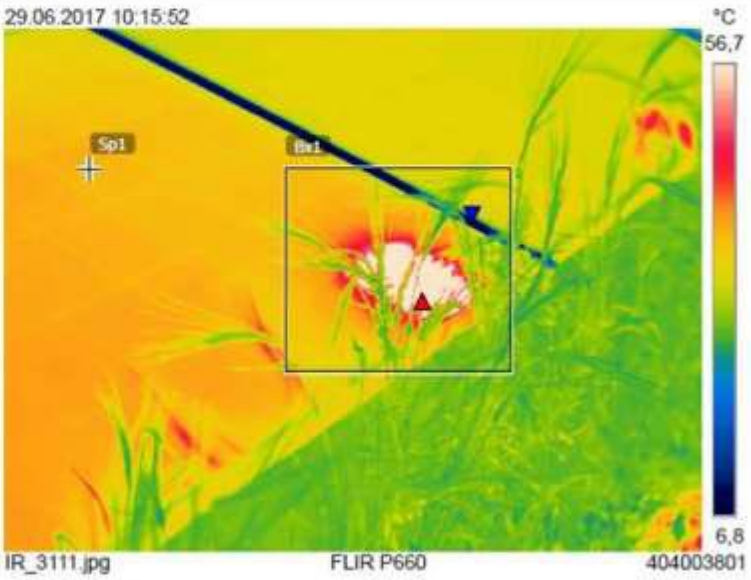
System Inspection and Testing

- Example of IR imaging
  - Hot spot caused by shading through plants

Measurements		
Bx1	Max	94,9 °C
	Min	-9,6 °C
	Average	39,7 °C
Sp1		40,7 °C
Dt1	Sp1 - Bx1.Max	-54,2 °C

Parameters	
Emissivity	0.95
Refl. temp.	15 °C

Geolocation	
Location	N 37° 46' 14.04", E 34° 39' 38.06"



Source: Fraunhofer ISE

System Inspection and Testing

- Visual inspection of the system
  - Determination of soiling losses for an extreme case Atacama dessert in Chile: 18%

Source: Fraunhofer ISE

System Inspection and Testing

- Module cleaning

10 Source: Fraunhofer ISE

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System Inspection and testing

- Check the module connectors
  - Two mistakes: loose cable gland, plug not locked

Source: Fraunhofer ISE

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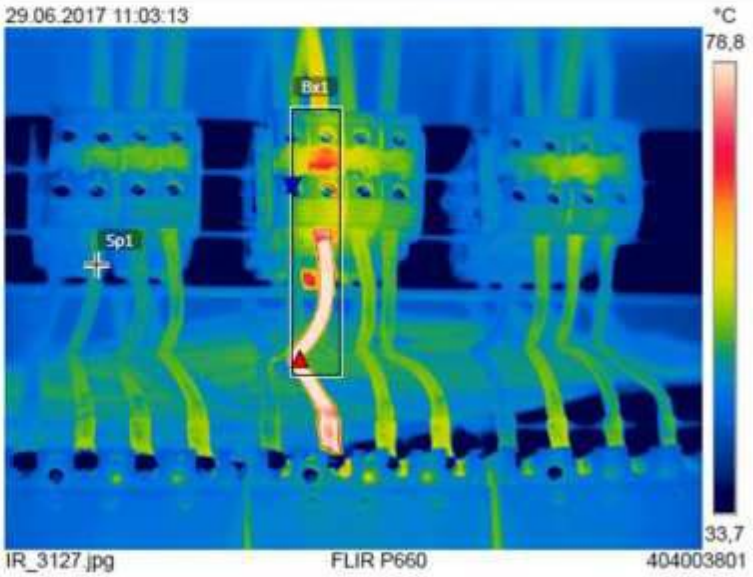
System Inspection and Testing

- Check with a infrared camera each combiner box and inverter, look if you see molten or discolored insulation
  - Heated cable in combiner box

Measurements		
Bx1	Max	82,9 °C
	Min	15,8 °C
	Average	59,2 °C
Sp1		49,8 °C
Dt1	Bx1 Max - Sp1	33,1 °C

Parameters	
Emissivity	0.95
Refl. temp.	15 °C

Geolocation	
Location	N 37° 48' 15.19", E 34° 39' 42.12"



Source: Fraunhofer ISE

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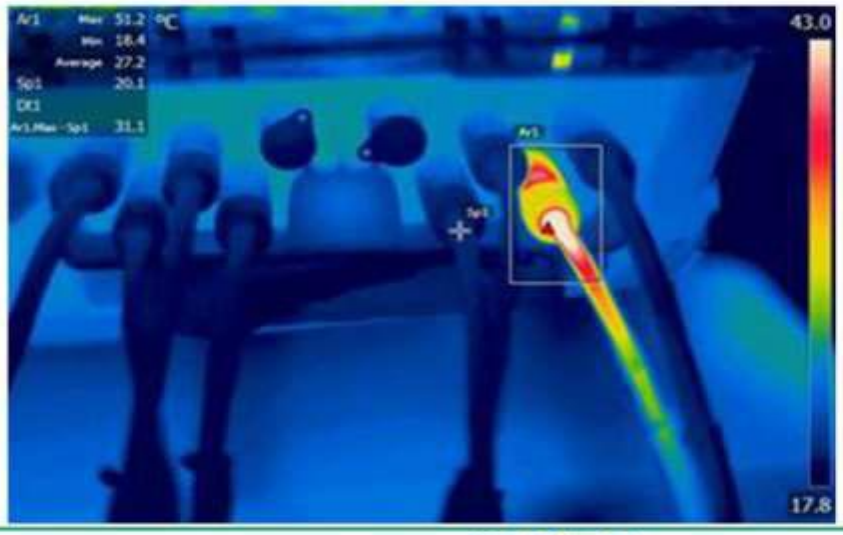
System Inspection and Testing

- Check with a infrared camera each combiner box and inverter, look if you see molten or discolored insulation
  - Heated DC plug/cable at an inverter



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Source: IEA PVPS task 13-10

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Suggested improvements

- Shading: cut grass
- Soiling: clean modules
- Hot plugs/connectors: reconnect the plug, remove dirt inside the plug/connector, check the crimping, the screw,

If still power is missing!

- Infrared images IR of the whole PV field or selected arrays and flashy modules

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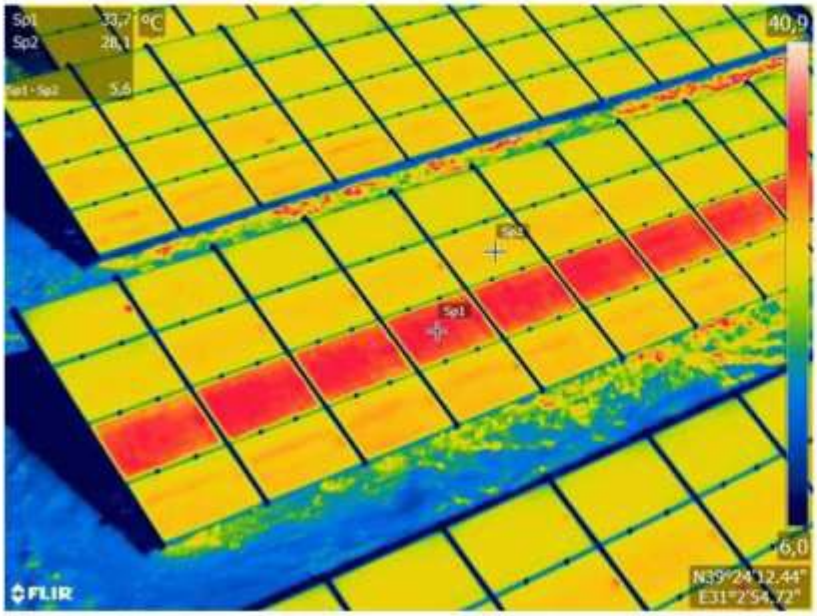
System Inspection and Testing

- Infrared thermography IR of the solar generator according to IEC 62446-3
  - Use a lift platform or
  - drone

15 Source: Fraunhofer ISE SES Senior Experten Service Fraunhofer ISE

Thermography of the solar generator

- The hotter string is not connected



Source: Fraunhofer ISE

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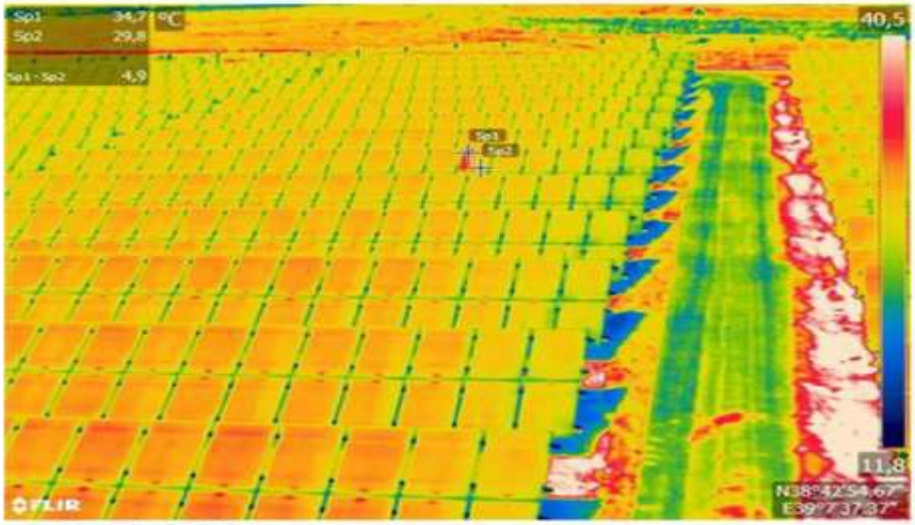
Thermography of the solar generator

- Check the two hotter spots in detail



Source: Fraunhofer ISE

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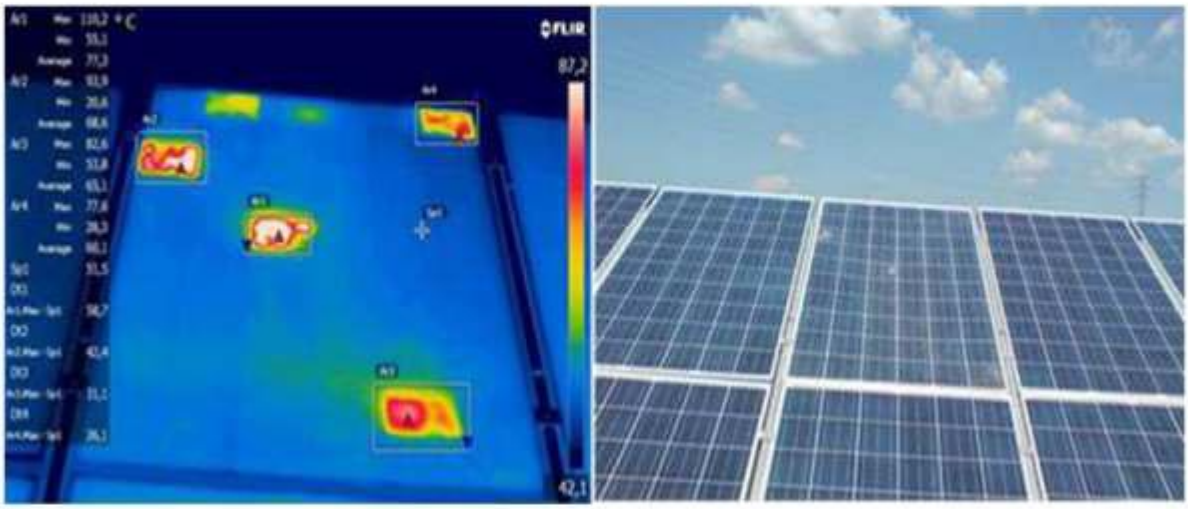
Thermography of the solar generator

- Breakage of front class



Source: IEA PVPS task 13-10

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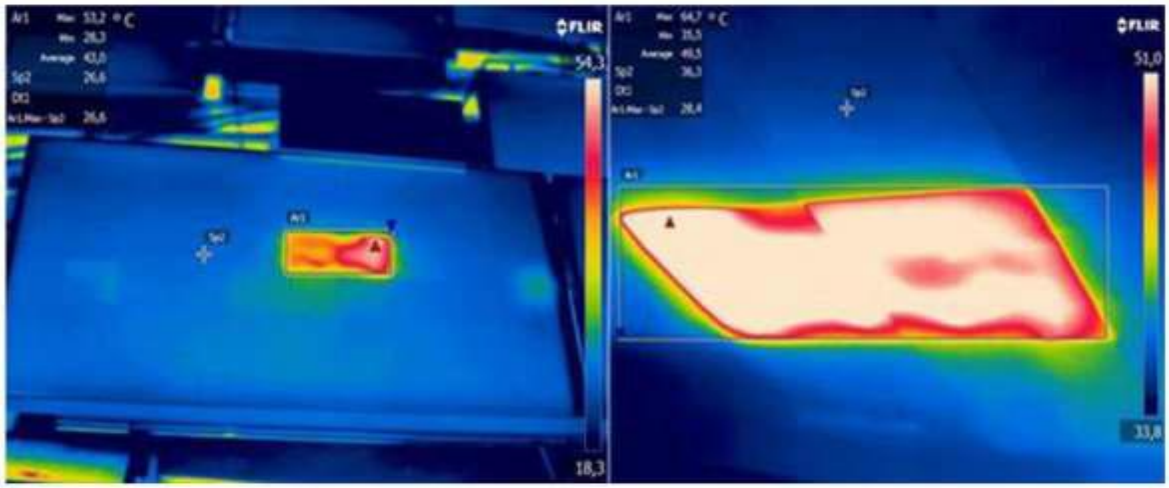
Thermography of the solar generator

- Overheated solar cell caused by bad cell or insufficient electrical contact



Source: IEA PVPS task 13-10

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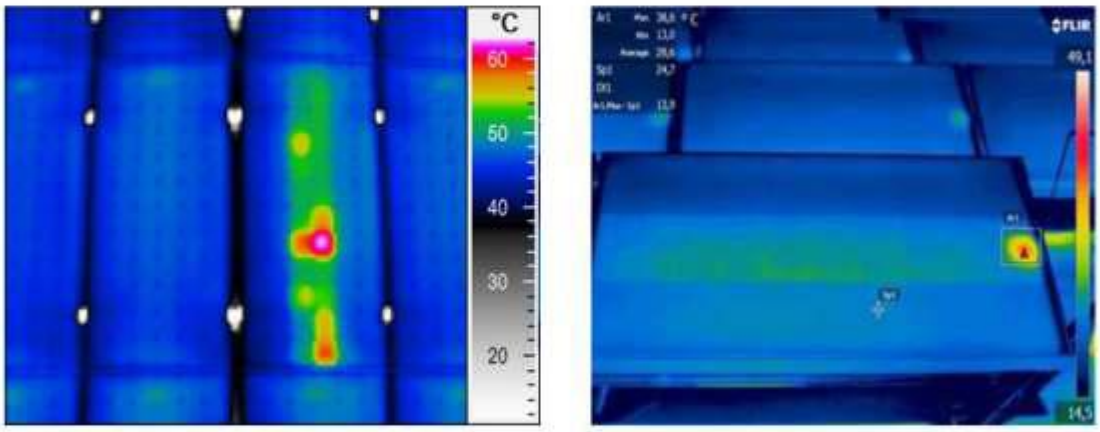
Thermography of the solar generator

- Overheated string in a PV module caused by short circuited bypass diode perhaps caused by long partial shading or lightning strike



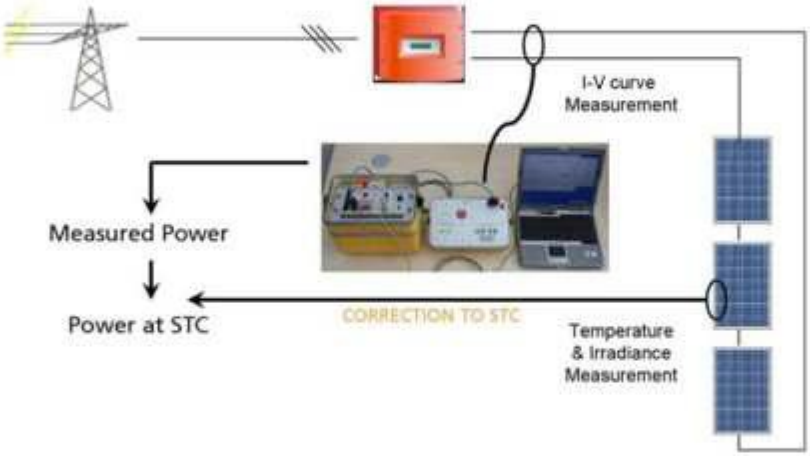
Source: IEA PVPS task 13-10

Suggested improvements

- Not connected strings:
  - Check fuses, switches, connectors
  - Repair/replace inverters
- Breakage of glass, hot cells
  - Replace PV module
- Short-circuited substring/string
  - Check bypass diode, if short circuited replace it
- Hot spots, hot cells temperature higher than 30^0 C
  - Measurement of I/V curve of this PV modules/arrays to verify module power

System Inspection and Testing

- Field I-V Curve Measurements according to IEC 62446-1 and IEC 60891 Ed. 2
  - Verifying Module Power



Source: Fraunhofer ISE

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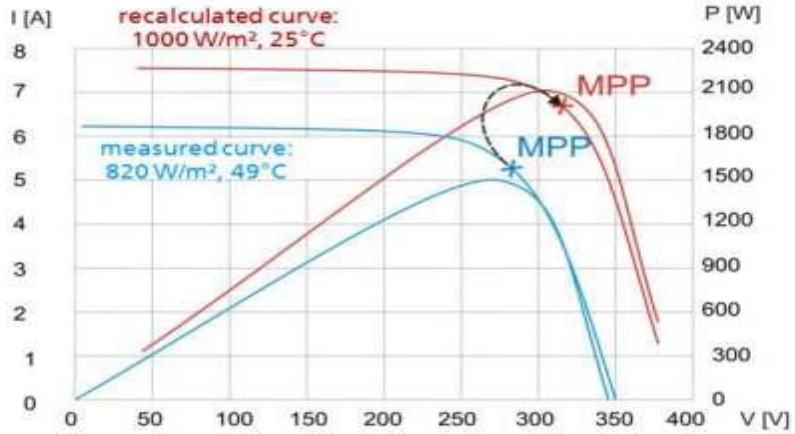
System Inspection and Testing

- Field I-V Curve Measurements
  - Extrapolation of Measured Solar Generator Characteristics according to IEC 60891 Ed. 2 mostly implemented in the I/V curve measurement device



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Source: Fraunhofer ISE

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Suggested improvements

- If you find no abnormalities in the I/V curve but less power in comparison to the data sheet adjust the PV module power in your model for calculation of PR and inform the owner of the system and the PV module manufacturer
- If you find abnormalities in the I/V curve
  - Check bypass diode
  - Check busbars

Conclusion

- To ensure long-term operation with high energy output/performance, the operation of the plant must be monitored continuously
- For estimation if the output power is high enough or can be optimized you must know the exact number of installed PV modules
- If the output power is too low, several testing methods are possible. IR is one of the most powerful methods
- Regular maintenance like module cleaning avoids power losses
- Please note:

  1 percent lower performance PR , e.g. due to poor or shaded or soiled modules, also leads to 1 percent lower system output

  ➢ Every percent PR counts to secure your investment!

Knowledge test

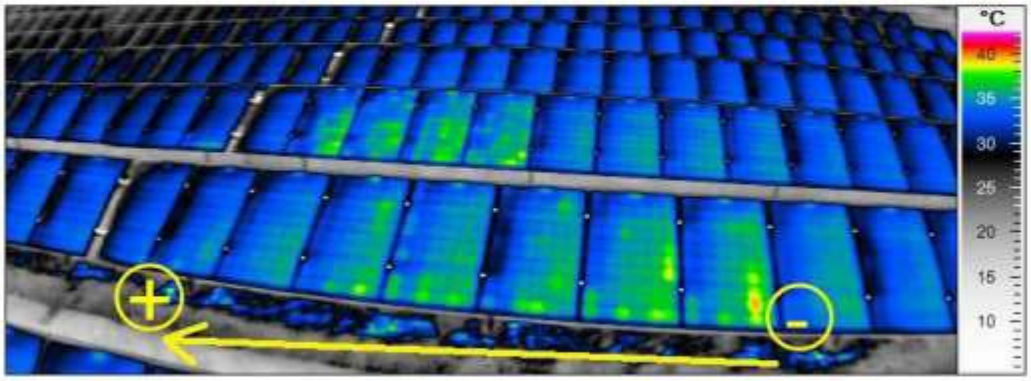
- Why continuously monitoring?
- What is the best method to identify if all PV modules are connected to the inverter?
- Which testing methods is one of the most powerful methods?
- Which IR pattern is caused by a short circuited Bypass diode?
- Exercise:
  - Connect again your inverter Kaco Powador 60 TL 3 by IP 10.10.1.10/# and compare the DC input currents, voltage and power of the 3 MPPT
  - If you have a IR camera lets have a short look to the PV generator

Thank You Very Much for Your Attention!

- If you need support please contact
  - Georg Bopp
    georg.bopp@web.de

PID detection by IR. Recommended method

- The modules in the foreground show PID patterns with warmer cells close to the bottom frame. The power of the modules (nominal power 225 Wp) from the negative pole is (see arrow from right to left): 188 Wp, 187 Wp, 190 Wp, 181 Wp, 199 Wp, 207 Wp, 212 Wp, 220 Wp.



Source: IEA PVPS task 13-10

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Suggested improvements

- PID
  - Grounding of negative pole of PV array, if PV inverter is able to handle this
  - Applying positive voltage against ground during night at the negative pole of the PV array

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International specifications and standards for onsite quality assessment of PV power stations

Georg Bopp
georg.bopp@web.de
Senior Expert Service

Till April 2018
Fraunhofer Institute for
Solar Energy Systems ISE
Freiburg, Germany

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DER WELT EXPERTEN DIENST

Overview of relevant Standards for monitoring and quality assessment

- IEC 61724-1: Photovoltaic system performance
  - Part 1: Monitoring
  - Part 2: Capacity evaluation method
  - Part 3: Energy evaluation method
- IEC 62446 Photovoltaic (PV) systems – Requirements for testing, documentation and maintenance
  - Part 1: Grid connected systems – Documentation, commissioning tests and inspection
  - Part 2: Grid connected systems - Maintenance of PV systems
  - Part 3: Photovoltaic modules and plants – Outdoor infrared IR thermography
- IEC/TS 60904 Photovoltaic devices
  - Part 12: Infrared IR thermography of photovoltaic modules
  - Part 13: Electroluminescence EL of photovoltaic modules

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IEC 61724-1-3: 2016

- Title: Photovoltaic system performance
  - Part 1: Monitoring; – Part 2: Capacity evaluation method
  - Part 3: Energy evaluation method
- Content:
  - Part 1: defines the performance data that may be monitored and collected, but does not define how to analyze that data in comparison to predicted performance.
  - Part 2: defines a procedure for measuring and analyzing the power production of a specific PV system with the goal of evaluating the quality of the PV system performance. The test is intended to be applied during a relatively short time period (a few sunny days).
  - Part 3: defines a procedure for measuring and analyzing the energy production of a specific photovoltaic system relative to expected electrical energy production for the same system from actual weather conditions. Minimum Period: 1 year
- Comment
  - Very detailed. The system performance allow direct comparison of different systems and indicates if system improvement is possible

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IEC 62446-1: 2018

- Title:
  Photovoltaic (PV) systems – Requirements for testing, documentation and maintenance
  – Part 1: Grid connected systems – Documentation, commissioning tests and inspection

- Content:
  - System documentation including results of the initial verification test of the realized system
  - Verification means initial and periodic inspection and testing: e.g.: Insulation, Voc, Isc, I/V curve; Infrared IR inspection

- Comment
  - Very detailed including informative PV System inspection report, PV array test report, notes concerning abnormality I/V curve

4

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Detailled content of IEC 62446 Part 1: Grid connected systems – Documentation, commissioning tests and inspection

- Documentation
  - System description (e.g. with general schematic)
  - Comparison of the installed system against the specification
  - Wiring and circuit diagrams
  - Product data sheets
  - Any certificates, certificates of guarantee, etc.
  - Operating instructions
  - Maintenance recommendations , Service address
  - Test results and commissioning data

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OBJECTIVES
To develop the understanding in an On-Grid Photovoltaic Power Generation System.

OUTCOME
The participants will be able to acquire knowledge in the operation of the grid-connected photovoltaic power generation system.

MAIN COURSE CONTENTS
Photovoltaic system for on-grid applications: Solar Cells and modules, Electric Safety (Lightning Protection), On-grid inverter, Grid connection requirements, Battery Design, Technical Specification, Commissioning, Operation, Monitoring and Maintenance.

Viswajyothi College of Engineering and Technology, Vazhakulam

VJCET is established in the year 2001by the Technical Education Trust of the Catholic Diocese of Kothamangalam, with the approval of AICTE and affiliated to Mahatma Gandhi University.VJCET focuses its activities with a vision of moulding engineers par excellence with integrity, fairness and human values.The college is situated at Vazhakulam, the City of Pineapples, 7kms from Muvattupuzha.
The college offers6 B.Tech(CE, CS, EC, IT, ME & EEE),3 M.Tech and MBA programs. The college has excellent infrastructure with fully equipped laboratories, hostels, etc. VJCET hadproduced a number of rank holders and hold excellent placement record. Within 17 years after its inception, the college has grown as a front-runner among the new generation Engineering Colleges of Kerala and is the preferred destination for technical education.

Department of Electrical and ElectronicsEngineering

INTERNATIONAL

Faculty Development Program on

ON-GRID PHOTOVOLTAIC POWER GENERATION SYSTEM

9th TO 16th DECEMBER, 2019

APPLICATION FORM

Name: .....

Designation:.....

Educational Qualification with Specialization .....

.....

Detailled content of IEC 62446 Part 1

- Acceptance inspection (check if the system is in accordance with the relevant standards)
  - Protection against electric shock
  - Protection against the effects of insulation faults
  - Protection against overcurrent
  - Earthing and bonding arrangements
  - Protection against the effects of lightning and overvoltage
  - Selection and erection of electrical equipment
  - AC system

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Detailled content of IEC 62446 Part 1:

- Testing and measuring
  - Category 1 (mandatory): Continuity of earthing and equipotenial bonding
  - Category 1 (mandatory): string measurements (open-circuit voltage, short-circuit current, insulation resistance)
  - Category 2: I-V characteristic curve measurements
  - Category2: Infrared camera IR inspection
- Appendix
  - Model verification certificate
  - Model inspection report
  - Model PV array test report
  - Interpreting I-V curve shapes

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IEC 62446-2: 2017

- Title:
  Photovoltaic (PV) systems – Requirements for testing, documentation and maintenance
  – Part 2: Grid connected systems - Maintenance of PV systems

- Content:
  - requirements and recommendations for the maintenance of PV systems, including periodic inspections, safety and performance related preventative maintenance, corrective maintenance and troubleshooting.
  - Include all electrical, mechanical, data acquisition system components

- Comment
  - Very detailed can be used like a manual
  - International still in approbation phase, valid in Germany

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Detailled content of IEC 62446 Part 2: Grid connected systems - Maintenance of PV systems

- Typical inspection measures:
  - Check of the monitoring system/webside (in many cases webside of the inverter manufacturer) and try to do a performance benchmarking
  - Check of the system/inverter parameters (status displays, error messages, yields, etc.)
  - Visual inspection of modules, mounting system, electrical components (e.g. for external damage or material changes)
  - Testing and measuring (here the same measures as in commissioning, or a subset thereof,
  - come into question; often only spot checks)

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Detailled content of IEC 62446 Part 2: Grid connected systems - Maintenance of PV systems

- Typical maintenance measures
  - Cleaning of PV modules and meteorological sensors
  - Cleaning of cooling fins and ventilation ducts or filters
  - Maintenance of green areas and cutting back of plant growth
  - Replacement of wear parts, e.g. parts of tracking system
  - Testing and activation of safety devices, e.g. ground fault detector
  - Adjustment or calibration of measurement devices, e.g. irradiation sensor

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IEC 62446-3: 2017

- Title:
  Photovoltaic (PV) systems – Requirements for testing, documentation and maintenance
  – Part 3: Photovoltaic modules and plants – Outdoor infrared IR thermography
- Content:
  - Requirements for IR camera, inspection procedure, evaluation of IR images
- Comment
  - Very detailed can be used like a manual including exemplary convincing IR images concerning typical failures

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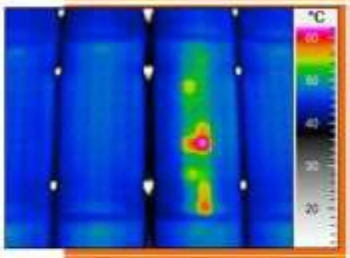
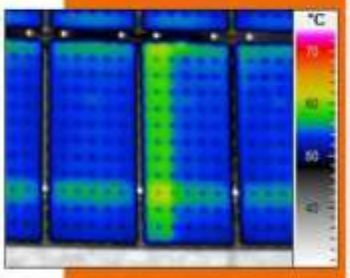
IEC 62446-3: 2017 Examples of IR images

Example 4 – 6: Substrings	Category	CoA	Temperature difference to normal operating device at 1000 W/m²	Thermal pattern, definition and additional information of abnormality
	Substring in short circuit, short circuit of bypass diode (crystalline Si)	2	Averaged 2 K – 7 K higher than substring (@ 15 % module-efficiency typically 4 K – 6 K)	Assessable by thermal pattern and classified as a extended area abnormality; At one or more substrings, easily mistaken for cell breakage or cell defects, Potential induced degradation (PID) or mismatch. Recommended: check module and bypass diodes for proper function under reverse biasing.
	1x Substring in open circuit, loss of connection within module junction box or cell connector (crystalline Si and thin film)	2-3	2 K – 7 K (@ 15 % module-efficiency typically 4 K – 6 K)	Assessable by thermal pattern and classified as a extended area abnormality; Part of the module surface is homogeneously heated up and heat dissipation by the bypass diode, which is operating, is visible. Temperature difference of the glass on top of the junction box containing the operating bypass diode differs with construction. Loss of contact at a cell connection might lead to a serial arc visible on the module backside surface=> CoA: 3.

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Draft IEC/TS 60904-13: 2016

- Title:
  Photovoltaic devices
  – Part 13: Electroluminescence EL of photovoltaic modules
- Content:
  - specifies methods to capture electroluminescence EL images of photovoltaic modules for PV modules measured indoors with a power supply that places the cells in the modules in forward bias
- Comment
  - Very detailed can be used like a manual including exemplary convincing electroluminescence EL images concerning typical failures in PV cells and modules
  - The exemplary images can also used for outdoor measurement

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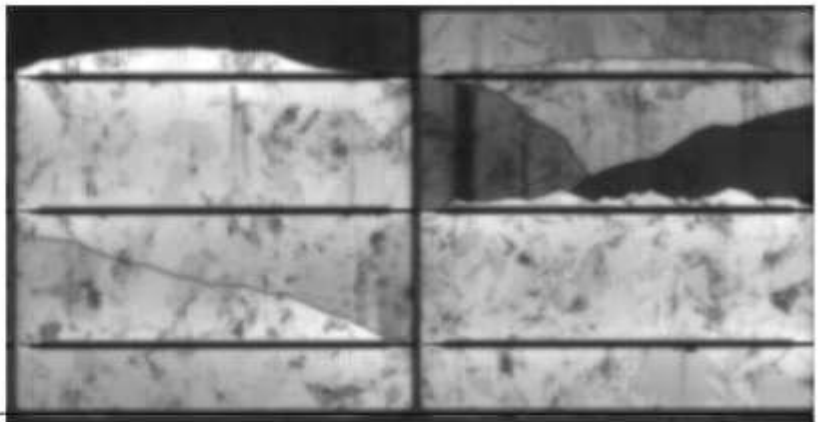
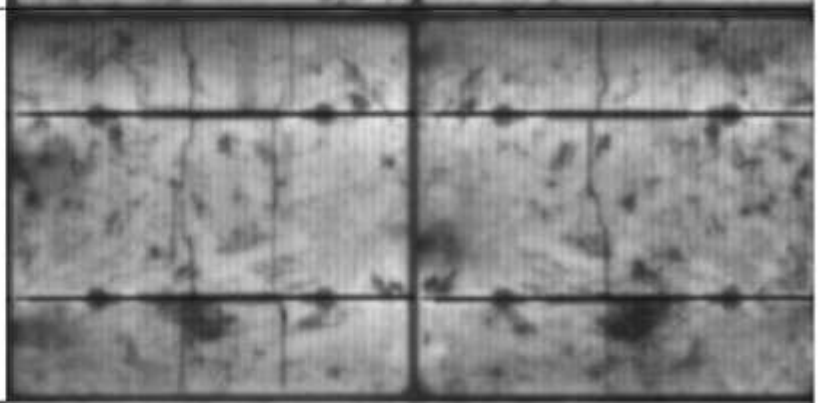
Draft IEC/TS 60904-13: 2016 Examples of EL images

Cell cracking. Cracks that cause isolation of regions of the cell (example, top left) tend to be more severe because there are no alternative current paths to the cell circuit in the module. These risk leading to hot spots	
Cell cracking (essentially parallel to grid fingers). Susceptible to further degradation if cracks expand, but less severely than multiple cracks parallel to the current collecting tabs (above).	

Report IEA-PVPS Task 13-10: 2018

- Title:
  Review on Infrared IR and Electroluminescence EL Imaging
- Content:
  - See title. The main content of the relevant standards are summarized
- Comment
  - Describe very well outdoor IR and EL measurement and analyzation of IR and EL images
  - Summarize experience of 15 testing institutions with the relevant standards and own measurements
  - Free available: http://www.iea-pvps.org

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Thank You Very Much for Your Attention!

- If you need support please contact
  Georg Bopp
  georg.bopp@web.de

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Senior Experten Service

Electrical Safety

Georg Bopp
Fraunhofer ISE; Senior Expert
Service since May 2018

Hermann Laukamp
Fraunhofer Institute for Solar
Energy Systems ISE

Kerala, Vazhakulam, Dec. 2019

Contents

- Risks of electrical systems
- Protection against shock
- Protection against fire
- Special features of PV
- Installation rules

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Risks of electrical systems

- Electric shock for humans, currents (50Hz) > 30mA can cause death
- Fire
- Failure

Solution: Standards

IEC - International Electricity Committee)

- IEC 60364 for standard electrical installation
- IEC 60364-7-712:2002 Requirements for special installations or locations - Solar photovoltaic (PV) power supply systems
- **The IEC 60364-7-712:2002 version was replaced by the 2017 version**
- IEC 62548:2016 Photovoltaic (PV) arrays – Design requirements
- IEC TS 62738:2018 Ground-mounted photovoltaic power plants – Design guidelines and recommendations

Usually the national electrical committee of a country translate IEC into national language and add sometimes additional modifications or rules
India suggest to apply IEC 60364-7-712:2017

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Protection against electric shock (IEC 60364-4-41)

- Protection against direct contact: Prevent touching live (voltage) parts by an enclosure (basic insulation or cover)
- Protection against indirect contact: No dangerous contact voltage under fault condition e.g. if basic insulation is defect. Currents (50Hz) > 30mA through humans can cause death
- Three most important methods to avoid dangerous currents
  - Automatic disconnection or alarm. Class 1 ⏚
  - Protective insulation, this means double or reinforced insulation. Class 2 ⧈
  - Protective extra low voltage (PELV), nominal voltage < 50 VAC or < 120 VDC. Class 3 ⧫III

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Protection by disconnection, class 1, ⏚

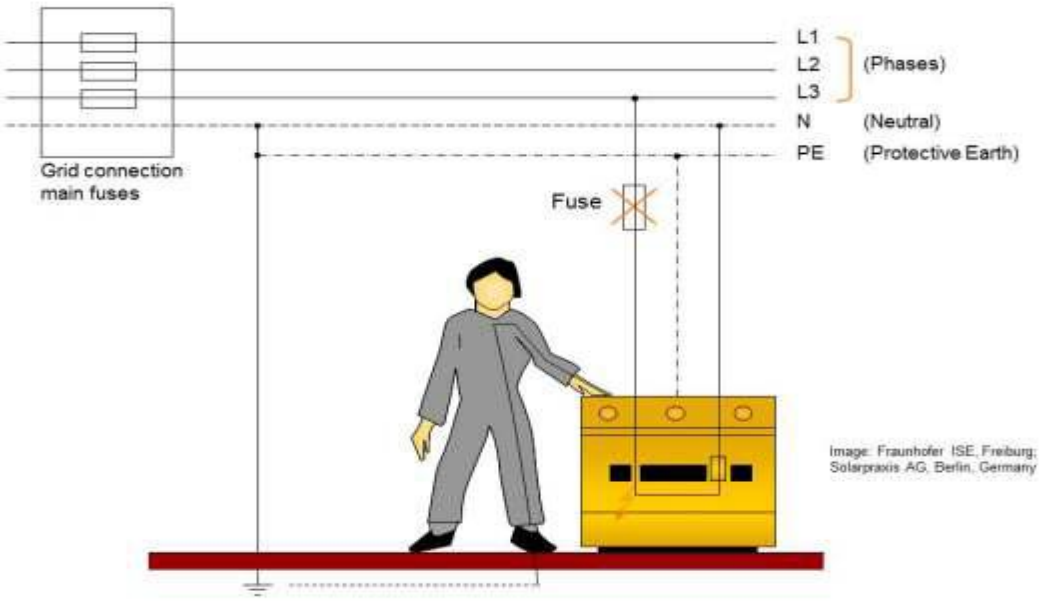
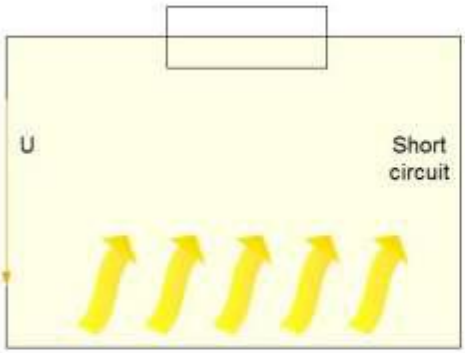


Image: Fraunhofer ISE, Freiburg; Solarpraxis AG, Berlin, Germany

SES Senior Experten Service Fraunhofer ISE

Protection against fire



- Protect each wire against overheating due to high currents via a fuse. The behaviour of the public grid is like a **voltage source** and can deliver very high short circuit currents
- Avoid arcs by good insulation and reliable connections

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Fraunhofer ISE

Special features of PV

- Current is limited, called **current source**
- Current depends on irradiance
- Short circuit cannot trip a circuit breaker or fuse

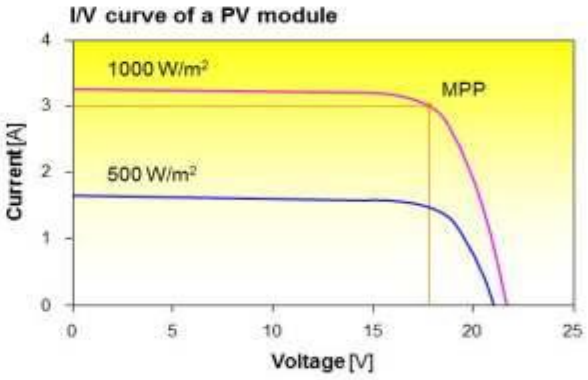

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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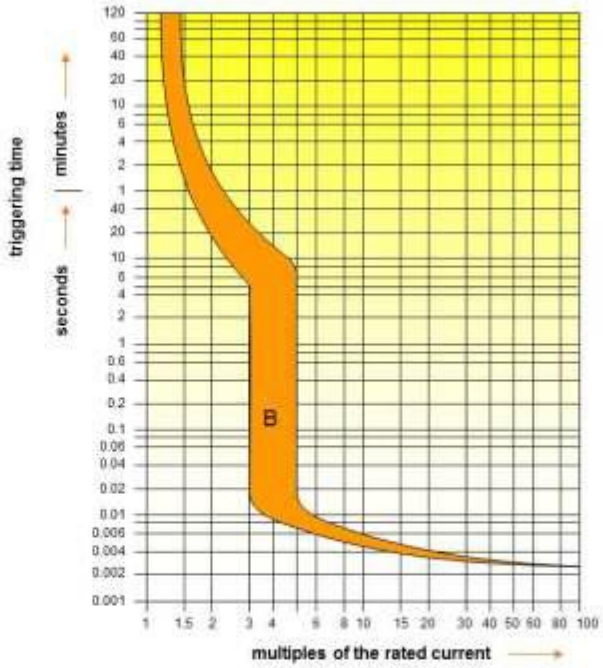
Special features of PV

- Current is limited, called **current source**
- Current depends on radiation
- Short circuit cannot trip a circuit breaker or fuse



Tripping characteristic of a circuit breaker

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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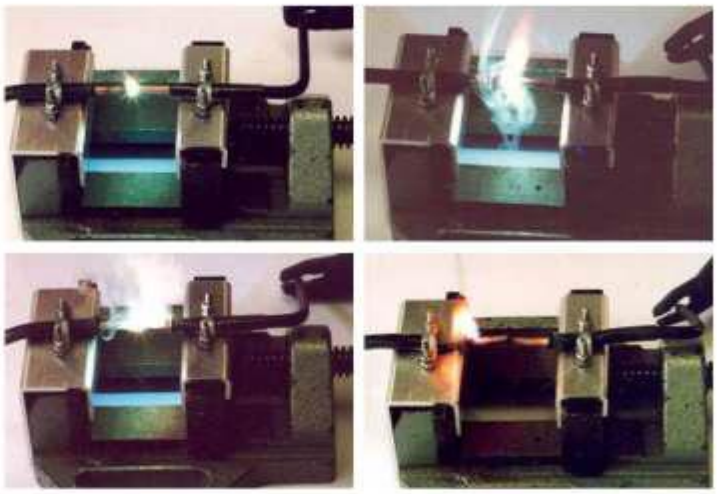
Special features of PV

Development of an arc at short circuit between the plus and minus cables (Cu) of a PV generator (U_{OC}=84V, I_{SC}=8A)

The metal melts, the arc stops, but the insulation continues to burn



Photos: Fraunhofer ISE, Freiburg, Germany

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PV arc ignition with Cu electrodes

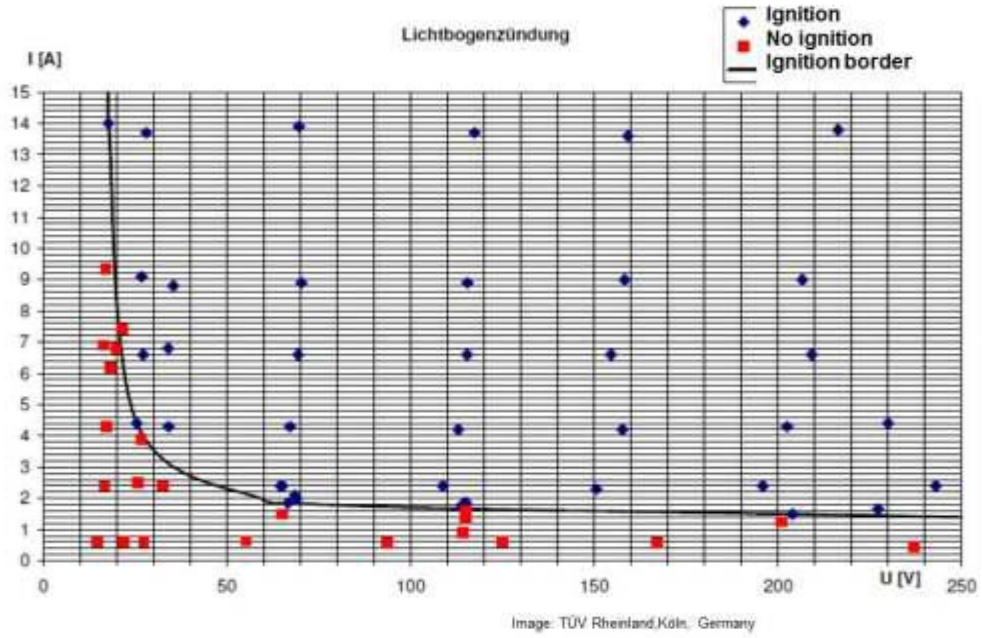

Image: TÜV Rheinland,Köln, Germany

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Protection against shock in PV systems

- Protective insulation, class 2 ⧈ for the solar modules

  or

- Protective extra low voltage voltage (PELV), class 3 ⧫ installation

  this means in accordance with IEC 60364-7-712:2017

  Max open circuit voltage Uocmax of the solar generator must be = < 60V

  Uocmax = Ku Uocstc

  Ku = 1 + (αUoc/ 100)*(Tmin – 25)

  or Uocmax =1.2*Uocstc but in Kerala Uocmax =1.0*Uocstc

  PV modul with 36 cells in series Uocstc about 23 V

  PV modul with 60 cells in series Uocstc about 40 V

  PV modul with 72 cells in series Uocstc about 46 V

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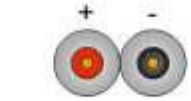
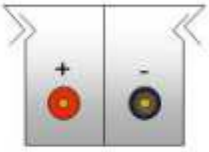
Protection against fire in PV systems

- Sufficiently large cross-section of wires
- **Double or reinforced insulation of each wire to minimise the risk of earth faults and short circuits** if Uocmax > 60 V DC.
- Switches and fuses must be able to disconnect DC current.

  gPV fuses in accordance with IEC 60269-6
- Standard AC equipment can disconnect DC current only till a DC voltage of about 60 VDC! Use special DC equipment!



doubly insulated
single-conductor cable (H07RN-F)



cables in partitioned or separated cable channels

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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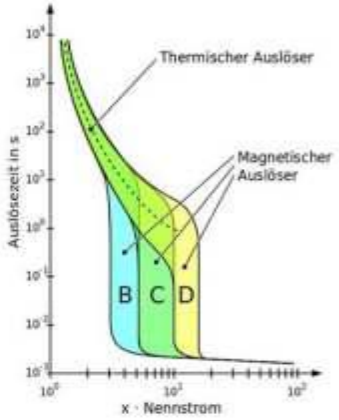
How to interrupt an arc

Spark quenching chamber
or **Arc chutes of a DC circuit breaker/fuse**



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New IEC...712: 2017 and 62548: 2016 Stringfuses if > 3 parallel Strings necessary

- in some countries string diodes recommended or oblige
- string fuses if:
  Imod_max_ocpr <(Ns-1)*1.25Iscstc
  Imod_max_ocpr : PV module maximum overcurrent protection rating ~ 2*I_{SCSTC}
  if > 3 parallel strings
  string fuses necessary
  - Why: Protection against reverse current/overheating caused by short circuits in PV moduls or earth faults of wiring
  - Disadvantage:
    - additional series connections and fuses which can cause failures
    - Expensive gPV fuses in accordance with IEC 60269-6

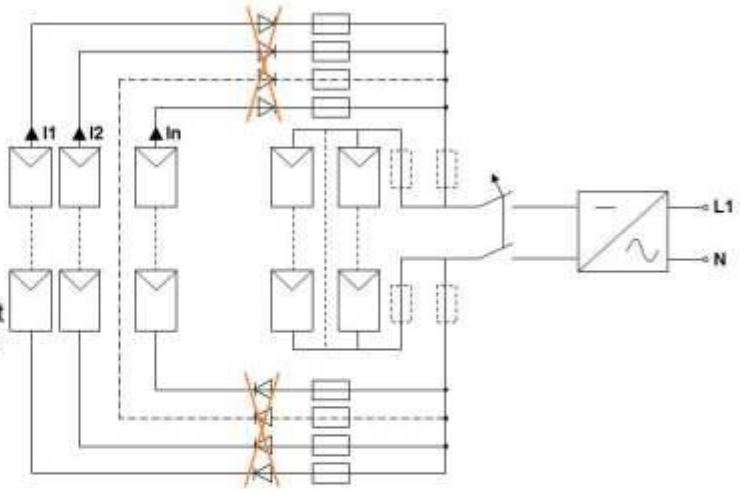

Image: Fraunhofer ISE, Freiburg, Germany

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New IEC 712:2017 If only three strings are connected in parallel a simple system design is possible

- no string diodes (unreliable)
- no string fuses

Each cable must be able to handle the 1.25*Iscstc total short-circuit current, otherwise group fuses are necessary

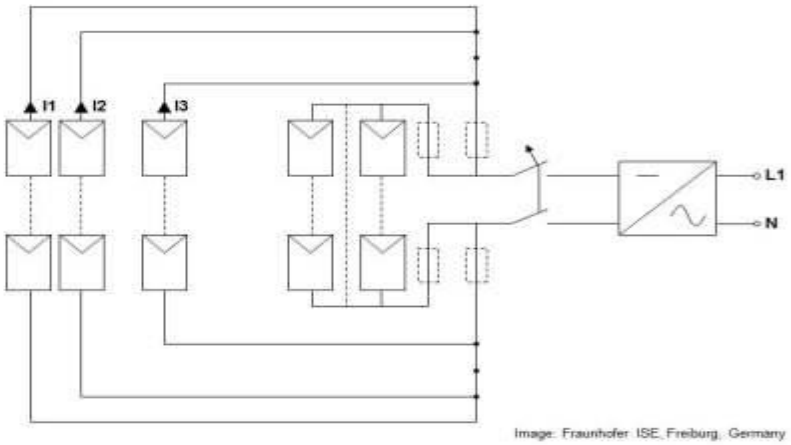

Image: Fraunhofer ISE, Freiburg, Germany

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Rules for DC wiring

- PV and battery must be ground fault and short circuit proof wired, i.e. double insulation
- PV modules/generator: protection class II or open circuit voltage < 60V
- Switches in the plus and minus cables for each device, additional fuses in the battery cables
- Fuses, circuit breakers and switches must be able to disconnect DC currents
- Do not open a DC connector/plug if the inverter or DC switch is on!! First switch off the DC switch or inverter

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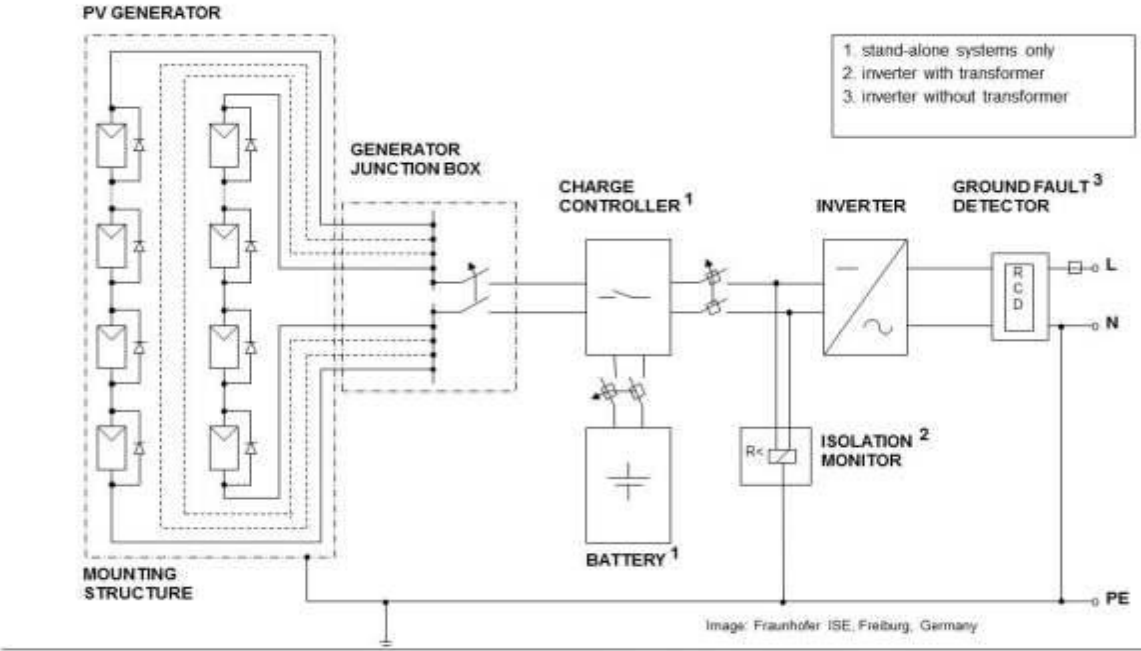
Block diagram of a PV Plant



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Questions

- What is the difference between the normal grid AC current and PV DC current
- Why Ground fault and short circuit proof wiring for PV cables
- At which DC voltage special switches are necessary? Why?
- Exercise:
  - Lets go to the two PV modules, connect them in series and make a short circuit! Look!
  - Lets go to the electrical laboratory. Try to switch off a DC current with a AC and DC switch/fuse. Difference?

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Exercise concerning switch off DC current

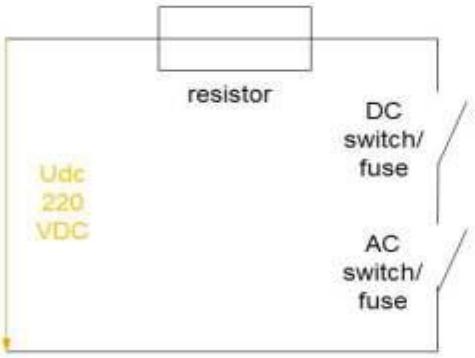

Image: Fraunhofer ISE, Freiburg, Germany

- Connect between plus and minus of a DC supply a DC switch/fuse and a AC switch/fuse
- Adjust a voltage of ~ 220 VDC and a current of ~ 10 A. If the DC supply do not contain a current limitation use a resistor/bulb for current limitation
- Close both switches. Try to open the AC switch, listen and look, open the DC switch

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Computer Simulation and design software for grid-connected PV systems

Georg Bopp
Fraunhofer ISE; Senior Expert
Service since May 2018

Andreas Steinhüser
Fraunhofer Institute for Solar
Energy Systems ISE

Kerala, Vazhakulam, Dec. 2019

Content

- Classification of simulation programs and their applicability
- Overview of commercial and non-commercial simulation programs
- Sizing PV power / inverter power
- Impact of partial shading / shading in simulation programs
- Impact of orientation and elevation on energy gain
- Evaluation of the simulation results

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Classification of simulation programs and their applicability

Much more tools/programs available

Dimensioning tools

- utility programs from inverter manufactures, like sunny design from SMA (free)

Programs for system simulation

- Retscreen (free)
- PVSol (commercial)
- PVSyst (commercial)
- Homer (commercial)

Open simulation environments

- InselDi (commercial)
- Matlab Simulink (commercial)

Databases and utility programs

- https://re.jrc.ec.europa.eu/pvgis.html (free)
- Meteonorm (commercial)

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Dimensioning tool

Sunny design

Features:

- web based www.sunnydesignweb.com/
- for grid-connected (battery can be integrated) and stand-alone PV-systems
- integrated expansive PV module and irradiance database
- only sma inverters
- load profile generator
- comprehensive report generator
- available in a lot of languages, German, English, French, Spanish,….

Source: www. sunnydesignweb.com

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Programs for system simulation

PV*SOL PRO

Features:

- for grid-connected and stand-alone PV-systems
- integrated expansive component and irradiance database
- load profile generator
- integrated shadowing editor
- comprehensive report generator
- available in German, English, French and Spanish

Source: www.valentin.de

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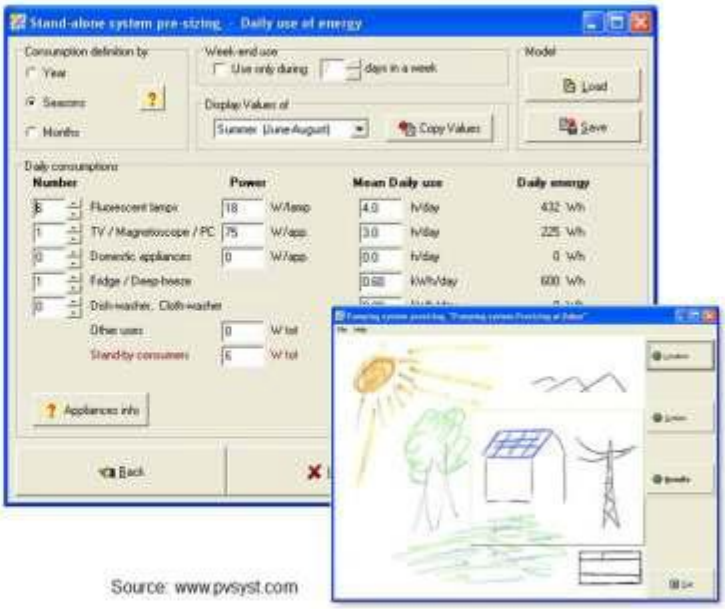
Programs for system simulation

PVSyst 5.51

PV*SOL PRO

Features:

- for grid-connected and stand-alone PV-systems
- integrated expansive component and irradiance database
- load profile generator
- integrated shadowing editor
- comprehensive report generator
- available in German, English, French and Spanish



Source: www.pvsyst.com

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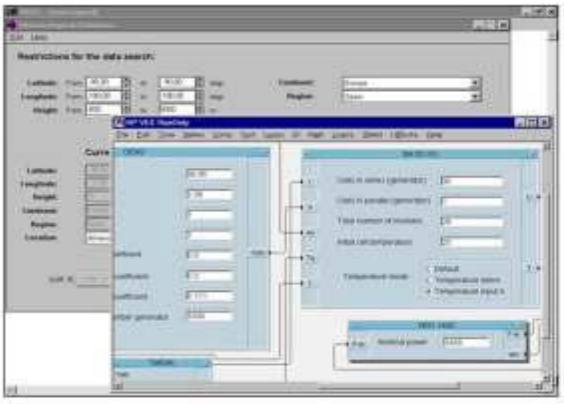
Open simulation environment

InselDI

Features:

- category of block-oriented simulation programs
- the user has to create a block diagram of the desired system configuration
- not restricted to pre-set system configurations, you can design your own system without any restrictions
- for professional users with considerable experience



Source: www.inselDi.com

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Sizing of System

The sizing of a PV system depends on

- the desired energy output
- the geographical location
- the orientation
- the available area
- the local shading at the site
- the amount of investment available

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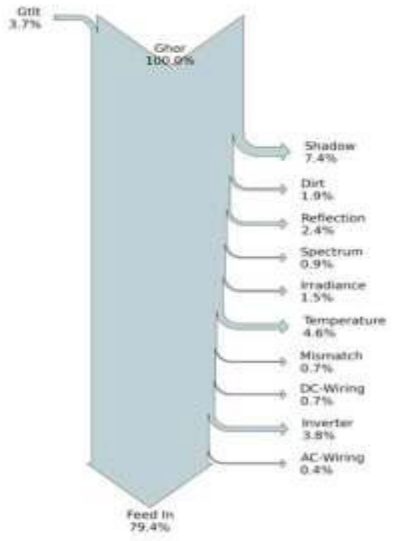
Calculation steps of a yield assessment, get by a very detailed simulation procedure/program

Actual long term yield

- Horizontal irradiation (history)
- Horizontal irradiation (future)
- Diffuse fraction & conversion into module plane
- Partial shading (& inverter behavior)
- Soiling losses
- Reflection losses
- Spectral effects
- Product specifications vs. actual properties
- Dependency on irradiance level
- Dependency on temperature
- Mismatch losses
- DC + AC cable losses
- Inverter efficiency and limitations
- Transformer losses
- System degradation



Source: Fraunhofer ISE

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Sizing PV power / inverter power

The sizing of the inverter power

- should be matched to the module power
- usually the AC power of the inverter is chosen 0.9 – 1.1 of DC power at STC of the PV generator
- Rule of thump

⇒ **AC Inverter Power = DC PV Peak Power**

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Sizing PV power / inverter power

For an exact sizing of the inverter, the following questions must be addressed

- Should one or more inverters be used?
- How many modules should be connected in each string?
- Does the maximum and minimum MPP voltage of the modules lie within the input voltage range of the inverter?
- Does the maximum open circuit voltage at lowest ambient temperature of the modules lie within the maximum input voltage of the inverter?
- How many strings can be connected to each inverter?
- Does the maximum module current match the maximum input current of the inverter?

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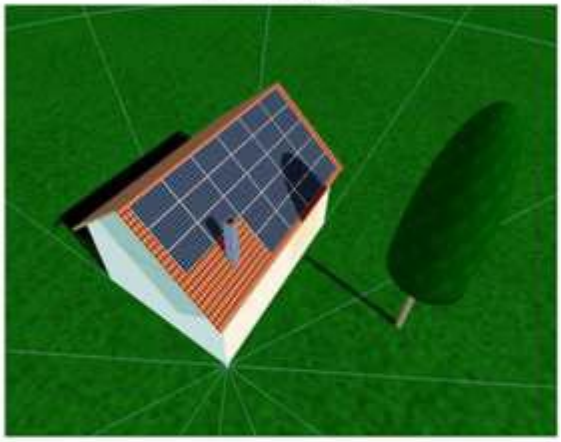
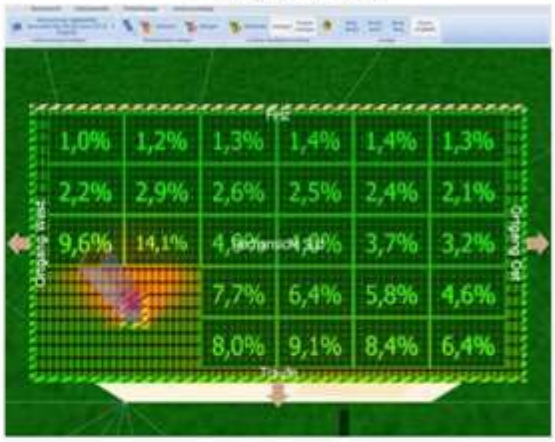
Impact of (partial) shading

3D-Overall view



Shading frequency



- Some simulation programs have integrated shadowing editors.
- To use these editors you have to determine the solar access and the shading patterns.
- The easiest way to do this is to use a special device like suneye or horicatcher https://meteonorm.com/en/product/horicatcher

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Device for estimation of shading e.g. SunEye

http://www.solmetric.com/

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Effects of orientation and tilt angle on the system performance

Annually energy production from a grid-connected system in Germany as a function of the orientation and tilt angle (percentage values relative to the maximum used solar energy; orientation 0 = south, for the northern hemisphere).

Rule of thumb:

Tilt angle/inclination ~ degree of latitude

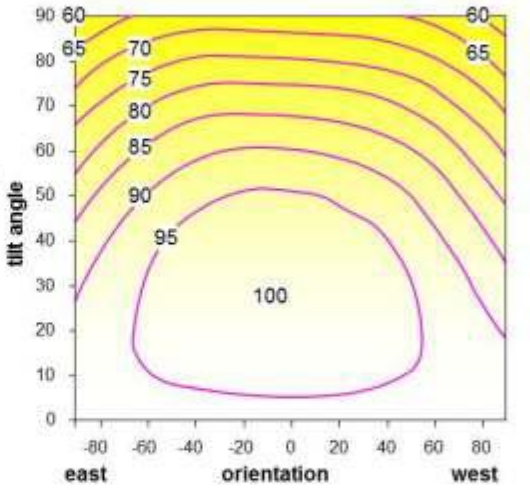

Image: Fraunhofer ISE, Freiburg, Germany; Solarpraxis AG, Berlin, Germany

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Evaluation of the simulation results

- Validation of the simulation results with values gained from experience
- For grid-connected systems the performance ratio (PR) and the annual yield are very good references
- These parameters are employed by most programs
- In Germany and India the (PR) should be greater than 0.8
- The annual yield should be at least
  - 900 kWh/kW$_p$ in Germany
  - 1400 kWh/kW$_p$ in India

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Knowledge Test:

- What are the four categories of simulation programs?
- How much less can you choose the Inverter power than the solar module power usually?
- How can you evaluate the simulation results?
- Exercise: Lets do a simulation of your own PV system with sunny design and https://re.jrc.ec.europa.eu/pvgis.html for Vazhakulam, compare the monthly/yearly solar/inverter output
  - Create an account **www.sunnydesignweb.com/**
  - Lets do the simulation together in the afternoon

    System size: 50 kW (200 modules, each 250Wp, 60 cells in series, Sungrace, 20 modules in series), tilt angle 10°

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Results for 50 kWp PV system

- Your Kaco system: 66600 kWh/a; 1333kWh/kW; Vazhakulam; GHI=1930kWh/m²*a??
- PVGIS: 75200 kWh/a; 1504kWh/kW; Vazhakulam; GHI=1930kWh/m²*a
- SMA: 85000 kWh/a; 1700kWh/kW; Thiruvananthapuram; GHI=1980kWh/m²*a

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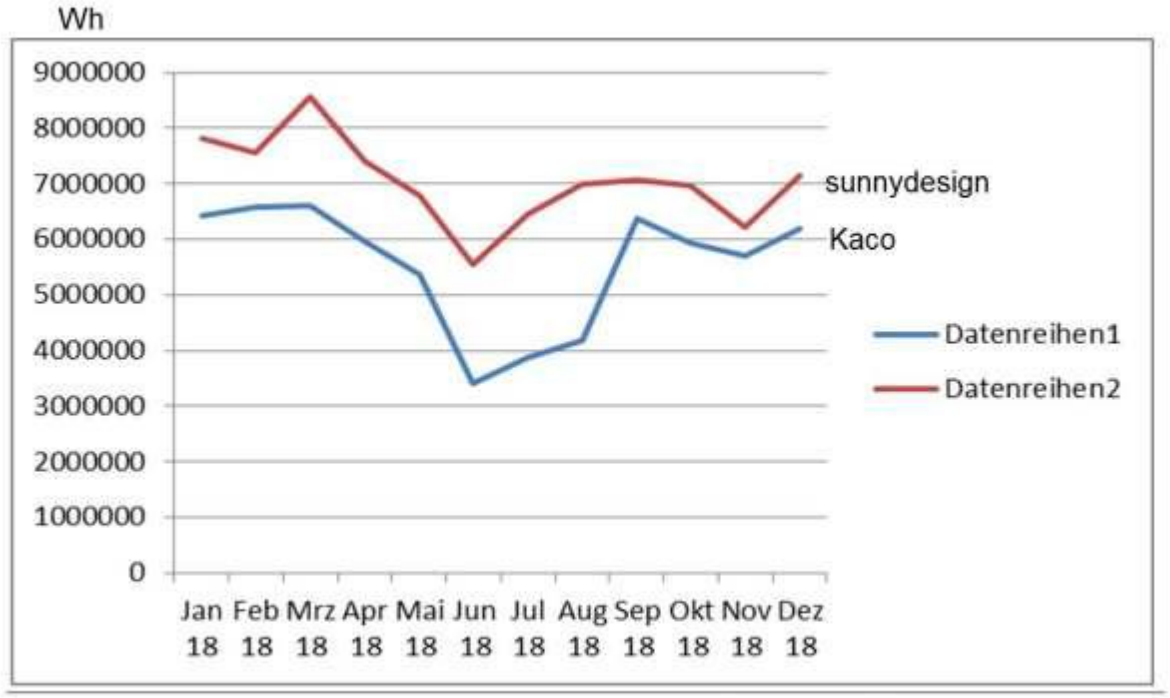

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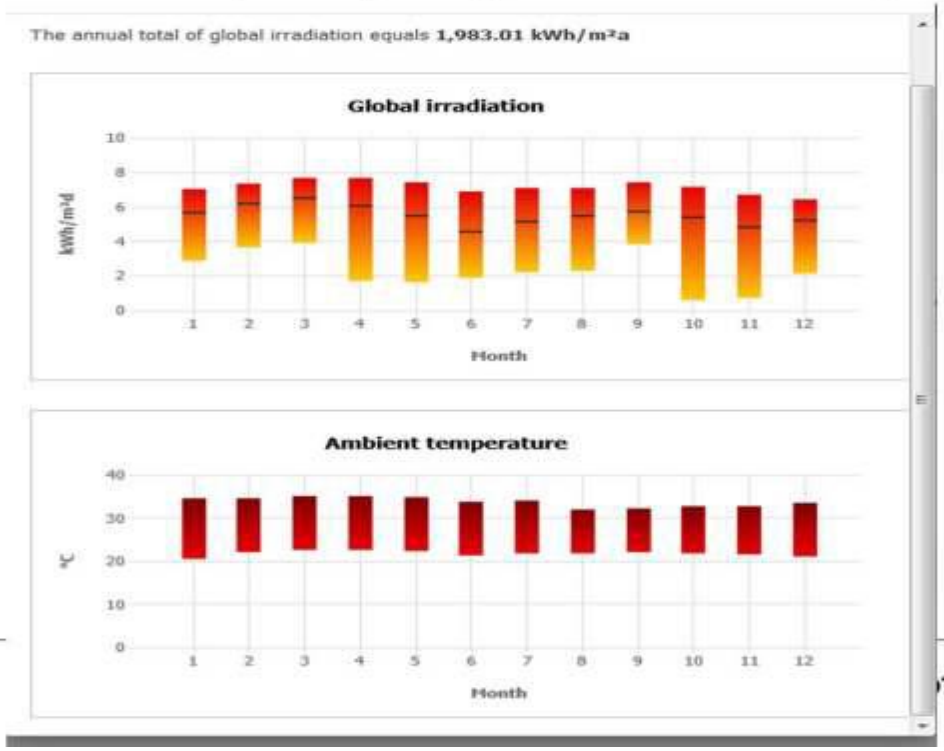
Irradiation used by Sunny design forThiruvananthapuram



INAUGURATION

VALVEDICTORY

Presenting Momento to Resource Person

Group Photo

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COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
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VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY

1.6 KTU Sponsored Faculty Development Program on

TOOLS, TECHNIQUES AND MODELS FOR SCIENTIFIC RESEARCH by MED

PREAMBLE

The KTU sponsored Faculty Development Program on "Tools, Techniques and Models for Scientific Research" is an interdisciplinary course organized with an aim to help any faculty desiring to carry out advanced research. This course will facilitate the young researchers to conduct research in the emerging areas and publish in reputed academic journals.

Topics to be covered:

- Overview of research methodology and research writing
- Optimization using exact and heuristic algorithms
- Role of simulation in heuristic based optimization
- Mathematical modelling and optimization
- Multi-objective optimization
- Design of experiments
- Statistical tools for research
- Lab sessions on MATLAB, SPSS, etc.

Course Coordinator
Dr. Sajan T John
Associate Professor, MED, VJCET

ELIGIBILITY

Faculty members from KTU Affiliated Colleges/Institutions can apply. *Total no. of participants is restricted to 30.*

Selection will be on first-come-first-served basis and will be intimated through e-mail latest by 16/07/2019. All further communication will be through e-mail only.

REGISTRATION:

The completed Registration form should reach the course coordinator (by Post or email) on or before 12th July 2019 (No registration fee)

Important Dates

Last date of Registration : 12th July 2019
Intimation of selection : 16th July 2019

For further details contact:

Dr. Sajan T John
Associate Professor
Department of Mechanical Engineering
VJCET, Vazhakulam - 686670
Ph: 9847334344
Email: sajan@vjcet.org
College website: http://www.vjcet.ac.in

TA/DA and Accommodation

No TA/DA will be paid to the participants. Accommodation can be availed at nominal rates on prior intimation. Lunch and tea/coffee will be made free for the participants.

"Moulding Engineers par excellence with integrity, fairness and human values"

KTU

KTU Sponsored
Faculty Development Programme
on
TOOLS, TECHNIQUES & MODELS FOR SCIENTIFIC RESEARCH
22nd - 26th JULY 2019

Organized by
Department of
MECHANICAL ENGINEERING
In association with
R & D Centre

All B.Tech programmes are Accredited by NBA

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Vazhakulam, Muvattupuzha
Ernakulam Dist., Kerala - 686 670

About the College

Viswajyothi College of Engineering and Technology (VJCET) is yet another hallmark of the commitment and experience of Catholic Diocese of Kothamangalam in the field of education. Established in the year 2001 as a self-financing Engineering College affiliated to Mahatma Gandhi University, Kottayam. Presently, it is affiliated to APJ Abdul Kalam Technological University. Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trendsetter in Engineering and Management education. The college now offers six B. Tech. Degree programs in ECE, CSE, IT, ME, EEE & CE; three M. Tech. programmes in highly specialised areas under the departments of ECE, CSE & ME and an MBA program under the Department of Management Studies. The institute has been continuously striving for excellence in education and research with an introduction of research and development centre in the campus. Presently, all the UG programmes of the institute are accredited by NBA.

About the Department

The Department of Mechanical Engineering is one of the oldest departments in this institute. At present, the department offers one undergraduate programme – B. Tech. (Mechanical Engineering) and one post graduate program – M. Tech. (Industrial Engineering and Management). The department also offers Ph.D. programme under APJ Abdul Kalam Technological University in various fields of Mechanical Engineering. The department faculty consists of well-qualified and experienced professionals having a proven track record in academics, industry and research. B. Tech. Mechanical Engineering program is accredited by National Board of Accreditation in June 2018 for three years.

Program Objectives

- To define a research problem and identify a suitable methodology for addressing the problem.
- To mathematically model a research problem
- To apply various optimization tools for scientific research.
- To use various statistical tools for scientific research

Expected Resource Persons

Dr. R SRIDHARAN - NIT CALICUT
Dr. RAM KUMAR PN – IIMK OZHIKODE
Dr. VINAYV PANICKER – NIT CALICUT
Dr. BRIJESH PAUL – MACE KOTHAMANGALAM
Dr. PRADEEP MONT G – MITS, PUTHENKURISH
Dr. JOBY GEORGE – AJCE, KANJIRAPPALLY
Dr. MIDHUN PAUL – FISAT, ANGAMALY
Dr. SHUNMUGESH K – VJCET, VAZHAKULAM
Dr. SAJAN T JOHN - VJCET, VAZHAKULAM

KTU Sponsored FDP
on
Tools, Techniques and Models for Scientific Research
July 22-26, 2019

REGISTRATION FORM**

Name :.....
Designation :.....
Organization :.....
Mailing Address :.....
.....
.....
Mobile :.....
Email :.....
Qualification & Specialization:.....
Experience :.....
Accommodation in Campus: Yes/ No
Signature of the Applicant:
Signature of the Head of the Institution:
Institution Seal

(IMPORTANT: By signing the above, the Head of the Institution certifies that the applicant is a faculty member of an Engineering college affiliated to KTU)

**To be completed and sent to the cause coordinator as to reach before 12th July 2019.

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
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VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY, VAZHAKULAM

KTU Sponsored Five Days Faculty Development Program on Tools Techniques and Models for Scientific Research

(22nd to 26th July 2019)

A

REPORT

Submitted by

Dr. Sajan T. John (Course Coordinator)
Associate Professor
Department of Mechanical Engineering
VJCET, Vazhakulam, Muvattupuzha – 686670
E-mail: sajan@vjcet.org, john.sajan@yahoo.co.in
Mob: 9847334344

Report on
Faculty Development Programme
On
Tools, Techniques and Models for Scientific Research
(KTU Sponsored)
at Department of Mechanical Engineering, Viswajyothi College of Engineering and Technology, Vazhakulam

KTU Sponsored Five Days faculty development programme on "**Tools, Techniques and Models for Scientific Research**" was held at the Department of Mechanical Engineering, Viswajyothi College of Engineering and Technology, Vazhakulam from 22nd July to 26th July, 2019. The FDP aims to provide opportunities to faculty members, to enhance their teaching skill and research. The FDP was attended by 30 participants from faculty members of Mechanical Engineering, MBA and Mathematics department.

Mr. Vinoj K, Head of Mechanical Engineering Department welcomed all the respected dignitaries and participants. Vice Principal Mr. Somy P Mathew delivered the presidential address. The program was inaugurated by Dr. R Sridharan, Professor, NIT Calicut. Dr. Ram Kumar P N, Associate Professor, IIM Kozhikode also attended the inaugural session. Dr. Sajan T. John, Coordinator of five days fdp , delivered the vote of thanks.

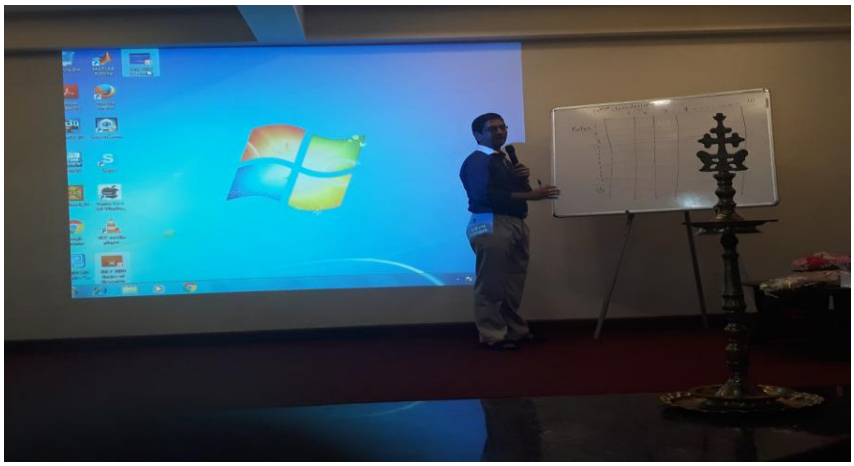
Technical sessions:

Day 1 (22/07/2019) FN session

Dr. R Sridharan, Professor, NIT Calicut has given a very good introduction to Research & Technical Writing. In this FN session, participants were leaned the basic things to be followed to do a good research. Prof. Sridharan also explained the importance of good technical writing skill and how to improve the writing skill.

Day 1 (22/07/2019) AN session

Dr. Ram Kumar P N, Associate Professor, IIM Kozhikode delivered an interesting session on How not to do Phd. Participants were learned the common mistakes people do while doing PhD and research. Dr. Ram provided clear ideas about how to write a good research article, how to do literature review, etc.



Day 2 (23/07/2019) FN and AN session

Dr. Brijesh Paul, Professor, MA College of Engineering, Kothamangalam, has given the idea of the use of genetic algorithm for solving optimization problems. In the afternoon, a lab session for the use of genetic algorithm was conducted. Participants learned how and when to use a heuristic, like genetic algorithm, while solving optimization problems.

Day 3 (24/07/2019) FN session

Dr. Vinay V Panicker, Assistant Professor, NIT Calicut, delivered sessions on statistical methods for scientific research. In this session, participants learned the use of various tests for statistical analysis and the use of statistical software such as SPSS.

Day 3 (24/07/2019) AN session

Dr. Pradeepmon T G, Associate Professor, Muthoot Institute of Technology and Science delivered an interactive session on the role of heuristic methods in scientific research. Participants learned the use of various heuristic methods for solving research problems.

Day 4 (25/07/2019) FN session

Dr. Midhun Paul, Assistant Professor, Federal Institute of Science and Technology handled a session on multi-objective optimization. Dr. Midhun started with the basic idea of single objective optimization and proceeded to the concept of pareto optimal solution and multi-objective optimization. Participants learned when a multi-objective problem arises and how to address this class of problems.

Day 4 (25/07/2019) AN session Dr. Sajan T. John, Associate Professor, Viswajyothi College of Engineering and Technology, initially, gave an introduction to mathematical modeling. Participants learned how to mathematically model a research problem. There are different methods to solve mathematical models. Various software packages are available to solve mathematically developed models. Participants leaned the use of one such software, LINGO.

Day 5 (26/07/2019) FN session

Dr. Joby George, Assistant Professor, AmalJyothi College of Engineering, Kanjirappally, delivered an interactive talk on system modeling and simulation. Participants learned the ideas of simulation, using a manual simulation example. The use of softwares such as Scilab and ARENA were discussed.

Day 5 (26/07/2019) AN session

Dr. Shunmugesh K, Associate Professor, Viswajyothi College of Engineering and Technology has delivered a session on Design of Experiments. The participants learned how to systematically design a relationship between various factors affecting a process and output of that process. Dr. Shunmugesh also gave lab session on data analysis software, Minitab.

VALEDICTORY SESSION:

Head of the Department of ME, Mr.Vinoj K summarized the program and distributed the certificates to the participants. Participants appreciated the department for organizing the FDP.The program was ended with vote of thanks by Dr. Sajan T. John, Associate Professor, MED, VJCET& Coordinator of the FDP.

OUTCOME:

All the sessions were very much informative. The discussed areas are of great benefit for the participants as the topics dealt with various tools, techniques and models for scientific research. Participants were enlightened with the widely used methodologies while carrying out scientific research. This in turn will increase the research output.

Prepared by

Dr. Sajan T. John (FDP Coordinator)

1.7 Five-day Faculty Development Programme on Advancements in Drives, Instrumentation and Control organized by EEED, VJCET Sponsored by APJAKKTU

DECLARATION

I, hereby declare that the details furnished above are true to the best of my knowledge and belief and agree to abide by the rules and regulations governing the conduct of course for the entire duration.

Name and Signature of Applicant

SPONSORSHIP CERTIFICATE

Certified that Sri/Smt_____

_____is

working as_____

at_____

_____in _____

Department. If selected he/she will be permitted to attend KTU sponsored faculty development programme on "Advancements in Drives, Instrumentation and Control".

Place:

Date:

Head of the Institution

(Office Seal)

ADVISORY COMMITTEE

Mar. George Madathikandathil, Patron
Msgr. Dr. Cherian Kanjirakombil, Manager
Rev. Dr. George Thanathuparambil, Director
Rev. Fr. Paul Nedumpurath, Secretary of the Trust
Dr. Josephkunju Paul C., Principal
Dr.Ashok S, Professor, NIT, Calicut
Dr.Udaya Kumar, Professor, IISC, Bangalore
Prof.Paul Antony, Rtd. Professor, VJCET
Mr.K.Vijayaraj, M.D, Suvire Electric Pvt.Ltd.,Chennai

ORGANIZING COMMITTEE

Prof. B Aruna, H.O.D, EEE Dept.
Dr. K K Rajan, Professor,EEE Dept.
Ms.Mereya Baby, Asst. Professor, EEE Dept.
Ms.Neena Alex, Asst. Professor, EEE Dept

For further details contact:

Dr. B.Aruna
Ph# **9072964416**
Email: baruna@vjcet.org

Ms.Mereya Baby
Ph# **9495426829**
Email: mereya@vjcet.org

KTU Sponsored
Faculty Development Programme
on
ADVANCEMENTS IN DRIVES, INSTRUMENTATION AND CONTROL
1st - 5th JULY 2019

Organized by
Department of
ELECTRICAL & ELECTRONICS ENGINEERING
(Accredited by NBA)

Inauguration
Prof. Dr. M. Nandakumar
Rtd. H.O.D, GEC, Thrissur

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Vazhakulam, Muvattupuzha
Ernakulam Dist., Kerala - 686 670

Objective of the Programme

- Imparting knowledge on the advancements & latest developments in the area of Drives instrumentation and control to faculty members
- To enhance the interface between theoretical knowledge on the topic along with practical experience.

Programme Content

- Emerging trends in industrial instrumentation
- Data acquisition system and control
- Sensors for process instrumentation in industry
- Emerging trends in industrial automation
- Advancements in flow measurement techniques
- Introduction to drives and its different configurations
- Selection and Performance evaluation of induction motor drives in industries

Programme outcome

The participants will be able to develop a clear-cut understanding of industrial instrumentation, sensors, and industrial automation. In addition to the presentation by various industrial experts on latest developments in the fields, it will also be very useful for faculty members to persue their Ph.D. in the area of industrial drives and control.

Resource Persons

- Dr. M. Nandakumar, GEC, Thrissur
- Dr. Rammohan, FCRI, Palghat
- Dr. B Babu, IGCAR, Kalpakkam
- Dr. Sudha Balagopalan, Vidya Academy of Science and Technology
- Dr.Isha T.B, Amritha Viswavidhya Peedham
- Dr.Dinesh Gopinath, CET, Trivandrum
- Shri. James Joseph, BARC, Kalpakkam
- Dr.K.K.Rajan, Dean IIC, VJCET, Vazhakulam
- Dr. Sony Kurian, VJCET, Vazhakulam
- Ms. Deepthi S Nair, Ph.D. Scholar, NIT Calicut

Viswajyothi College of Engineering and Technology, Vazhakulam.

VJCET is established in the year 2001 by the Technical Education Trust of the Catholic Diocese of Kothamangalam, with the approval of AICTE and affiliated to Mahatma Gandhi University. VJCET focuses its activities with a vision of moulding engineers par excellence with integrity, fairness and human values. The college is situated at Vazhakulam, the City of Pineapples, 7kms from Muvattupuzha.

The college offers 6 B.Tech(CE, CS, EC, IT, ME & EEE), 3 M.Tech and MBA programs. The college has excellent infrastructure with fully equipped laboratories, hostels, etc. VJCET had produced a number of rank holders and hold excellent placement record. Within 18 years after its inception, the college has grown as a front-runner among the new generation Engineering Colleges of Kerala and is the preferred destination for technical education.

Department of Electrical and Electronics Engineering

The Department of Electrical and Electronics Engineering –accredited by National Board of Accreditation, is established in the year 2004 with well equipped state of art laboratories. The Department has a fine blend of renowned as well as young and dynamic personalities as faculty members, who have been motivating the students for getting the best out of them. The department offers under graduate program in electrical and electronics engineering with an intake of 60 students. The department focuses on overall development of the students by encouraging them to take part in students association activities, internships and industrial training. The department secured Six University Ranks since its inception, and the 1st Rank of 2013-'17 batch adds a jewel to its crown.

How to Register

Faculty from Engineering college / Poly Technique institutions and professionals from industry can apply in prescribed format through email to **mereya@vjcet.org** on or before 25th June 2019. Once registered, you will receive a confirmation mail containing filled application form. Kindly take a printout of the same duly signed by the head of institution and should be handed over to the coordinators while attending FDP. The registration fee of the programme is **Rs. 500/-** which can be paid at the registration desk on **1st July 2019.**

KTU Sponsored FDP
on
Advancements in Drives, Instrumentation and Control.
1st – 5th July 2019
APPLICATION FORM

Name :.....

Designation :.....

Educational Qualification

with Specialization .....

.....

Institution .....

.....

Address for Correspondence:

.....

.....

.....

.....

Teaching Experience.....

KTU ID :.....

Mobile No. :.....

e-mail ID :.....

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

REPORT ON

KTU Sponsored

FACULTY DEVELOPMENT PROGRAMME

On

Advancements in Drives, Instrumentation and Control

1st -5th, July 2019

Organised by

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Viswajyothi College of Engineering and Technology Vazhakulam P.O.
Muvattupuzha, Ernakulam Dist.,Kerala – 686670

Website: http://www.vjcet.org, e-mail: vjcet@vjcet.org

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KTU Sponsored

FACULTY DEVELOPMENT PROGRAMME

On

Advancements in Drives, Instrumentation and Control

Advisory committee

Mar. George Madathikandathil, *Patron*

Msgr. Dr. Cherian Kanjirakombil, *Manager*

Rev. Dr. George Thanathuparambil, *Director*

Rev. Fr. Paul Nedumpurath, *Secretary of the Trust*

Dr. Josephkunju Paul C., *Principal*

Dr.Ashok S, *Professor, NIT, Calicut*

Dr.Udaya Kumar, *Professor, IISC, Bangalore*

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Mr.K.Vijayaraj, *M.D, Suvire Electric Pvt.Ltd. Chennai*

Organizing Committee

Prof.Dr.B, Aruna, *H.O.D, EEE Dept.*

Dr. K K, Rajan, Professor, *EEE Dept*

Ms.Mereya Baby, *Assistant Professor, EEE Dept.*

Ms.Neena Alex, *Assistant Professor, EEE Dept.*

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY

Viswajyothi College of Engineering and Technology (VJCET) established in the year 2001, is affiliated to M.G.University and APJ Abdul Kalam Technological University and has earned the reputation as a trend setter in Engineering Education. Presently Viswajyothi College of Engineering and Technology offers six B.Tech Engineering Degree courses and four Post Graduate Courses. The building complex of the College is situated in a sprawling campus of 26 acres, nestled among lush greenery over a hillock on the side of the Ernakulum, Thodupuzha State Highway, in central Kerala.

Our Vision

Moulding Engineers par excellence with integrity, fairness and human values

Our Mission

We commit to develop the institution into a Centre of Excellence of International Standards

- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

The Department of Electrical and Electronics Engineering –accredited by National Board of Accreditation, is established in the year 2004 with well equipped state of art laboratories. The Department has a fine blend of renowned as well as young and dynamic personalities as faculty members, who have been motivating the students for getting the best out of them. The department offers under graduate program in electrical and electronics engineering with an intake of 60 students. The department focuses on overall development of the students by

encouraging them to take part in student's association activities, internships and industrial training. The department secured Six University Ranks since its inception.

Vision of the Department

Mould globally competent Electrical and Electronics Engineers

Mission of the Department

- To provide the best academic ambiance.
- To develop technical and soft skills to cope up with the emerging global scenario.
- To enhance knowledge by industry and alumni interaction.

Program Educational Objectives (PEO)

- Graduate shall have the foundation in mathematical, analytical and scientific skills to design technically and economically viable engineering solutions.
- Graduate shall have the culture and attitude of team work, to help in upbringing socially committed Entrepreneurs engaged in lifelong learning.
- Graduate shall have professional communication skills, social values and work ethics.

Program Specific Outcome (PSO)

- Students will be able to apply the concepts of circuit analysis and design in the areas of electric power generation, transmission and distribution from conventional and nonconventional sources.
- Students will be able to develop Control and Power Electronic application circuits.
- Students will be able to design and interface microcontroller-based embedded systems.

Principal's Message

An educated, employable generation is the crux for any developing nation. Technical education focuses on a broad-spectrum of educational experience by creating expertise in technical and personality skills. The department of EEE with its sophisticated equipments and well developed infrastructure combined with a team of competent and dedicated faculty ensure a delightful and enriching learning experience. I am very happy to note that department EEE of Viswajyothi College of Engineering and Technology is organizing a KTU sponsored Faculty development programme on the topic 'Advancements in Drives, Instrumentation and Control' from 1^{st} – 5^{th}July 2019.

Faculty development programmes aims at enriching and enhancing the spirit and passion of teaching professionals by refining or updating their knowledge in accordance with the industrial and societal needs. I wish this faculty development programme would help in formulating new perspectives in technical education by enlighting the dear participants with new convictions and crafts of teaching.

Dr. Josephkunju Paul C

HOD's Message

It is with immense pleasure, the Department of Electrical and Electronics Engineering is organizing a Faculty Development Program on "Advancement in Drives, Instrumentation and Control". Faculty Development Programs are requisite for enhancing the academic and intellectual environment for the faculty to pursue research and make the classroom teaching in a most efficient manner. It is a forum for interacting with experts from reputed industries, research organizations and academic institutions.

Markets for adjustable speed drives continue toexpand steadily over the past few years. The remarkable progress in power electronics and microelectronics has made it possible to use AC motors in variable speed drive applications. Moreover, the development of new control technologies made the AC motors to be used in high performance drive applications such as in industries, transportation and marine applications. The new complex control technologies are the results of advancements in microprocessors, microcontrollers and microcomputers. The advent of electric vehicles has resulted in the demand for electric motors with unique features. Electric drive technologies including electric motor, inverter and boost converters are essential components of electric vehicles.

Also there is a rapid growth in the instrumentation technologies in the recent years. Laser and fiber optic technology based sensors are becoming attractive now a days. A course regarding the importance of advancements in drives, instrumentation and control is crucial for electrical engineers so as to ensure themselves that they are exposed to the most modern trends and developments in that domain.

As the Head of the Department, I wish the faculty development program a grand success and I hope the Faculty Development Program will facilitate the delegates to enhance their knowledge and teaching skills.

Dr. B. Aruna

Resource Persons

- ***Dr. M. Nandakumar, Professor and Former H.O.D, Government College of Engineering, Thrissur***

Dr. M. Nandakumar graduated in Electrical Engineering from Government College of Engineering, Thrissur. He took his M,Tech in industrial electronics from NIT,Surathkal and PhD from ITT ,Madras in Power Electronics. He has got an experience of 29 years in teaching and 2 years in research and development. He has 16 publications in referred journals, 14 in international conferences and 14 in national conferences. He is a member of MISTE and FIE. He is guiding 7 PhD scholars. He has awarded Prof. M.M. Ghani Award for Best College Teacher under University of Calicut for the year 2008-09.He was the chairman of board of studies, Electrical, Electronics and Communication Engineering, University of Calicut during 2010-13. His area of interest are power electronics and drives, power quality, dc-dc converters, FACTS and custom power devices

- ***Dr. B Babu, Senior scientific Officer,IGCAR, Kalpakkam***

B. BABU is a Senior Scientific Officer and Head of Division at Indira Gandhi Centre for Atomic Research (IGCAR), Department of Atomic Energy at Kalpakkam. He completed B.Tech in Electrical Engineering with First class and Distinction in 1986 from University of Kerala.

He joined BARC, Mumbai in 1987and after successful completion of the training on advanced nuclear engineering and technology; he was posted in Fast Breeder Test Reactor (FBTR) at Kalpakkam. He has 22 years of experience working in FBTR and contributed significantly towards the commissioning, operation and maintenance of two nuclear reactors: FBTR and Kamini. He was responsible for the maintenance and upkeep of control, instrumentation and computer systems of both nuclear reactors. He has significantly contributed in the development of sodium sensors and instruments for Fast breeder reactors. In 2015, as Team leader, he got the Group Achievement award under DAE for the outstanding contribution on "Development of in-sodium sensors for PFBR". He has also got Young Officer Award on two occasions and Group Achievement awards on six occasions. He has completed Ph D in Engineering Sciences. He has also acquired Master of Business Administration (MBA). He has more than 20 publications in national and international journals, 40 conference papers and more than 400 internal reports. He is a Life member of Indian Nuclear Society, Indian Vacuum Society and Instrument society of India. He is also serving as faculty member in training school and sodium school for engineers.

As Head of Device Development and Rig Services Division of Fast Reactor Technology Group, he is responsible for the safe operation and maintenance of a dozen facilities for in-sodium testing and conducting experiments on full scale FBR components. He is also involved in construction and commissioning of new sodium facilities.

- ***Dr. SudhaBalagopalan V, Dean Academics, Vidya Academy of Science & Technology, Trissur***

She has obtained BSC Degree in electrical engineering from REC Calicut in 1980.She took her M.Tech degree in power system from GEC Thrissur in 1995 and PHD from NIT Calicut. She worked as scientific officer in BARC and has played a vital role in designing control

circuits of 'DHRUVA' reactor in BARC.She was awarded the prestigious "Bhabha award" for coming first among the 24th batch of BARC Training school students, in the year long orientation course She worked as design and estimation engineer in several electrical projects in Kuwait She served as assistant engineer in KSEB for 5 years. She has a teaching experience of almost 20 years and is presently dean academics and former principal of Vidya Academy of Science and Technology. She has published numerous papers in national and international journals. She has guided several BTECH projects in association with, GIT, Atlanta, ISRO, Port Trust, Total Energy Security Mission, OEN, KSEB, BPCL, TELK, etc. and was the guide of the project that won the student enterprise award of 1500 dollars from IEEE, USA. Her areas of interest include Power Systems, control systems, signals and circuits, Electrical Machines, Optimization, Game Theory

- ***Ms. Deepthi S, Research scholar, NIT, Calicut***

Deepthi S Nair completed her B.Tech degree in Electrical and Electronics Engineering from Viswajyothi college of Engineering and Technology in 2010 and her M.Tech from Rajagiri School of Engineering and Technology, Kakkanad in 2012 with the specialization of Industrial Drives and Control. Presently she is working towards her Ph.D degree at National Institute of Technology Calicut. Her current research interests include power electronic converters, direct torque control, estimation algorithms, permanent magnet machines and their control. She is currently working in the implementation of DTC on Electric Vehicles application

- ***Dr. Sony Kurian, Associate Professor, Electrical and Electronics Engineering, VJCET.***

Dr. Sony Kurian is having a teaching experience of more than12 years and has published more than 10 papers in various national and international journals. He graduated in Electrical Engineering from NSS College, Palakkad, completed his masters in power electronics from Amrita School of Engineering, Coimbatore and received PhD from NIT Calicut. He has conducted various conferences, workshops and symposiums. His fields of interest are Power Electronics, control systems and renewable energy systems.

- ***Mr. Sharone Varghese, Assistant Professor, Viswajyothi College of Engineering & Technology***

Mr. Sharone Varghese, completed graduation from M. G. University in Electrical and Electronics Engineering in the year 2008 and Post Graduation in VLSI & Embedded Systems from Cochin University of Science and Technology in the year 2012. His area of interests is Embedded Systems, Currently working as Assistant Professor in the Dept. of Electrical and Electronics Engineering at Viswajyohti College of Engineering and Technology, Vazhakulam.

- ***Shri.James Joseph, Head,I&CS,KNRPC,BARC, Kalpakkam***

Shri James Joseph is a graduate Electrical Engineer from NIT Calicut and has completed his degree course in 1983. He joined BARC training school in 1985. After completion of one year training he joined Control and Instrumentation Division of Fuel reprocessing& waste management group in BARC and has worked for the design, erection, commissioning and maintenance of Instrumentation and control systems in various nuclear fuel reprocessing& waste management plants for last 32 years. He has completed Instrumentation and control systems of two reprocessing plants, one waste management plant, one spent fuel storage plant at Kalpakkam. His current project is design of Instrumentation and control systems for uranium oxide production plant at Kalpakkam. At present he is head of Process Instrumentation & Control Section, ARC Facilities at Kalpakkam.

- ***Dr. K. K. Rajan, Independent Director and Member Board of Directors, NPCIL and Prof., EEE Dept, VJCET.***

Dr.K.K.Rajan graduated in Electrical Engineering from National Institute of Technology, Calicut.He was posted to Indira Gandhi Centre for Atomic Research (IGCAR) Kalpakkam in

1981 and was responsible for design, development and testing of critical Fast Breeder Reactor Components. Considering his knowledge, experience and excellent coordination ability he was given the additional responsibility of Director, Engineering Services Group in IGCAR.He has more 140 publications in national and international journals. Homi Bhabha National Institute (HBNI) Mumbai had awarded Ph.D. to him on his thesis "Compact Electromagnetic Flow Meters with Enhanced Sensitivity for Flow Measurement in Sodium Circuits". He was in the grade of Distinguished Scientists at the time of his retirement on superannuation, 30th April 2016. Dr. K. K. Rajan has been a Director of Nuclear Power Corporation Of India Limited since April 30, 2017. He is a member of Indian Nuclear Society, Instrument Society of India and a fellow of Institution of Engineers (India).

He is presently working with Viswajyothi College of Engineering and Technology, Vazhakulam, Kerala as Professor, EEE department, Nodal officer, Innovation and Entrepreneurship Development Cell and Dean, Industry Institute Interaction Cell.

- ***Dr. Dinesh Gopinath, Associate Professor, College of Engineering, Trivandrum***

Dr. Dinesh Gopinath, Associate Professor, college of engineering Trivandrum took his B.tech from college of engineering Trivandrum in the year 1996 and M.Tech in Power Electronics from NIT Calicut in the year 1999. He took his PhD in Electrical Engineering from Indian Institute of Science Bangalore in the year 2010.He has research experience in C-DAC Trivandrum from 1999-2000.

PARTICIPANTS

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
KTU Sponsored - FACULTY DEVELOPMENT PROGRAMME
On
Advancements in Drives Instrumentation and Control
1st-5th July 2019
Organised by: EEE Department, VJCET

Sl.No	Name	College
1	Ansar Jamal	Ilahia College of Engineering & Technology,Mulavoor
2	Jubin Eldho Paul	Ilahia College of Engineering & Technology,Mulavoor
3	Harikumar R	Ilahia College of Engineering & Technology,Mulavoor
4	Sajini Susan Mathai	Ilahia College of Engineering & Technology,Mulavoor
5	Neetha John	Ilahia College of Engineering & Technology,Mulavoor
6	Dhivya Haridas	Ilahia College of Engineering & Technology,Mulavoor
7	Thanuja Mary Abraham	Ilahia College of Engineering & Technology,Mulavoor
8	Reshma S.Isman	Ilahia College of Engineering & Technology,Mulavoor
9	Dhanya B Nair	Ilahia College of Engineering & Technology,Mulavoor
10	Neeraja.V	MGM College of Engineering and Technology, Pampakuda

11	Anu George	MGM College of Engineering and Technology, Pampakuda
12	Elizwa Laiju	College of Engineering,Poonjar
13	Elezabeth Skaria	Baselios Thomas I Catholicose College of Engineering and Technology
14	Gritty Joseph	Baselios Thomas I Catholicose College of Engineering and Technology
15	Arun Eldho Alias	Mar Baselios Institute of Technology and Science
16	Thomas George	Mar Baselios Institute of Technology and Science
17	Renu Mary George	Mar Baselios Institute of Technology and Science
18	Radhika R	College of Engineering,Munnar
19	Shahimol Basheer	College of Engineering,Munnar
20	Maria Joseph	University College of Engineering, Muttom
21	Veena Vijayan	University College of Engineering, Muttom
22	Mayamol S	University College of Engineering, Muttom
23	Ambily V R	University College of Engineering, Muttom
24	Sherin Samuel	University College of Engineering, Muttom
25	Sony Kurian	Viswajyothi College of Engineering & Technology, Vazhakulam
26	Smitha Jacob	Viswajyothi College of Engineering & Technology, Vazhakulam
27	Sharone Varghese	Viswajyothi College of Engineering & Technology, Vazhakulam
28	Breeza Poulose	Viswajyothi College of Engineering & Technology, Vazhakulam
29	Neena Skaria	Viswajyothi College of Engineering & Technology, Vazhakulam
30	Jane Maria S.	Viswajyothi College of Engineering & Technology, Vazhakulam

Inaugural Function

The inauguration of KTU sponsored faculty development programme 2019 on Advancement in Drives, Instrumentation and Control was held on1^{stJuly} 2019at the seminar hall of Research & Development block. The ceremony started with an invocation to God Almighty.

Prof. B Aruna, Head of Electrical &Electronics department, formally welcomed all the dignitaries present and participants from various colleges and colleagues. She pointed out that this course will be a beneficial addition to all faculty members in their career.

Rev. Fr. Dr. George Thanathuparambil, Director of the College, presided over the inaugural function. In his address, he urged the significance of research in academics, focusing on knowledge sharing to the student community.

Our beloved principal, Dr. Josephkunju Paul C has made the Principal's address. He appreciated the idea of organizing a Faculty development programme on very relevant topic and mentioned that it will be part of effective and intellectual learning process of faculties towards the socio-economic issues with an engineering perspective. He appreciated the department of EEE for organizing such a programme with emphasis on the most crucial field of Engineering and Technology.

It is followed by the formal inauguration of the function by the eminent guest of the day, Dr.M.Nandakumar, Professor and Former H.O.D, Government Engineering College, Thrissur. He made an excellent talk that invoked the minds of listeners with new ideas and the need for advancements in technologies in the field of Drives and Control especially in hybrid electric vehicles.

Prof. Ann Neetha Sabu, Head of Science and Humanities Department, has offered felicitation for the faculty development programme. She wished the Electrical & Electronics Department all the success in bringing up such fruitful programmes.

Ms.Mereya Baby, Assistant Professor, EEE Department and the coordinator of FDP has proposed the vote of thanks. She thanked the most estimable chief guest of the day, Dr. M.Nandakumar for coming and inaugurating the FDP with a remarkable talk. She extended gratitude to the management, colleagues and all the delegates for the support, motivation and participation. She extended her heartfelt thanks to all the resource persons who accepted the invitation and came.

Invited Talks

There were 9 invited talks in the programme

Day 1 1st July 2019	**8:30 am - 9:00 am**	**Registration of Participants**
	9:00 am - 9:45 am	**Inaugural Session**
	9:45 am – 10.00 am	**Tea Break**
	10.00 am – 1.00pm	**Session 1:Grid connected inverter systems and its control methods Dr. M. Nandakumar, GEC, Thrissur**
	1.00pm - 1:30 pm	**LUNCH BREAK**
	1:30 pm - 2:45 pm	**Session 2: Data Acquisition systems –Current and Future Trends Dr. B Babu, IGCAR, Kalpakkam**
	2:45 pm - 3:00 pm	**Tea Break**
	3:00 pm - 4:30 pm	**Session 3: Data Acquisition systems –Current and Future Trends Dr. B Babu, IGCAR, Kalpakkam**
Day 2 2nd July 2019	**9:00 am - 10:45 am**	**Session 4: Electric Drives and Control Systems Dr. Sudha Balagopalan V, Professor, Vidya Academy of Science & Technology, Trissur**
	10:45 am - 11:00 am	**Tea Break**

	11:00 am – 1.00 pm	Session 5: Electric Drives and Control Systems Dr. Sudha Balagopalan, V, Professor, Vidya Academy of Science & Technology, Trissur
	1.00 pm - 1:30pm	LUNCH BREAK
	1:30pm - 2:45 pm	Session 6: Introduction to BLDC and PMSM Drives – Design and Control Aspects Ms. Deepthi S, Research scholar, NIT Calicut
	2:45 pm - 3:00 pm	Tea Break
	3:00 pm - 4:30 pm	Session 7: Introduction to BLDC and PMSM Drives – Design and Control Aspects Ms. Deepthi S, Research scholar, NIT Calicut
Day 3 3rd July 2019	9:00 am - 4:00 pm	INDUSTRIAL VISIT TO MALANKARA HYDRO ELECTRIC PROJECT
Day 4 4th July 2019	9:00 am - 10:45 am	Session 8: Power Electronics and Control in Energy Systems Dr. Sony Kurian, Associate Professor, VJCET, Vazhakulam
	10:45 am - 11:00 am	Tea Break
	11:00 am – 1.00 pm	Session 9: Hands on training in fabrication laboratory Mr. Sharone Varghese, Asst. Professor, VJCET, Vazhakulam
	1.00 pm – 1.30 pm	LUNCH BREAK
	1:30 pm - 2:45 pm	Session 10: Development of Instrumentation and Control Systems for a Nuclear fuel reprocessing plant Shri. James Joseph, BARC, Kalpakkam
	2:45 pm - 3:00 pm	Tea Break
	3:00 pm - 4:30 pm	Session 11: Development of Instrumentation and Control Systems for a Nuclear fuel reprocessing plant Shri. James Joseph, BARC, Kalpakkam
Day 5 5th July 2019	9:00 am - 11:00 am	Session 12: Innovative sensors,devices and technologies for sodium cooled fast reactors Dr.K.K.Rajan, Dean IIIC, VJCET,Vazhakulam
	11:00 am - 11:15 am	Tea Break

	11:15 am – 1.00 pm	**Session 12: DESIGN OF POWER CONVERTERS Dr. Dinesh Gopinath, Associate Professor, CET Trivandrum**
	1.00 pm – 1.30 pm	**LUNCH BREAK**
	1:30 pm - 3:45 pm	**Session 13: DESIGN OF POWER CONVERTERS Dr. Dinesh Gopinath, Associate Professor, CET Trivandrum**
	3:45 pm - 4:30 pm	**Feedback, Test and Valedictory Function**

Technical Session: 1

Topic: Grid connected inverter systems and its control methods

Resource Person:

Dr. M. Nandakumar, Professor and Former HOD, GEC, Thrissur.

Dr.M.Nandakumar made a presentation on Grid connected inverter systems and its control methods. He started his session with the requirement of grid connected system, which is a grid interactive that inject real and reactive power as required. The real and reactive power injection to the system is based on Instantaneous p-q theorem. Further the session delved into the control schemes of grid interactive inverter, PWM control technique. This discussed about a switching scheme of grid interactive inverter for bi-directional real and reactive power control and harmonic compensation, with the main feature that the power flow in based the relation of phase angle between the injected current and the grid voltage. The controller mechanism proposed in 3-phase constant frequency hysteresis controller,

which is based on Volt-Sec balance method. This described the analysis of minimally switched grid interactive inverter, considering the selection of switch in the controlled phases with reactive power compensation. Further the session discussed on the study of the simulation, in the areas of voltage sector identification, current polarity identification, switching pulses to switches (Sap, Sbp, Scp wrt San). The simulation results discussed the grid voltage and injected current for various power factor angle 0 inverter mode, 60 lag, 180 rectifier mode, reactive compensation, transient mode. The session concluded with the analysis on harmonic compensation.

Technical Session: 2

Topic: Data Acquisition systems –Current and Future Trends

Resource Person: Dr. B Babu, IGCAR, Kalpakkam

Dr.B.Babu made a presentation on data acquisition system and how it is implemented in IGCAR, kalpakkam. He also gave an overview of the current and future trends in data Acquisition system. He started his présentation with the global energy scenario. It was said that the proven global coal reserve was estimated to be 9, 84,453 million tones by end of 2003. The USA had the largest share of the global reserve (25.4%) followed by Russia (15.9%), China (11.6%). India was 4th in the list with 8.6%. Oil The global proven oil reserve was estimated to be 1147 billion barrels by the end of 2003. Saudi Arabia had the largest share of the reserve with almost 23%. Gas The global proven gas reserve was estimated to be 176 trillion cubic metres by the end of 2003. The per capita energy

consumption is too low for India as compared to developed countries. It is just 4% of USA and 20% of the world average. The per capita consumption is likely to grow in India with growth in economy thus increasing the energy demand. He emphasized the need of nuclear energy in the present energy scenario. Nuclear fission is a nuclear reaction in which the excited compound nucleus of fissile isotope formed by neutron absorption, fragments in parts releasing tremendous energy along with two to three neutrons. He explained the three stage nuclear program in IGCAR, Kalpakkam

He gave detailed explanation of Sodium-Coolant for Fast Reactor. Coolant transfer and transport the heat to steam generator .since large amount heat is there, a coolant with excellent heat transfer properties is required .In fast reactor, liquid metal with high thermal conductivity is the suitable coolant. Liquid metal sodium transfers the heat in conductive and convective mode. Then he explained DAS for Nuclear Applications. Nuclear physics experiments require DAS capable of Handling and crunching large amounts of data Improvised sensor data, in terms of accuracy, resolution, and width, number of channels, etc. High speed inter connectivity amongst acquisition modules, for proper synchronization. Digital recording that can keep pace with the speed of acquisition hardware. Easy experiment specific tailoring of the hardware and software, with full fledged reconfigure possibility Requirements of experiments to deal with signals that occur with vastly different occurrence rates and be able to correlate asynchronous events from various detectors. Details of MIMIC display were also discussed. Mimic plays a major role in displaying P&I for operator, Obtain soft inputs from operator Trending Report generation. Mimic is displayed in- local display of PC and large Video Display and is implemented in SCADA software.Citect SCADA is used in Graphical process visualization, advanced alarm management, Historical and real-time trending, Built-in reporting Statistical Process Control Multithreaded CitectVBA and Cicode programming languages. He also explained in detail the features of DACS for Sodium Facility, Under sodium Ultrasonic Scanner (USUSS),and future trends of DAS.then he moved on to Wireless Sensor Networking Technology at Sodium Technology Complex. Wireless sensor networking technology planned in STC for monitoring the surface temperature of sodium piping and components and for sodium leak detection. Wireless Sensor Network consists of multiple sensor nodes that are connected to various types of

sensors to monitor/ measure physical parameters, router nodes to forward the data collected from the sensor node, Base station connected to the data acquisition system, that will receive collected data from all of the nodes for further processing and Multiple thermocouples (maximum 6) will be connected to signal conditioning modules of the sensor node. Each floor will have around 40 number of sensor nodes that will be connected to thermocouples. (In total around 120 sensor nodes). In temperature Monitoring WSN System The data will be collected from each sensor in one second interval Router nodes will be kept at each floor for forwarding the data to base station For redundancy, two base stations (on load sharing basis) will be kept in the remote I/O rack. The remote I/O rack will be located in air conditioned cabin in each floor (first, second and third floor) along with DACS.Base stations convert wireless data to DACS compliant format and forwards to DACS. For Leak Detection WSN System Each floor will have around 40 sensor nodes that will be connected to leak detectors The signal conditioning boards will accommodate maximum 6 leak signals Router nodes will be kept at each floor for forwarding the data to base station Each node will transmit the packet in one second interval and the same will be received by the base station kept at control room It is a stand-alone microcontroller based card to perform data collection. It will be interfaced with hardware annunciation window and hooter for giving alarm through actuator node .The base station will also be connected to VDU in control room and Leak server in server room through wired Ethernet LAN. He concluded his session by detailing Wireless Network Management System, Power system automation and important aspect of electrical power network.

Technical Session: 3

Topic: Electric Drives and Control Systems

Resource Person:
Dr. SudhaBalagopalan V, Professor, Vidya Academy of Science & Technology, Trissur

Dr.Sudha Balagopalan made a presentation on **Electric Drives and Control Systems**. She started her presentation with the concepts in Induction motor studies. She explained Torque-slip characteristics, and equivalent circuit of 3-phase induction motor. She gave an outline of drive requirements and compared ac and dc motor control strategies. She discussed dc motor control strategies and highlighted the evolvement of Induction motor control strategies from dc machine.

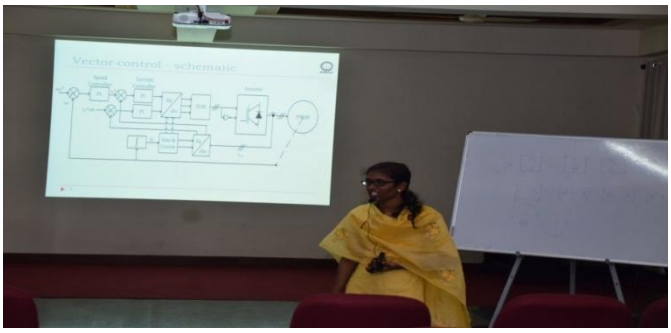
General components of electric drive are explained with the help of a block diagram. A detailed explanation on modeling of PMSM is given. She highlighted the need of deriving a dynamic model of the induction motor and thus introduced Vector Oriented Control (VOC). In modeling of PMSM, the methodologies, stator flux linkage based voltage equations and equations for modeling in vector control are described. Steps for doing Vector control in drive system are explained in detail.

Various transformations models like equivalent mmf model, Clarke's and Park's transformations, Kron's primitive machine model, Dynamic Impedance Model, Flux-Torque model are explained. Vector Oriented Control was explained from the basics where Clarke's and Park's transformations were discussed in detail. Vector diagram of Flux Oriented Control was revisited.

A detailed explanation of controllers in drives is given. Block diagram of Indirect VOC is described along with the computation methods. She detailed the indirect VOC, block diagram of Direct Torque Control and logic diagram of DTC.

Technical Session: 4

Topic: Introduction to BLDC and PMSM Drives – Design and Control Aspects



Resource Person:

Ms. Deepthi S Nair, Research scholar, NIT Calicut

Ms. **Deepthi** S Nair made a presentation on Introduction to PMSM and BLDC Motor Drives – Control Strategies. In her introduction, she explained the basic differences between Permanent Magnet Synchronous motor and Brushless dc motor. The two control methods, Vector control and Direct Torque Control methods are explained with schematics. In order to explain vector control, basic transformations are described in detail. The goal of the FOC (also called vector control) on synchronous and asynchronous machine is to be able to control those like a separately excited DC machine wherein the flux producing and torque producing currents are separately controlled. To decouple the torque and flux producing currents, it is necessary to engage several mathematical transforms, and this is where the DSPs add the most value. In vector control the D-axis is aligned along the rotor magnetic flux and the Q axis is orthogonal to D axis.

She also drew attention towards Space vector modulation. The steps to be followed in space modulation are explained in detail. She explained that Space Vector Pulse Width Modulation (SV-PWM) is a modulation scheme used to apply a given voltage vector to a three-phased electric motor (permanent magnet or induction machine). The goal is to use a steady state DC-voltage and by the means of six switches (e.g. transistors) emulate a three-phased sinusoidal waveform where the frequency and amplitude is adjustable. The main principle is that A three-phase inverter converts a DC supply, via a series of switches, to three output legs which could be connected to a three-phase motor.

The switches must be controlled so that at no time are both switches in the same leg turned on or else the DC supply would be shorted. This requirement may be met by the complementary operation of the switches within a leg. i.e. if A+ is on then A− is off and vice versa. This leads to eight possible switching vectors for the inverter, V0 through V7 with six active switching vectors and two zero vectors.

Industrial Visit to Malankara Hydro Electric Project

Industrial visit was carried out at Malankara Hydroelectric Project, Thodupuzha, on 3rd July 2019, in connection with Faculty Development Programme organized by EEE department of VJCET.The faculties left for visit at 9.00 am and took about one and half hours to cover the distance. The hydro electric project is located at Thodupuzha in Idukki district.

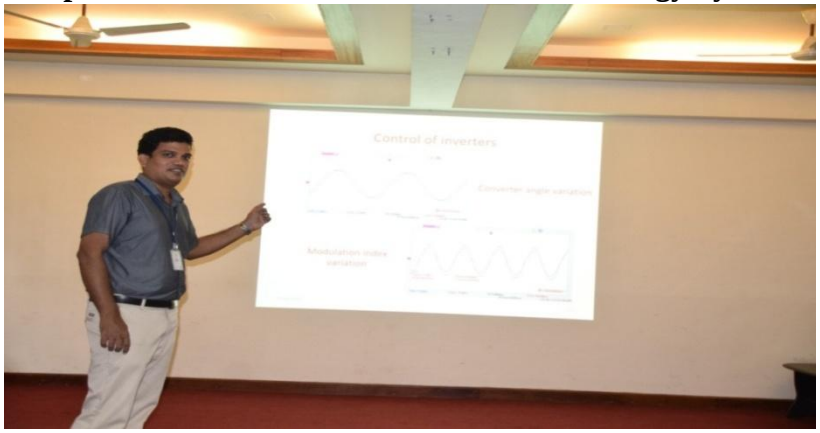
Our main purpose for this visit is to familiarise with industrial environment and to get practical knowledge and learn where & how we apply our theoretical knowledge in real application. Malankara Hydroelectric Project is erected at the Malankara dam of Karikode village in the Thodupuzha taluk of Idukki district. The power project was commissioned in 1994 with an installed capacity of 10.5 Megawatt. The project type is small, since its capacity is in between 3 and 25 Megawatt. The status of Powerhouse is Operational. The water source for the hydroelectric project is Thodupuzha River. The Basin of Power Plant is West flowing Rivers. The power plant is situated in the Southern Hydroelectric Region.

The power plant is owned by State Government of Kerala and it is operated by the Kerala State Electricity Board. The beneficiary state of power project is Kerala. The power project is completed in 1994 and soon the plant started its operations. There are three turbines in the power house and the capacity per turbine is 3.5 MW. The Unit Size of Power Plant is 3 units of 3.5 MW each. So there are 3 units in operation with a total installed capacity of 10.5 MW.

All the units are commissioned. The first unit is commissioned in 06 August 2005 with an installed capacity of 3.5 MW. Similarly the second unit is also commissioned in 06 August 2005 with an installed capacity of 3.5 MW. Lastly the third unit with an installed capacity of 3.5 MW is commissioned in 27 August 2006.

Technical Session: 5

Topic: Power Electronics and Control in Energy Systems



Resource Person:

Dr. Sony Kurian, Associate Professor, EEE Department,

Viswajyothi College of engineering and technology, Vazhakulam

Dr. Sony kurian Expalined the key role played by the power electronics in distributed generation and need for efficient control in the Iintegration of renewable energy sources into the electrical grid. The fast evolution of power converters due to the development of fast semiconductor switches and Introduction of real-time controllers was discussed in detail. The power transfer control during the injection of power to the grid by means of controlling the power angle and line reactance was introduced from the fundamentals. Diffrent FACT devices llike STATCOM, SSC, UPFC , SVC ect were alalysed. The system operation improvement due to the introduction of SVC in a 5 Bus system was discussed as an example. The discussion on system perfomanece enhancement due to the incorporation of storage sytem in a standerd bus sytem was one of the attraction of the session

Technical Session: 6
Topic: Hands on training at Fabrication laboratory

Resource Person:
Mr. Sharone Varghese, Asst. Professor, VJCET, Vazhakulam

A Fabrication Laboratory (FabLab) is a technical prototyping platform for innovation and invention which aims at providing stimulus for local entrepreneurship and serves as a platform for learning and innovation. It is a small scale workshop offering digital fabrication which empowers the users to create smart devices for themselves which can be tailored to local or personal needs. The FabLab also becomes a medium for connecting to a global community of learners, educators, technologists, researchers and innovators – essentially becoming a self-sustaining global knowledge sharing network.

The FabLab at Viswajyothi is one among the 20 mini-Fab Labs established in the Engineering Colleges of Kerala. The FabLab in the Viswajyothi campus has the following machineries.

1. Laser Cutter
2. Large Scale CNC Mill: Shopbot
3. 3D printers: Dimension SST 3D printer and Ultimaker 2
4. Vinyl Plotter
5. Sand Blaster
6. Electronic Components and Tools
7. Molding and Casting
8. Electronics Test Equipments

In the FabLab Visit session, the delegates were occupied in the college FabLab, and were initially familiarised with all the machineries. In the second phase of the session, the resource person concentrated in 3D printing machine, Laser Cutter and Vinyl Cutter. 3D printing demonstrated the design of a 3D model using CAD tool and printing of the same model. Laser cutting on acrylic and wood is done on the laser cutting machine. Vinyl cutting of a basic design is also done in the session.

Technical Session: 7

Topic: Development of Instrumentation and Control Systems for a nuclear fuel reprocessing plant

Resource Person:
Shri.James Joseph, BARC, Kalpakkam

Shri James Joseph made a presentation on instrumentation and control system of spent fuel reprocessing plant. He started his session with an introduction to the reprocessing plant. The reprocessing of the spent fuel to separate plutonium and balance uranium is done in reprocessing plants. The reprocessing capacity is 150 of spent fuel. He explained the diagrams of In Cell equipment erection and In Cell piping. He also gave an overall picture about the civil structures of the plant. He explained the process block diagram which includes spent fuel storage, mechanical disassembly, acid dissolution, and solvent extraction, plutonium oxide conversion, off gas treatment, acid recovery, solvent treatment, uranium oxide conversion and HLW. He gave details about the instruments used and their requirement. The I&C system for plant contain process control system and radiation monitoring system. The functions off I&C system are measurement,monitoring and control of process parameters,plant operation from remote control room,data acquisition,display and logging of process parameters etc. There are different measurement techniques. Purge method and ultrasonic method are used for level,density, interface and pressure. For temperature thermocouples are used. For flow measurement rotameters and anubars are used. He explained these measurement techniques in detail using the necessary diagrams and bocks. He also showed the steam ejector control and ALP control. ALP is operated by energizing the solenoid valve to pass the air. The transfer is stopped by closing the air supply to ALP. Then he explained the system architecture and showed the pictures of actual panels and measuring instruments. He concluded his session by briefing various challenges in reprocessing plant instrumentation and control.

Technical Session: 8

Topic: Innovative sensors, devices and technologies for sodium cooled fast reactors

Resource Person:

Dr.K.K.Rajan, Independent Director and Member Board of Directors, NPCIL and Prof., EEE Dept, VJCET.

In Fast reactors, fission is brought about by fast neutrons. Moderator is not used in fast reactors. Fast Breeder Reactors can produce more fuel than it consumes. In any nuclear reactor coolant is used to transfer and transport the heat to steam generator to produce steam. The power density in fast reactor is very high so a coolant with excellent heat transfer properties are required. Liquid metal sodium which transfers the heat in conductive and convective mode from reactor core is selected as the coolant. The main properties required for a reactor coolant are Low melting point, high boiling point, non-corrosive properties, low neutron absorption cross section, low moderation, radiation stability, thermal stability, low induced radioactivity and low pumping power. Sodium meets the entire requirement. Conventional Sensors and devices cannot be used in SFRs. Sodium Instrumentation is special in nature because of high Nuclear radiation, High operating temperature upto 600° C and chemically reactive sodium Environment. Liquid Sodium reacts with air and catches fire. All welded construction is required and materials used should be compatible with sodium. Non contact non intrusive type of sensors are needed for SFR circuits. Very good electrical conductivity of sodium is utilized in developing sensors and electromagnetic devices for SFR applications. Sensors for various applications in SFR are developed in IGCAR. Mutual inductance type continuous and discontinuous type

level sensors/probes are used in sodium systems. They work on the principle of change in the mutual inductance of the coils when sodium level changes. Mutual inductance type continuous level sensor consists of two coils wound on a stainless steel former. The primary is excited with AC constant current source. It produces alternating flux which induces emf in secondary coil and in sodium. This current produces another flux that opposes the main flux and reducing it. Hence secondary coil emf reduces with level. Primary and secondary coils are wound using 1mm dia. SS sheathed MgO insulated, copper cables. In discrete level probe the winding is at discrete intervals so as to obtain signals corresponding to different levels of sodium. Location and number of discrete sensors depends on process requirement. All primary coils are connected in series and excited by single current .Conductance type and mutual inductance type sodium leak detectors are used in SFRs. Sodium ionization detector based global area monitoring system is used in reactor buildings. Permanent magnet type sodium flow meter for pipe flow measurement and Eddy current flow meters are used for core flow monitoring. Ultrasonic scanners for under sodium viewing. Acoustic method Steam generator leak detection is developed. Special sensors and EM devices for SFRs have been successfully developed indigenously and deployed in PFBR and experimental facilities. Many more such sensors and devices are required to enhance safety and economy of SFRs. Modification and modeling are required for improving performance. Young Electrical Engineers and academicians can play a key role in India becoming global leaders of SFR technology.

Technical Session: 9

Topic: Design of Power Converters

Resource Person:
Dr. Dinesh Gopinath, Associate Professor, CET Trivandrum

Dr. Dinesh Gopinath gave a presentation on Design of power converters. He started his talk by saying that DC-DC power converters are employed in order to transform an unregulated DC voltage input (i.e. a voltage that possibly contains disturbances) into a regulated output voltage. He explained that Power Electronics Power Electronics" can be considered as "The technology associated with the conversion, control and conditioning of electric power from its available form to the desired electrical form, by the application of electronics". Then he briefly discussed about the history of power electronics and why power electronics is needed now. He also gone through the major applications of power electronics in industries. He also drew attention towards the various design inputs such as hardware specifications, cost factor, electrical specifications, mechanical specifications, selected topology etc. He has given a detailed explanation regarding various design specifications.

He explained the various factors to be considered during selection of switching frequency. The choice of switching frequency depends on available magnetic material, available Power Semiconductor, available Isolation & Control, Specifications to be met, selected topology etc. the various magnetic materials that can be used are Cold Rolled Non-Oriented Steel (CRNO), Cold Rolled Grain Oriented Steel (CRGO), Laser Scribed CRGO, Powdered iron Core, Amorphous Core (METGLAS), Ferrite Core etc. The power semiconductors that are widely used are Bipolar Power Transistors (upto about 30kHz, 250W power), Power MOSFETs (upto about 200kHz, 1kW power), IGBTs (upto about 30kHz, 1kW or higher power), SCRs in all range of power, mostly in 50Hz applications, Triacs in specific 50Hz applications, Ultra Fast Recovery Diodes, Schottky Diodes. Then he clearly explained the design steps to be followed.

Dr. Dinesh Gopinath explained linear circuit elements used in power electronic circuits. Linear circuit elements refer to the components in an electrical circuit that exhibit a linear relationship between the current input and the voltage output. Examples of elements with linear circuits include –Resistors, Capacitors, Inductors, and Transformers. He described each circuit elements in detail with necessary symbols and diagrams. Next topic discussion was about various filets in power electronics.

Next topic of major discussion was on dc- dc converters. Design criteria that has to be followed in designing converters like buck, boost and buck-boost converters are explained in detail. Analysis of converter waveforms in continuous conduction mode and discontinuous conduction mode and output equations are discussed.

Group Photo

Valedictory Function

The valedictory function of the KTU sponsored faculty development programme 2019 on the 'Advancements in Drives Instrumentation and Control 'was held on 5th July at the seminar hall of Research & Development block. With over 30 participants the programme was a success.

Dr. B. Aruna, Head of EEE Department welcomed all the dignitaries to the function. She mentioned the contribution of all faculties and participants towards the successful completion of the faculty development programme 2019 under the joint auspices of KTU.

Dr. Sony Kurian, Associate Professor, EEE Department, in his felicitation, spoke on the scope of the course as a professional one and thanked the delegates for their good participation. He pointed out the need for such events in future.

Prof. K. K. Rajan, EEE Department & Dean of Industry Institute Interaction cell, pointed out that the participation of industry professionals and academician in the FDP was highly beneficial to the delegates. But the knowledge acquired can be complete only when the faculties are able to transfer it to the young engineering minds. He also pointed out that the huge opportunities in the electrical engineering field are not known to the students as well as to the people looking for higher studies. The challenges faced by the engineering colleges now are due to the lack of awareness of the society towards the demand for engineers across the globe. This has to be changed by conducting more societal programmes with engineering base.

It was followed by a feedback session from delegates. Ms. Neeraja.V from MGM college of engineering Pampakuda, Mutattupuzha, Ms.Renu Mary George from Mar Baselios Institute of Technology And Science, Ms. NeenaSkaria from VJCET gave valuable feedbacks of the entire course.

Ms. Neeraja V from MGM college giving feedback of FDP

Distribution of certificates for all the delegates was made. Dr. B. Aruna, Head of EEE Department has distributed the certificate of participation to all the delegates.

The valedictory session was concluded with a vote of thanks by Ms. Mereya Baby, Assistant Professor, EEE Department and co-coordinator of the Faculty Development Program. She thanked each one who attended the programme and EEE Department for the wholehearted support and motivation in bringing up such a programme. She thanked all the resource persons who have travelled a lot and for the most insightful sessions. She emphasized on the need for such faculty development programme in future.

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COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

Released By

Department of Electrical Engineering

Viswajyothi College of Engineering and Technology

2. 2018 - 19

2.1 FDP on Embedded Systems & Data Mining by CSED

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Principal
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Convenor
Mr. Amel Austine, HOD, CSE Department

Course Coordinators
Dr. Anishin Raj M.M, Associate Professor (CSE)
Mrs. Arsha J K, Assistant Professor (CSE)
Mrs. Sabitha Raju, Assistant Professor (CSE)

Programme Objectives

- To introduce the technologies behind the embedded systems
- To introduce the concept of data mining and its application
- Familiarize some mining tools

Expected Outcomes

- Understand the individual components involved in a typical embedded systems
- Identify the key process of Data Mining and Ware housing

FIVE DAY FDP
ON
Embedded Systems and Data Mining
(Based on KTU Syllabus)
10th January – 16th January 2019
Venue: R&D Seminar Hall

ORGANISED BY
DEPARTMENT OF CSE
In Association with CSI, ISTE and R&D

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
VAZHAKULAM, MUVATTUPUZHA

Moulding Engineers Par Excellance With Integrity, Fairness and Human Values

About VJCET

Viswajyothi College of Engineering and Technology (VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education. Established in the year 2001 as a self-financing Engineering College affiliated to Mahatma Gandhi University, Kottayam, Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trend setter in Engineering and Management Education. The college now offers six B.Tech Degree Programmes in ECE, CSE, IT, ME, EEE & CE and an MBA programme under the Department of Management Studies. All B.Tech programmes are now accredited by NBA. The Institute has been continuously striving for excellence in education and research with an introduction of Research and Development Centre in the campus.

Vision

Moulding Engineers par excellence with integrity, fairness and human values

Mission

- We commit to develop the institution into a Centre of Excellence of International Standards.
- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

About CSE Department

Started in the year 2001, the department of Computer Science & Engineering offers both undergraduate (B. Tech.) and postgraduate (M. Tech.) programs. The CSE department runs under the invaluable guidance of the HOD, Mr. Amel Austine. The annual intake of the B. Tech. program is 120 students and that of the M. Tech. is 24. The department provides its students an environment that stimulates their intellectual growth and personality development. Infrastructure facilities are excellent with well-equipped computer labs, classrooms and libraries. We also have high speed leased line Internet connection and online access to all IEEE journals. A team of well qualified faculty that keeps their knowledge up to date by attending conferences and workshops on a regular basis is a major asset of the department.

Topics to be covered

KTU B.Tech CSE Eighth Semester Syllabus – Embedded Systems and Data Mining

Resource Persons

1. Dr. Aji Joy(Associate Professor, Dept. ECE,MACE, Kothamangalam)
2. Dr.Anand H S(HOD, Dept. CSE, MITS, Puthencruz)
3. Dr.Revmi N G (Assistant Professor, Dept. CSE, MITS, Puthencruz)
4. Ms.Sreenu G (Assistant Professor, Dept. CSE, MITS, Puthencruz)

Registration Fee

Course Fee: Rs.1500/- including lunch and tea
The registration fee can be paid in cash on10th January 2019 at the time of registration

How To Register.

For registration fill the online form at
https://goo.gl/forms/9KpJRYCCAHet0CZq1

Who Can Attend.

Faculties in CSE, IT and ECE Dept. in any Engineering College Affiliated by KTU

For further details contact Co-ordinators
1. Mrs. Arsha J K(9567966176)
2. Mrs. SabithaRaju(9496278828)

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Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
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2.2 One week FDP on Computer Architecture & Data Communication by ECED

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY VAZHAKULAM

FACULTY DEVELOPMENT PROGRAMME ON

COMPUTER ARCHITECTURE & DATA COMMUNICATION

17th - 21st December 2018

By

Department of Electronics & Communication Engineering

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Principal, VJCET

Prof. Jose P. Varghese
Dept. of ECE, VJCET

CONVENER

Mrs. Smitha Cyriac
HOD, Dept.of ECE
Tel: 0485 226221, 9447523022 E-mail : smithac@vjcet.org

FACULTY CO-ORDINATORS

Dr. Simi Zerine Sleeba
Associate Professor, Dept. of ECE Mob: 7561034837
E-mail : simi@vjcet.org

Mrs. V.K.Vanitha Rugmoni
Assistant Professor, Dept. of ECE Mob: 7902377281
E-mail: vanitharugmoni@gmail.com

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY

VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education. Established in the year 2001 as a self-financing Engineering College affiliated to Mahatma Gandhi University, Kottayam, Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trend setter in Engineering and Management Education. The college now offers six B.Tech Degree programs in ECE, CSE, IT, ME, EEE & CE; three M.Tech programs in highly specialised areas under the departments of ECE, CSE & ME and an MBA program under the School of Management Studies. The departments of Civil Engineering, Computer Science &Engineering, Electronics & Communication Engineering, Electronics & Communication Engineering and Mechanical Engineering were accredited by NBA in excellence in education and research with an excellence in education and research with an introduction of Research and Development Centre in the campus.

Our Vision

Moulding Engineers par excellence with integrity, fairness and human values

Our Mission

We commit to develop the institution into a Centre of Excellence of International Standards

- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

Department Vision

“Moulding Electronics Engineers with Professional Competence and Global outlook”

Department Mission

1. To create a vibrant academic ambience conducive for progressive learning.
2. Build up excellent infrastructure and lab facilities to train the students in the current & emerging technology.
3. Maintain well qualified faculty who are willing to upgrade their knowledge continuously
4. Groom students towards successful careers by facilitating industry-institute relationships and value addition through regular skill-development programmes.

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

Director's Message

At Viswajyothi College of Engineering and Technology, we aim at excellence in our students by ensuring high quality of education. Electronics and Communication Engineering is a discipline which is expanding its horizon to new technologies and tools in a fast pace. The new developments in technology and research can be introduced to the students only through a continuous training process for the faculty members. I am happy that the Department of Electronics and Communication Engineering has organized a Faculty Development Program on two such emerging areas of Computer Architecture and Data Communication with resource persons from industry and academia. I would like to extend my well wishes to the department for organizing this program

Principal's Message

Engineering education has to evolve into an outcome based education for sustaining our students in the technology arena. Faculty training programs are organized as a step to advance the institute's tradition of quality in the teaching learning process. The Department of Electronics and Communication Engineering has conducted a training program for faculty members about the latest advancements in the field of computer architecture research and data communication methods. My best wishes for this endevour

Vice Principal's Message

I take this opportunity to offer my felicitation for the proceedings of Faculty Development Program conducted by ECE department during 17th to 21st December 2018. The academic community needs to keep track of the new developments in the field of computer architecture and data communication. I am sure that this program served to enhance the knowledge of our faculty members and rejuvenate their teaching methods.

HOD's Message

I am pleased to share my happiness on the occasion of the publication of the proceedings of faculty development program conducted by ECE department during 17th to 21st December 2018.This FDP was intended to address the recent advancements in the field of computer architecture and data communication. I take this opportunity to express my sincere gratitude to management, advisory and organising committee members for their permissions and guidance.

Let me express the appreciation to coordinators Dr.Simi Zerine Sleeba and Mrs. K Vanitha Rugmony who made this event happen. The FDP was eventually a great success with the help of our faculty and other staff members. Hope all the staff members who benefited from this FDP will transfer their knowledge to the student community.

RESOURCE PERSONS

1. **Dr. K.R.Suresh Nair**

   CTO, SFO Technologies, Kochi

   Dr.Suresh Nair, alumnus of Department of Electrical Engineering, IIT Bombay has spent his initial career at TIFR, and then at SAMEER, R&D Lab of Ministry of Information Technology, Government of India. Later he shifted to NeST, a multinational private industry as Global Chief Technology Officer. He has designed and developed many novel products in Healthcare, Communication and Defence and many of these products are finding excellent market acceptance globally.

2. **Dr.Rekha K. James**

   SOE, CUSAT

   Dr.Rekha K. James is working as Professor, Division of Electronics, School of Engineering, CUSAT. She took her PhD in Advanced Processor design and M.Tech in Digital Electronics from CUSAT. She is an alumnus of College of Engineering Thiruvananthapuram with B. Tech in Electronics and Communication Engineering. She is the author of many international conference and journal publications and book chapters.

3. **Dr.Tripti Warrier**

   Dept. of Electronics, CUSAT

   Dr.Tripti Warrier is working as Assistant Professor at the Department of electronics, CUSAT. Received her PhD in Computer Architecture from IIT, Madras in 2016 and M.Tech in Digital Electronics and Communication from Manipal University in 2005. Before joining CUSAT she was working as Associate Professor at Muthoot Institute of Technology and Science, Varikoli and Adi Shankara Institute of engineering and Technology, Kaladi.

4. **Dr. Jaison Jacob**

   Dept. of ECE, RSET

   Received his B.E. Degree in Electronics from Dr. Babasaheb Ambedkar Marathwada University, Aurangabad in 1993, M.E. Degree in Applied Electronics from Karunya University, Coimbatore in 2006 and Ph.D from Cochin University of Science and Technology in 2017. Before Joining RSET in 2002, he had worked with Xerox Modi Corp for six years and Cochin University College of Engineering Kuttanad for two years.

5. **Dr. Sidharth Shelly**

   Dept. of ECE, MACE

   He received his PhD in Vehicular Networks from NIT Calicut in 2016, M.Tech in VLSI Design from Amritha Institute, Coimbatore in 2009 and B.Tech in Electronics and Communication Engineering from Viswajyothi College of Engineering and Technology, Muvattupuzha. He is presently working as Assistant Professor in Department of Electronics & Communication Engineering, Mar Athanasius College of Engineering, kothamangalam. He has 6 international journal and 8 international conference publications to his credit.

6. **Dr. Bijoy Antony Jose**

   Dr. Bijoy Antony Jose is an Assistant Professor at the Department of Electronics in Cochin University of Science and Technology. He has received his B.Tech. from School of Engineering Cusat (2004) and M.S. from State University of New York (2006). He received Ph.D. from Virginia Tech (2011) and was working in Intel Corporation in California for 4 years. He left his software architect role at Intel an academic career in 2015.

7. **Dr. Simi Zerine Sleeba**

   Received her PhD in VLSI System Design from CUSAT in 2018. She received her M.Tech in VLSI & Embedded Systems from Government Model Engineering College, Thrikkakara in 2010 and B.Tech in Electronics and Communication Engineering from Mar Athanasius College of Engineering, Kothamangalam in 1997. Presently, she is working as Associate Professor in the Department of Electronics and Communication Engineering, VJCET, Vazhakulam.

INAUGURAL FUNCTION

The Faculty Development Program on Computer Architecture and Data Communication was inaugurated on 17th December, 2018, 9.30 am by lighting the lamp. The chief guest of the ceremony was Dr. K.R. Suresh Nair, Chief Technology Officer, SFO Technologies, Kochi. Prof. Smitha Cyriac (HoD, ECE Dept.) welcomed the gathering. Rev. Msgr. Dr. Cherian Kanjirakombil, (Manager, VJCET), Rev. Dr. George Thanathuparambil, (Director, VJCET), Dr. Josephkunju Paul C. (Principal, VJCET, Prof. Jose P. Varghese (Former HoD, ECE Dept.) felicitated the function. The inaugural address was delivered by the chief guest. Dr. Simi Zerine Sleeba (Associate Professor, ECE Dept, & FDP Co ordinator) delivered the vote of thanks.

Valedictory Function

The valedictory function for the FDP was conducted on 21st December, 2018. Prof. Smitha Cyriac , HoD, ECE Department addressed the participants. Certificates were distributed to the the participants by Dr. Josephkunju Paul C., Principal , VJCET and the resource person of the day, Dr. Bijoy Antony Jose, Assistant Professor, CUSAT. Many of the internal and external faculty participants gave their valuable feedback about the program.

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www.vjcet.org

2.3International Workshop on Databases by CSED

SES-INTERNATIONAL WORKSHOP ON DATABASES

3-10 December, 2018

NBA Accredited

Organized by

SES
Senior Experten Service
DER WELT EXPERTEN DIENST

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
VAZHAKULAM, MUVATTUPUZHA
ERNAKULAM, KERALA 686 670
INDIA

Moulding Engineers Par Excellance With Integrity, Fairness and Human Values

Patron
Mar. George Madathikandathil,
Bishop of Kothamangalam
Manager
Rev. Msgr. Dr. Cherian Kanjirakompil
Director
Rev. Dr. George Thanathuparambil
Principal
Dr. Josephkunju Paul C.
Convenor
Mr. Amel Austine
Head, CSE Department
Organising Secretary
Mrs. Sindhu Jose, Assistant Professor, CSE Dept.
VJCET
Organising Committee Members
Dr Anishin Raj M.M, Associate Professor, CSE Dept.
VJCET
Mr. Jobin Jose, Assistant Professor, CSE Dept.
VJCET
Mrs. Arsha J.K, Assistant Professor, CSE Dept.
VJCET
SES EXPERT
Mr. Gau, Senior SES Expert

SES-INTERNATIONAL WORKSHOP ON DATABASES
3-10 December, 2018, R&D Lab
REGISTRATION FORM

Name: .....
Designation: .....
Institution: .....
Address for Communication: .....
.....
.....
.....PIN:.....
Phone No: .....
Mobile No: .....
Email: .....
I would like to participate in the workshop in the following category:
Academician/Industry delegate, Research Scholar, PG Students
Payment Details:
DD No: .....
Date: .....
Bank: .....
Amount: ..... Place: .....

Signature of Participant
CONTACT DETAILS
The Convenor,
SES-INTERNATIONAL WORKSHOP ON DATABASES
CSE Department
Viswajyothi College of Engineering & Technology, Vazhakulam, Ernakulam, Kerala 686 670 India.
Phone: 0485 - 2262211, 2262255, Fax. 0485 – 2262211.

ABOUT THE COLLEGE

Viswajyothi College of Engineering and Technology (VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education.

Established in the year 2001 as a self-financing Engineering College affiliated to Mahatma Gandhi University, Kottayam, Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trend setter in Engineering and Management Education. The college now offers six B.Tech Degree Programmes in ECE, CSE, IT, ME, EEE & CE; three M.Tech Programmes in highly specialised areas under the departments of ECE, CSE & ME and an MBA programme under the School of Management Studies. The Institute has been continuously striving for excellence in education and research with an introduction of Research and Development Centre in the campus.

The College is situated in a sprawling campus of 26 acres, nestled among lush greenery over a hillock on the side of State Highway No.8, about 5 kms from Muvattupuzha en-route to Thodupuzha, 40km from International Airport and Major Railway Stations Alwaye & Ernakulam.

DEPT. VISION

"Moulding socially responsible and professionally competent Computer Engineers to adapt to the dynamic technological landscape."

DEPT. MISSION

1. Foster the principles and practices of computer science to empower life-long learning and build careers in software and hardware development.

2. Impart value education to elevate students to be successful, ethical and effective problem-solvers to serve the needs of the industry, government, society and the scientific community.

3. Promote industry interaction to pursue new technologies in Computer Science and provide excellent infrastructure to engage faculty and students in scholarly research activities.

ABOUT SES

The SES is Germany's leading volunteering organisation for experts and executives who are either retired or taking some time off work

At present, the SES has access to the knowledge and experience of over 12,000 experts from all professional spheres. Since 1983, the SES has completed more than 45,000 voluntary expert assignments in over 160 countries, with approximately a third of the placements being in Germany.

The main beneficiaries of the SES network's expertise are small and medium-sized businesses, public authorities, professional and business associations, social and medical facilities, and institutions which provide basic education or vocational training. In Germany, there is a special focus on supporting the development of young people at school or in training.

All SES assignments follow the principle of helping people to help themselves. Their aim is to share knowledge and experience in order to improve other people's future prospects.

OBJECTIVES

1. To understand the latest trends and innovations in the area of NoSQL Databases for the development of Social Network/ Machine Learning related software development.
2. To enable the delegates to develope new applications for startups in the latest arena of computer science.

OUTCOMES

1. Interaction with international experts from industry
2. Participant will get an in depth knowledge into various topics of Databases.
3. They will understand the importance and practical difficulties of NoSQL databases when compared to relational databases.
4. They will have an opportunity to know the latest trends and innovations in this field.

ABOUT THE FACULTY DEVELOPMENT PROGRAM

OBJECTIVES

1. To understand the latest trends and innovations in the area of No SQL Databases for the development of Social Network/ Machine Learning related software development.
2. To enable the delegates to develop new applications for startups in the latest arena of computer science.

OUTCOMES

The Faculty will be able to develop a CASE study using No SQL Databases such as Neo4j, MongoDB, HBase etc.

MAINCOURSECONTENTS

- Features of No SQL Databases. Exposure to HBase, Cassandra, MongoDB and its features.
- Properties of NOSQL databases.Consistenthashing, Objectversioning, Hintedhandoff, Snapshots-Key-Value data-stores.
- Graphdatabases-Neo4j–, InstallationofNeo4J,Neo4JBrowserinterface,Examplegraphs, CypherQueries &Clauses.
- Development of sample applications using Neo4j and MongoDB.

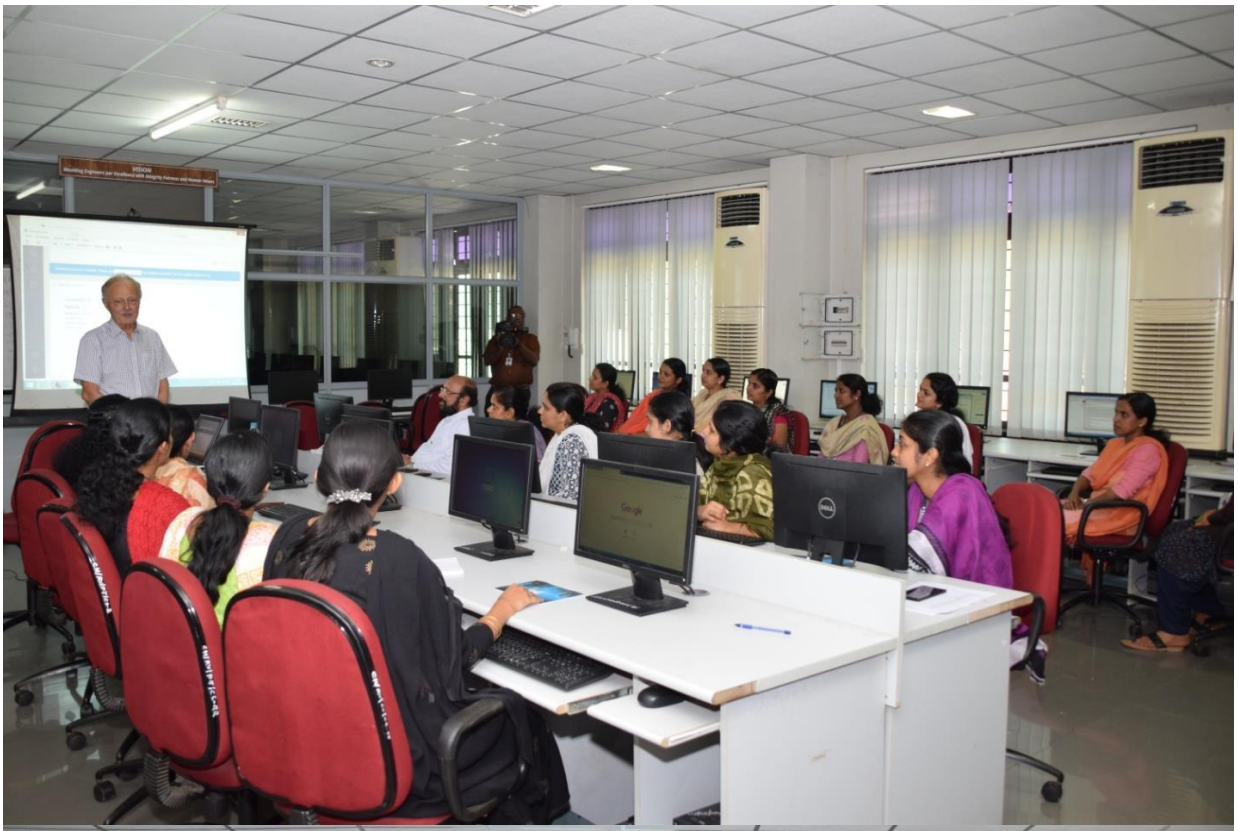
Participants:

Faculty members from CSE and IT, VJCET

Photos of the Event

Inauguration of SES event

Inaugural Talk by Mr.Gau, SES-Expert from Germany



2.4 Five-day Faculty Development Programme on

FRONTIERS OF COMPUTER APPLICATION

FIVE DAY FDP ON
Frontiers of Computer Applications

Main Course Contents

1) *Wavelet Transform using Matlab*
2) *Digital Image Processing and Pattern Recognition*
3) *Stegnography*
4) *Advanced Computer Architecture*
5) *Video Processing*
6) *Advanced Networking Concepts*

Programme Objectives

- *Obtain a deep insight into various aspects of machine learning, stegnography*
- *Equip faculty to have a exposure to the advanced computer architecture and video processing*
- *To have a hands on training on Wavelet transform*

Expected Outcomes

- *Differentiate various feature extraction techniques for supervised training*
- *Compare the complexities of various transforms*
- *Apply knowledge for developing a sample application using artificial intelligence*

5 DAY FDP
ON
Frontiers of Computer Applications
16th July –20th July 2018
Venue: R&D Seminar Hall

ORGANISED BY
Department of Computer Science
IN ASSOCIATION WITH
ISTE and R&D

Course Coordinators
1. Mrs. Sabitha Raju, Assistant Professor(CSE)
2. Dr. Anishin Raj M.M, Associate Professor(CSE)
3. Dr. K.N.Ramachandran Nair (HOD-CSE)

About The College

Viswajyothi College of Engineering and Technology (VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education. Established in the year 2001 as a self-financing Engineering College affiliated to Mahatma Gandhi University, Kottayam, Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trend setter in Engineering and Management Education. The college now offers six B.Tech Degree Programmes in ECE, CSE, IT, ME, EEE & CE, three M.Tech Programmes in highly specialized areas under the departments of ECE, CSE & ME and an MBA programme under the Department of Management Studies.CSE, CE, ECE and ME programmes are now accredited by NBA. The Institute has been continuously striving for excellence in education and research with an introduction of Research and Development Centre in the campus.

Vision

Moulding Engineers par excellence with integrity, fairness and human values

Mission

- We commit to develop the institution into a Centre of Excellence of International Standards.
- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

About CSE Department

Started in the year 2001, the department of Computer Science & Engineering offers both undergraduate (B. Tech.) and postgraduate (M. Tech.) programs. The CSE department runs under the invaluable guidance of the HOD, **Dr.K.N. Ramachandran Nair.** The annual intake of the B. Tech. program is 120 students and that of the M. Tech. is 24. The department provides its students an environment that stimulates their intellectual growth and personality development. Infrastructure facilities are excellent with well-equipped computer labs, classrooms and libraries. We also have high speed leased line Internet connection and online access to all IEEE journals. A team of well qualified faculty that keeps their knowledge up to date by attending conferences and workshops on a regular basis is a major asset of the department. Department of Computer Science is accredited by NBA.

Resource Persons:

1. *Dr.Reshmi.N G (Faculty, Muthoot Institute of Technology & Science)*
2. *Mr.Basil Thomas (Rubix Academy)*
3. *Dr.K.N Ramachandran Nair (HOD CSE,VJCET)*
4. *Dr.Anishin Raj M M (Faculty, VJCET)*
5. *Dr.Kavitharan.S (Faculty, VJCET)*
6. *Mr.Shibu K R (Faculty, VJCET)*
7. *Mr.Jobin Jose (Faculty, VJCET)*
8. *Mr.Basil Baby (Faculty, VJCET)*
9. *Mr.Dona Jose(Faculty, VJCET)*
10. *Mr.Andrews Jose (Faculty, VJCET)*
11. *Mr.Soman Kurian (Faculty, VJCET)*

For further details contact Course Co-coordinators

3. 2017 - 18

3.1 Seven day STTP on Fundamentals of Total Station by CED

Program Schedule

Welcome speech: **Dr. Anoop C K**
Associate professor, Civil Engineering Dept.
Resource person:
Mrs. Neena M Joseph, Mrs. Minu C Joy and Ms. Rosemary Xavier
Assistant professors, CED, VJCET
Vote of Thanks: **Ms. Minu C Joy**

Abstract

Surveying or land surveying is the science of making all essential measurements to determine the relative position of points or physical and cultural details. Experts in Surveying can become licensed surveyors and members of various building professions. A Total Station is an electronic-optical instrument used in modern surveying and construction. The one week training program is aimed at providing uniform, comprehensive and customized guide to the engineers in course of performing Survey works in the field by Total Station.

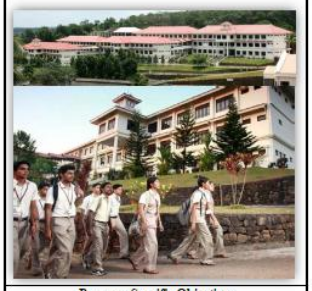
Objectives : *To*
>> Learn Total Station at basic level
>> Understand site survey procedures using total station
>> Learn various operations of Total Station
>> Construction Stakeout
>> Remote height calculation
>> Area and Volume calculation

Proposed Outcomes : *Candidates will be able*
>> To learn the basic concept of surveying.
>> To understand how total station works.
>> To learn how to operate and use total station.
>> To learn surveying using total station, techniques and real world applications.
>> To learn how to use related surveying software for data downloading and interpreting.
>> To generate outputs and present the results.

Program Educational Objectives

Our graduates :

1. Shall tackle the multiple responsibilities of analysis, design and construction of traditional and modern systems in compliance with various codes of practices and to meet the current technical challenges.
2. Shall be proficient in the use of relevant software packages for planning, designing, scheduling, executing and controlling of civil engineering projects, with an urge for life-long learning.
3. Shall function effectively with individual capabilities as well as with a collective strength as a professional team with good communication skills.



Program Specific Objectives

1. Ability to utilize civil engineering principles and software that are appropriate to solve technical problems; prepare design and construction documents ; create structural systems; produce drawings, reports and quantity estimates related to the Civil Engineering domain.
2. Ability to utilize modern surveying methods for land measurement and/or construction layout and to conduct standardized field /laboratory tests related to Civil Engineering.

"Moulding Engineers par Excellence with Integrity, Fairness and Human Values"

A Workshop on

Fundamentals of Total Station

by
Mrs. Neena M Joseph, Mrs. Minu C Joy and Ms. Rosemary Xavier

Venue : Civil Workshop
Date : 27 - June - 2018
Time : 09:30 A. M.
Organized by

Civil Engineering Association, VJCET

In association with

Industry Institute Interaction Cell, VJCET
Hosted by

DEPARTMENT OF CIVIL ENGINEERING

VISWAJYOTHI COLLEGE OF ENGINEERING & TECHNOLOGY
Vazhakulam, Muvattupuzha
Ernakulam, Kerala—686 670

About The College

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About the Department

The Department of Civil Engineering has been in existence since the inception of VJCET in 2001 and has emerged into a full-fledged department with the commencement of Civil Engineering branch in 2010. It is trailblazed by highly competent, dedicated, well qualified and experienced faculty who are determined to instill in their students the right amount of confidence, knowledge and ethics to build our world.
Over the years, the Department has grown many times in different spheres of activities. At present, the Department offers an undergraduate program in Civil Engineering leading to the BTech degree. The Department has well-equipped laboratories with facilities more than those prescribed in the course syllabus. The Civil Engineering Department is continuing the process of building strong links with the building and construction industry. Besides high quality teaching and instruction at undergraduate level, the department offers technical advisory support to various Governmental & Private organizations by way of consultancy services, material testing facilities and quality analysis for potable water. The department works to generate civil engineers who can muddle through the tedious and highly professional requirements of the engineering era.

Invitation

Respected Sir/ Madam,

The Civil Engineering Association, VJCET together with Industry Institute Interaction Cell, VJCET & Department of Civil Engineering invites you to 'A Workshop on'

Fundamentals of Total Station

by
Mrs. Neena M Joseph, Mrs. Minu C Joy and Ms. Rosemary Xavier

Venue : Civil Workshop
Date : 27 - June - 2018
Time : 09:30 A. M.

HOD, CED

About the Resource Person

Assistant professors in Civil Engineering Department, VJCET.

Department Vision & Mission

VISION

"Building Professionally Competent and Motivated Engineers in the Arena of Civil Engineering with High Professional Ethics."

MISSION

• To promote a better teaching learning process through academically proficient faculties, full fledged laboratories and excellent infrastructure facilities.
• To equip the graduates with knowledge, research and practical skills in modern construction practices and techniques.
• To inculcate knowledge of sustainability in various domains of Civil Engineering.
• To nurture Civil Engineers into ethically strong and responsible leaders to address global challenges through quality education

Relevant PO'S

PO 1 : Engineering Knowledge
PO 3 : Design/development of solutions
PO 5 : Modern tool usage
PO 6 : The engineer and society
PO 7 : Environment and sustainability
PO 8 : Ethics
PO 9 : Individual and team work
PO 11 : Project management and finance
PO 12 : Life-long learning □

Relevant PSO'S

PSO 1 : Ability to utilize civil engineering principles and software that are appropriate to solve technical problems; prepare design and construction documents ; create structural systems; produce drawings, reports and quantity estimates related to the Civil Engineering domain.
PSO 2 : Ability to utilize modern surveying methods for land measurement and/or construction layout and to conduct standardized field /laboratory tests related to Civil Engineering.

Contact us @

Head of the Department / Program Coordinator
Ms. Shine George
shinebgeorge@gmail.com
Faculty Coordinators
Ms. Neena M Joseph
neenamariya@yahoo.co.in
Mrs. Minu c joy
minum2@yahoo.co.in
Ms. Rosemary Xavier
rasemaryx@vjcet.org


SHORT TERM TRAINING PROGRAM
ON
FUNDAMENTALS OF TOTAL STATION SURVEYING
Organised By
DEPARTMENT OF CIVIL ENGINEERING
27th June to 4th July
Viswajyothi College of Engineering & Technology, Vazhakulam
Department of Civil Engineeering


SHORT TERM TRAINING PROGRAM
ON
FUNDAMENTALS OF TOTAL STATION SURVEYING
DEPARTMENT OF CIVIL ENGINEERING
Viswajyothi College of Engineering & Technology, Vazhakulam
Department of Civil Engineeering

3.2 Six-day Faculty Development Programme on

Advancements in Electrical machines and Industrial Instrumentation by EEED

Who can apply
The course is open to faculties from Engineering college / Poly Technique institutions and Professionals from industry.

How to Register
Please scan the QR code or enter the URL to register via Google form on or before 20th June 2018.

For Registration, Please scan QR or follow the link

https://tinyurl.com/fdp-vjc-2018

Once registered, you will receive a confirmation mail containing filled application form. Kindly take a printout of the same duly signed by the head of institution and should be handed over to the coordinators while attending FDP.

If not registered online, kindly fill out the registration form in the given format and mail to kkrajan@vjcet.org on or before 20th June 2018.

The registration fee of the programme is Rs.1000/- which can be paid at the registration desk on 25th June 2018.

For further details contact:

Dr. K. K Rajan
Ph# 9072964417
Email: kkrajan@vjcet.org

Mrs. Seethamma George
Ph# 9447612874
Email: seethamma@vjcet.org

Advisory Committee

Mar. George Madathikandathil, Patron
Msgr. Dr. CherianKanjirakombil, Manager
Rev. Dr. George Thanathuparambil, Director
Dr. Cyriac Thomas, Former V.C., MG University
Rev. Fr. Paul Nedumpurath, Secretary of the Trust
Dr. Josephkunju Paul C, Principal
Dr.Vijayakumar, Chairman, ISTE Kerala Section
Shri. M. K. Kuriakose, Secretary, ISTE Kerala Section

Organizing Committee

Dr. B Aruna, H.O.D, EEE Dept.
Dr. K K Rajan, Professor, EEE Dept
Prof. Paul Antony, Professor, EEE Dept..
Mrs. Seethamma George, Asst. Professor, EEE Dept.

Resource Persons

Shri.Col.Shaji M Varghese, Managing Director, KEL
Er. Mohan George, Assistant Executive Engineer, KSEB
Er. Rakesh K P, Project Manager, IPCS Automation
Er. Vishnu Rajan, Academic Head, IPCS Automation
Er. Manu John, Empower Engineers, Thodupuzha
Er. Akhileshkumar.C, MTTC, Ernakulam
Dr. B Aruna, HOD, EEE Dept, VJCET
Dr. K K Rajan, Professor, EEE Dept, Dean IIIC, VJCET
Dr. Anishin Raj M, Associate Professor, CSE Dept, VJCET
Dr. Sony Kurian, Associate Professor, EEE Dept, VJCET

The Programme will be inaugurated by

Shri. Col. Shaji M Varghese

Managing Director,
Kerala Electrical and Allied Engg. Co. Ltd (KEL)

ISTE
FACULTY DEVELOPMENT PROGRAMME
On

Advancement in Electrical Machines and Industrial Automation

25th – 30th June 2018

Organized by

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Viswajyothi College of Engineering and Technology
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala – 686670
Website: http://www.vjcet.org

Viswajyothi College of Engineering and Technology, Vazhakulam

VJCET is established in the year 2001by the Technical Education Trust of the Catholic Diocese of Kothamangalam, with the approval of AICTE and affiliated to Mahatma Gandhi University. VJCET focuses its activities with a vision of moulding engineers par excellence with integrity, fairness and human values. The college is situated at Vazhakulam, the City of Pineapples, and 7kms from Muvattupuzha.
The college offers 6 B.Tech (CE, CS, EC, IT, ME & EEE), 3 M.Tech and MBA programs. The college has excellent infrastructure with fully equipped laboratories, hostels, etc. VJCET had produced a number of rank holders and have excellent placement record. Within 17 years after its inception, the college has grown as a front-runner among the new generation Engineering Colleges of Kerala and is the preferred destination for technical education.

Institute Vision
Moulding engineers par excellence with integrity fairness and human values

Institute Mission
- We commit to develop the institution as a Center of Excellence of International Standards.
- We guide our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help each and every student in their personal growth into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, thus empowering them to serve the humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

Department of Electrical and Electronics Engineering
The department offer excellent infrastructure with fully equipped laboratories for an intake of 90 students. The highly qualified faculty helps students to score excellent results. The department strongly emphasizes on developing the quality of faculty and students through several value added programmes.
Department Vision
Mould globally competent electrical and electronics engineers.

Department Mission
- To provide the best academic ambiance.
- To develop technical and soft skills to cope up with the emerging global scenario.
- To enhance knowledge by industry and alumni interaction.

Faculty Development Programme
Electrical and Electronics Department of Viswajyothi College of Engineering and Technology is conducting a Faculty Development Programme on the topic Advancements in Electrical Machines and Industrial Automation. Major advancements are taking place in the area of Electrical Machine's design, manufacturing, control, installation and quality control.

These advancements are mainly aimed to achieve higher overall efficiency and lower production cost. Industrial activities are being automated all over the world. Suitable machines, reliable sensors , robust Instrumentation and Control System are the basic needs for successful Industrial Automation. Industrial automation is the use of control systems, such as computers or robots, and information technologies for handling different processes and machinery in an industry to replace a human being. It is the second step beyond mechanization in the scope of industrialization.

The syllabus of Kerala Technological University is covering these topics. Hence it is appropriate to have the Faculty Development Programme on the topic Advancements in Electrical Machines and Industrial Automation.

Objective of the Programme
To provide awareness on advancements in Electrical machines technology, electrical installation and recent trends in automation sector.

Programme highlights
The programme would cover technical sessions on the following topics:

- Manufacturing & Quality control of Electrical Machines
- Switch Gear & Protection
- Electrical Installation in Industries
- Introduction to PLC and SCADA
- PLC & VFD Programming session
- Sensor & control elements for automation
- Automation in engineering & energy sector
- Robust control of PM Synchronous Motor
- Installation, Commissioning, Operation & maintenance of Electrical Machines

Programme outcome
The participants will be able to develop an clear cut understanding of Electrical Installations, Erection of Substations, Switch Gear &Protective devices. Participant will be capable of programming PLC and VFD drives for real life applications.

ISTE
FACULTY DEVELOPMENT PROGRAMME

Registration Form

Name: .....
Designation: .....
Institution: .....
Educational Qualification with Specialization: .....
.....
Teaching Experience: .....
Whether ISTE Member.....
If Yes, ISTE Membership No.....
Mobile No: .....
E-mail ID:.....

Declaration
I, hereby declare that the details furnished above are true to the best of my knowledge and belief and agree to abide by the rules and regulations governing the conduct of ISTE-AICTE approved programmes.

Name and Signature of Applicant

Sponsorship Certificate
Certified that Sri/Smt._____
is working as_____at_____
_____
_____in_____Department
.
If selected he/she will be permitted to attend the self-financing ISTE STTP on "Advancement in Electrical Machines and Industrial Automation".

Place
Date:

Head of the Institution
(Office Seal)

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

REPORT ON

ISTE and AICTE Certified

FACULTY DEVELOPMENT PROGRAMME

On

Advancement in Electrical Machines and Industrial Automation

25 th – 30 th June 2018

Organised by

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Viswajyothi College of Engineering and Technology
Vazhakulam P.O. Muvattupuzha, Ernakulam Dist.,
Kerala - 686670

Website: http://www.vjcet.org, e-mail: vjcet@vjcet.org

ISTE and AICTE Certified

FACULTY DEVELOPMENT PROGRAMME
On

Advancement in Electrical Machines and Industrial Automation

Advisory committee

Mar. George Madathikandathil*, Patron*

Msgr. Dr. Cherian Kanjirakombil*, Manager*

Rev. Dr. George Thanathuparambil*, Director*

Dr. Cyriac Thomas,*Former V.C., MG University*

Rev. Fr. Paul Nedumpurath*, Secretary of the Trust*

Dr. Josephkunju Paul C*, Principal*

Dr.Vijayakumar*, Chairman, ISTE Kerala Section*

Shri. M. K. Kuriakose*,Secretary, ISTE KeralaSection*

Organizing Committee

Prof.Dr.B Aruna, H.O.D, *EEE Dept.*

Dr. K KRajan,*Professor, EEE Dept.*

Prof. Paul Antony*, Professor, EEE Dept.*

Mrs. Seethamma George, *Asst. Professor, EEE Dept.*

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY

Viswajyothi College ofEngineering and Technology (VJCET) established in the year 2001, is affiliated to M.G.University and APJ Abdul KalamTechnological University and has earned the reputation as a trend setter in Engineering Education. Presently Viswajyothi College of Engineering and Technology offers six B.Tech Engineering Degree courses and four Post GraduateCourses. The building complex of the College is situated in a sprawling campus of 26 acres,nestled among lush greenery over a hillock on the side of the Ernakulam, Thodupuzha State Highway, in central Kerala.

Our Vision

Moulding Engineers par excellence with integrity, fairness and human values

Our Mission

We commit to develop the institution into a Centre of Excellence of International Standards

- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students,empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

The Department of Electrical and Electronics Engineering of VJCET was established in the year 2004, with eminent and well qualified faculty and excellent infrastructure. The department is recognized for excellence in teaching and service to the professionandoffers undergraduate programme with an intake of 120 students. In a very short span the department emerged with four university ranks. The academic strength of the faculty

is reflected by the alumni, many of whom are in the top echelons of industry and academician both in India and abroad.

Vision of the Department

Mould globally competent Electrical and Electronics Engineers

Mission of the Department

- To provide the best academic ambiance.
- To develop technical and soft skills to cope up with the emerging global scenario.
- To enhance knowledge by industry and alumni interaction.

Program Educational Objectives (PEO)

- Graduate shall have the foundation in mathematical, analytical and scientific skills to design technically and economically viable engineering solutions.
- Graduate shall have the culture and attitude of team work, to help in upbringing socially committed Entrepreneurs engaged in lifelong learning.
- Graduate shall have professional communication skills, social values and work ethics.

Program Specific Outcome (PSO)

- Ability to apply fundamentals of Engineering in analyzing multidisplinary issues, developing solutions with professionals and ethical responsibilities, and promoting conventional and unconventional methods for higher research.
- Ability to apply Electrical Engineering knowledge to perform Circuit Analysis, troubleshoot Electrical machines and optimize Power Systems designs by incorporating analog and digital controls.

Principal's Message

An educated, employable generation is the crux for any developing nation. Technical education focuses on a broad-spectrum of educational experience by creating expertise in technical and personality skills. The department of EEE with its sophisticated equipments and well developed infrastructure combined with a team of competent and dedicated faculty ensure a delightful and enriching learning experience. I am very happy to note that department EEE of Viswajyothi College of Engineering and Technology is organizing a ISTE and AICTE certified Faculty development programme on the topic "Advancement in Electrical Machines and Industrial Automation" from 25th– 30th June 2018.

Faculty development programme aims at enriching and enhancing the spirit and passion of teaching professionals by refining or updating their knowledge in accordance with the industrial and societal needs. I wish this faculty development programme would help in formulating new perspectives in technical education by enlighting the dear participants with new convictions and crafts of teaching.

Dr. Josephkunju Paul C

HOD's Message

Over the past years, Electrical & Electronics Engineering Department has succeeded in moulding globally competent Electrical and Electronics Engineers. It's with immense pleasure and pride EEE department is hosting a faculty development programme on "Advancement in Electrical Machines and Industrial Automation". Faculty development programmes are a requisite for enhancing the academic and intellectual environment in the institution by stipulating faculty members with ample opportunities to pursue research and to participate in seminars, conferences and workshops which in turn will enable them to update their research and pedagogical skills.

Industrial Automation is increasing in prominence in the current International scenario. The growing demand of automation in all sectors of Industry and advancements needed in electrical machines to meet the challenges is a point of discussion among technologists worldwide. At this juncture course regarding the importance and advancements in electrical machines and industrial automation is crucial for an electrical engineer so as to ensure themselves that they are exposed to the most modern trends and developments in field of Industrial Automation.

As the head of the department, I wish the faculty development programme all success. I sincerely hope the programme will facilitate the delegates to sharpen their knowledge and teaching skills.

Dr. B. Aruna

Resource Persons

Shri Col. Shaji Varghese, Managing Director, KEL

Col.Shaji M Varghese (Retd), Managing Director of KEL is a Graduate in Mechanical Engineering from Kerala University in the year 1987. He joined corps of EME (Army) as an Officer in 1988. During his illustrious service in corps of EME, he has done Post Graduation equivalent course in Tank Technology from Military College of EME, Secunderabad and advance Weapon Technology course from Institute of Armament Technology, Pune. He has also done Senior Command course from Army war College, Mhow, Madhya Pradesh. He did his Masters in Public Personnel Management from Osmania University, Hyderabad. In the Army he had the distinction of serving as Commandant & MD of Army base workshop &Colonel Administration of Military College of EME, a training centre giving training in basic skilled development to Corps. Officer associated with Missile Programs like 'Prithvi', 'Akash' and 'Nag' during his tenure with DRDO Hyderabad and 'Pinaka' weapon system in ARDE, Pashan, Pune. He has also served with vehicles (R&D) Lab, VRDE, Ahmednagar where he has closely associated with design and development of Prime movers for 'AGNI' ground system. He has been awarded with the Best Scientist of the year award during 2015. The officer after 28 years of service had taken voluntary retirement from Army and assumed charge of Managing Director of KEL on 9th Nov 2016.

Er. Mohan George, Assistant Executive Engineer, Relay Sub Division Pallom

Shri Mohan George is B.E. in Electrical and Electronics from University of Mysore and MTech in Instrumentation and Control from University of Calicut. He joined KSEB as Assistant Engineer in May 1998. Initially he was responsible for construction of 220 KV Switching Station TC Sub Division, Poovanthuruthu. He was promoted Assistant Exe. Engineer in December 2008 and has gained experience in Testing, Commissioning & Trouble shooting of Relays, Maintenance of Transformers, Switchgears and Maintenance of Generators. Currently he is working in Relay Sub Division, Pallom and is involved in Testing, Commissioning & Trouble shooting of Relays used for power system protection. He is also a regular faculty at Power Engineers Training and Research Centre, KSEB,

Moolamattom and Regional Power Training Institute, KSEB, Pallom in topics such as Relays, Switchgear, and Transformer etc.

Er. Rakesh K P, Trainer, IPCS Automation

Shri Rakesh K P is a Graduate Electronics and Communication Engineer. He has more than 4 years experience in the field of Programmable Logic Controllers and Industrial Automation. He has executed many automation projects successfully in industry. He is very familiar with PLCs supplied by all reputed manufacturers and its programming. He is very good in implementation of automation on any specific application. He is working with IPCS for last 4 years. He is a trainer and a field engineer in Industrial automation projects.

Er. Vishnu Rajan, Trainer, IPCS Automation

Er. Vishnu Rajan is an Electrical and Electronic Engineering graduate. He has more than 6 years' experience in Industrial Automation. He has appreciable knowledge and experience in rotating Electrical Machines, Variable Frequency Drives, and sensors and devices used industrial automation. He has played a key role in many industrial automation projects executed by IPCS in India and Abroad. He has mastered in the technology of application of VFDs to meet specific requirement of industry. He is working with IPCS for last 4 years. He is a trainer and a field engineer of Industrial Automation Projects.

Er. Akhileshkumar.C, MTTC, Ernakulum

Er. Akhileshkumar C is a Graduate Electrical and Electronics Engineer from Mahatma Gandhi University. He is the Managing Director of the company MTTC. He has more than 10 years experience in the field of training electrical engineers for different types of Electrical engineering jobs in Industry. He has shown keen interest in Industrial automation and artificial intelligence**.** He is a certified A grade Electrical Supervisor of Government of Kerala. He is a member of ISHRAE from January 2018.

Er. Manu John, Empower Engineers, Thodupuzha

Er Manu John is a Graduate Electrical and Electronics Engineer from Mahatma Gandhi University. He has more than five years experience in LT and HT power distribution and

control. He is the founder and CEO of Empower Engineers Thodupuzha. He has executed many LT and HT power distribution projects successfully. His area of interest includes Industrial automation and development of reliable machinery and power distribution system components towards this.

Dr. B Aruna, HOD, EEE Dept., VJCET

B. Aruna graduated in Electrical Engineering from the Government Engineering College, Trichur, Kerala, India. . She obtained her post graduate degree in Power Systems from the Regional Engineering College, Trichy, Tamil Nadu, India and received her PhD from Hindustan University, Chennai, India. She has served Hindustan University, Chennai for 23 years. Currently, she is Professor and HOD in the Department of Electrical and Electronics Engineering of Viswajyothi College of Engineering and Technology, Kerala, India. She has published papers in international and national conference proceedings and journals. Her research interest is in advanced control of machines and Power Systems. She is the Co-investigator of the BRNS-IPR sponsored collaborative project "Development of Level Sensor for Lead-Lithium Loop System" is being carried out at Viswajyothi College of Engineering and Technology.

Dr. K K Rajan, Professor, EEE Dept, VJCET

Dr K.K .Rajan completed BSc (Engg.) degree with 1st Class honors in 1980 from NIT, Calicut and joined BARC training school in the same year. After successful completion of the training he was posted in IGCAR, Kalpakkam in 1981. He was Distinguished Scientist and Director of Fast Reactor Technology Group in IGCAR at the time of his retirement on April 30, 2016. Currently he is working as Prof. EEE and Dean Industrial Institute interaction cell at VJCET. He has made significant contributions for the development of Fast reactor technology in the country and represented India in many international meetings. He is a member of Indian Nuclear Society, Instrument Society of India and a fellow of Institution of Engineers (India). He has more than 140 publications in national and international journals.

Dr.Anishin Raj M, Associate Professor, CSE Dept., VJCET

Dr.Anishin Raj M.is a graduate in Computer Science and Engineering from Cochin University of Science and Technology (CUSAT). His post-graduation is from Amrita University and field of specialization was Computer Vision and Image Processing. He has also acquired MBA degree from Bharathiar University on Information Systems. He took his Ph.D., with Specialization in Image Processing, from SASTRA University, Thanjavur in the year 2014. He has more than eight years of teaching experience and more than one year Industrial experience in Tata Consultancy Services (TCS). He is chartered Engineer of Institution of Engineers (India), Life Time member of Indian society for Non-Destructive Testing ISNT, life fellow of SAEST and Life Member of ISTE. He has 15 numbers of publications in international journals and IEEE Conferences of which two articles are indexed in Thomson Reuters- Science Citation Indexed and 12 articles are indexed in SCOPUS database. He is Assistant Head of Department CSE at Viswajyothi College of Engineering and Technology VJCET and Dean R & D. He is a recognized Ph.D.research supervisor of KTU.

Dr. Sony Kurian, Associate Professor, EEE Dept, VJCET

Dr. Sony Kurian received his B.Tech and M.Tech degrees in Electrical and Electronics Engineering in the years 2002 and 2005 respectively. He received doctoral degree from National Institute of Technology, Calicut, India in 2017. His research interests are in Power Electronics application in power system and renewable energy integration to power system. He is working as Associate Professor in EEE department of Viswajyothi College of Engineering and Technology. He has more than 10 years of teaching experience. He has published many papers in National and international journal. He closely follows up the recent developments in Electrical and Electronics Engineering and acquired adequate knowledge in advancements in Electrical machines and Industrial automation.

Participants

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
ISTE - FACULTY DEVELOPMENT PROGRAMME
On
Advancement in Electrical Machines and Industrial Automation
25-30th June 2018
Organised by: EEE Department, VJCET

Sl.No	Name	College
1	Rajeevan A.K	Model Engineering college, Ernakulam
2	Sajini Susan Mathai	ICET, Mulavoor
3	DhivyaHaridas	ICET, Mulavoor
4	Neetha John	ICET, Mulavoor
5	Nithin S Nair	SNGCE, Kadayirippu
6	Anitha P	ASIET, Kalady
7	Vibin Thomas	ASIET, Kalady
8	Indhu K.K	CE, Munnar
9	Shahimol Basheer	CE, Munnar
10	K. K. Rajan	VJCET ,Vazhakulam
11	B. Aruna	VJCET ,Vazhakulam
12	Sony Kurian	VJCET ,Vazhakulam
13	Cini K.	VJCET ,Vazhakulam
14	Seethamma George	VJCET ,Vazhakulam
15	Smitha Jacob	VJCET ,Vazhakulam
16	Mereya Baby	VJCET ,Vazhakulam
17	Dileep Kumar P	VJCET ,Vazhakulam
18	Babu T. Chacko	VJCET ,Vazhakulam
19	Sharone Varghese	VJCET ,Vazhakulam
20	Jis Jose	VJCET ,Vazhakulam
21	NeenaSkaria	VJCET ,Vazhakulam
22	BreezaPoulose	VJCET ,Vazhakulam
23	Jane Maria S.	VJCET ,Vazhakulam
24	Jomu M. George	VJCET ,Vazhakulam
25	Neena Alex	VJCET ,Vazhakulam
26	Seena Paul	VJCET ,Vazhakulam
27	Sonia Sunny	VJCET ,Vazhakulam
28	Aryasree. G	VJCET ,Vazhakulam
29	SteffyTreasa Loui	VJCET ,Vazhakulam
30	Jibil Joseph	VJCET ,Vazhakulam
31	AkhilVenugopal	VJCET ,Vazhakulam

Inaugural Function

The inauguration of ISTE and AICTE certified faculty development programme 2018 on the Advancement in Electrical Machines and Industrial Automation was held on 25th June 2018 at the seminar hall of Research & Development block. The ceremony started with an invocation to God Almighty.

Prof. B Aruna, Head of Electrical &Electronics department, formally welcomed all the dignitaries present and participants from various colleges and colleagues. She pointed out that this course will be a beneficial addition to all faculty members in their career.

Our beloved principal, Dr. Josephkunju Paul C has made the presidential address. He appreciated the idea of organizing a Faculty development programme on a very relevant topic and mentioned that it will be part of effective and intellectual learning process of faculties towards the socio-economic issues with an engineering perspective. He appreciated the department of EEE for organizing such a programme with emphasis on the most crucial field of Engineering and Technology.

It is followed by the formal inauguration of the function by the eminent guest of the day, Shri.Col.ShajiM Varghese, Managing Director, KEL.He made an excellent talk that invoked the minds of listeners with new ideas and the need for advancements in technologies in the field of Industrial automation.

Prof. Paul Antony felicitated the gathering. He stressed the need for Periodic Enrichment of knowledge of faculty members is the one important factor for the success of technical education. He wished the programme all the success and thanked all the delegates for considering this as an opportunity to bring forth themselves onto a learning platform.

Prof. K. K. Rajan, EEE Department & Dean of Industry Institute Interaction Cell and co-coordinator of FDP has proposed the vote of thanks. "Advancements in Electrical Machines and Industrial Automation" is a very appropriate topic on today's international scenario. The entire world is moving towards automation. Human beings in industry are going to be replaced by robots. Artificial intelligence is going tobe a reality. The technology for Industry 4.0, the fourth industrial revolution, is the one which we hear from Industrial experts all over the world. He mentioned that EEE Dept. of VJCET is fortunate and lucky to have person like Col.Shaji. M Varghese as the chief guest to inaugurate this programme. He is a person with vast experience who is leading most important Electric Industry in Kerala.

We had a very good mix of speakers from industry, research and academic field. This exposure will help the faculty members to train the students and provide them quality education in this area. He thanked all the dignitaries, speakers, delegates, and organizing committee members for their gracious presence,support, motivation and participation.

Invited Talks

There were ten invited talks in the programme.

Technical Session: 1

Topic: "Recent Trends in Design and Manufacturing of Electrical Machines."

Resource Person:
Shri.Col.Shaji Varghese, Managing Director, KEL

In his talk he explained in detail about the various activities taking place in Kerala Electrical & Allied Engineering Co.Ltd. Established in 1964 in the State of Kerala, India, the Kerala Electrical & Allied Engineering Co.Ltd. (KEL) is a multifaceted company fully owned by the State government. The various units of the company are,

- **Transformer Division @ Mamala Unit**
- **Structural Engineering Division @ Mamala Unit.**
- **Train Lighting Alternator Division @ Kundara Unit.**
- **LT Switchgear Division @ Olavakkod Unit.**
- **Cast Resin Transformer Division @ Edarikode Unit.**

Through its four production facilities, located in various districts of the State, this ISO 9001: 2000 complaint company provides basic engineering services / products besides executing projects of national significance for high profile clients like the various defense establishments. The company manufactures and markets products like general purpose brushless alternators, brushless alternators for lighting and air-conditioning of rail coaches, medium power and distribution transformers as well as structural steel fabrications. The product categories for defense applications include high frequency alternators, frequency convertors, special alternators and power packs for missile projects. The power packs designed and supplied by the company for missile projects like Falcon, Prithvi, Trishul and Akash have been pioneering efforts. The company has also supplied special alternators to the Army (Military Power Cars) and Air Force (Radar Applications).

The company's all-India marketing network with regional offices in all metro cities cater to major institutional clients like the State Electricity Boards, Indian Railways and various defence establishments besides the general market clients.

Technical Session: 2

Topic: " Selection and Installation of Switch Gears and Protective Devices in Machines and Power system."

Er. Mohan George, Asst. Exe. Engineer, KSEB, Relay Sub-division, Pallom

The summary of the presentation made by Er. Mohan George on the above topic is given below.

In an electric power system, switchgear is the combination of electrical disconnects (switches, fuses or circuit breakers) used to control, protect and isolate electrical equipment. Switchgear is used both to de-energize equipment to allow work to be done and to clear faults downstream. This type of equipment is directly linked to the reliability of the electric supply.

The earlier central power stations used simple open knife switches, mounted on insulating panels of marble or asbestos. Power levels and voltages rapidly escalated, making opening manually operated switches too dangerous for anything other than isolation of a de-energized circuit. Oil-filled equipment allowed arc energy to be contained and safely controlled. By the early 20th century, a switchgear line-up would be a metal-enclosed structure with electrically operated switching elements, using oil circuit breakers. Today, oil-filled equipment has largely been replaced by air-blast, vacuum, or SF_6 equipment, allowing large currents and power levels to be safely controlled by automatic equipment.

High-voltage switchgear was invented at the end of the 19th century for operating motors and other electric machines. The technology has been improved over time and can now be used with voltages up to 1,100 kV. Typically, switchgear in substations are located on both high- and low-voltage sides of large power transformers. The switchgear on the low-voltage side of the transformers may be located in a building, with medium-voltage circuit breakers for distribution circuits, along with metering, control, and protection equipment. For industrial applications, a transformer and switchgear line-up may be combined in one housing, called substation.

Switchgear has 2 types of components:

- Power conducting components, such as switches, circuit breakers, fuses, and lightening arrestors, that conduct or interrupt the flow of electrical power.
- Control systems such as control panels, current transformers, potential transformers, protective relays, and associated circuitry, that monitor, control, and protect the power conducting components.

One of the basic functions of switchgear is protection, which is interruption of short-circuit and overload fault currents while maintaining service to unaffected circuits. Switchgear also

provides isolation of circuits from power supplies. Switchgear is also used to enhance system availability by allowing more than one source to feed a load.

Switchgear for lower voltages may be entirely enclosed within a building. For higher voltages (over about 66 kV), switchgear is typically mounted outdoors and insulated by air, although this requires a large amount of space. Gas-insulated switchgear saves space compared with air-insulated equipment, although the equipment cost is higher. Oil insulated switchgear presents an oil spill hazard. Switches may be manually operated or have motor drives to allow for remote control. Switchgear may be a simple open-air isolator switch or it may be insulated by some other substance. An effective although more costly form of switchgear is the gas-insulated switchgear (GIS), where the conductors and contacts are insulated by pressurized sulphur hexafluoride gas (SF_6). Other common types are oil or vacuum insulated switchgear.

The combination of equipment within the switchgear enclosure allows them to interrupt fault currents of thousands of amps. A circuit breaker (within a switchgear enclosure) is the primary component that interrupts fault currents. The quenching of the arc when the circuit breaker pulls apart the contacts (disconnects the circuit) requires careful design. Circuit breakers and fuses disconnect when current exceeds a predetermined safe level. However they cannot sense other critical faults, such as unbalanced currents for example, when a transformer winding contacts ground. By themselves, circuit breakers and fuses cannot distinguish between short circuits and high levels of electrical demand. Merz-Price circulating current scheme also known as differential protection depends upon Kirchhoff's current law, which states that the sum of currents entering or leaving a circuit node must equal zero. Using this principle to implement differential protection, any section of a conductive path may be considered a node. The conductive path could be a transmission line, a winding of a transformer, a winding in a motor, or a winding in the stator of an alternator. This form of protection works best when both ends of the conductive path are physically close to each other. Two identical current transformers are used for each winding of a transformer, stator, or other device. The current transformers are placed around opposite ends of a winding. The current through both ends should be identical. A protective relay detects any imbalance in currents, and trips circuit breakers to isolate the device. In the

case of a transformer, the circuit breakers on both the primary and secondary would open. A short circuit at the end of a long transmission line appears similar to a normal load, because the impedance of the transmission line limits the fault current. A distance relay detects a fault by comparing the voltage and current on the transmission line. A large current along with a voltage drop indicates a fault. Shri Mohan George explained the switch gear and protection system followed in KSEB with specific examples. He answered many questions from faculty members and cleared their doubts on implementation of switch gear and protection system

Technical Session 3 to Technical Session 8 were handled by **Engineers from Ingenious Power & Control Systems Pvt. Ltd (IPCS) Cochin. Shri Rakesh K P and Shri Vishnu Rajan**.

IPCS (Ingenious Power & Control Systems Pvt. Ltd.) having registered office in Cochin and branches in Calicut, Trivandrum, Coimbatore, Chennai, Qatar, Dubai, Saudi Arabia are providing intelligent solutions to industries and giving corporate training on modern automation systems. IPCS conducting various talks for corporate companies and professionals in area of SCADA, PLC, DCS, Process control, HMI, Panel designing, embedded systems and drives. IPCS is following ISO 9001:2008 norms of TUV Germany. IPCS Courses are accredited by International Accreditation Organization (IAO), USA, Supreme Education Council, Qatar, BSS - promoted by Government of India, Scientific and Technical Education Council (STED Council). Their placement wing is conducting interviews for various automation companies in India and abroad.

Technical Session 3: Introduction to Automation & PLC

This topic was covered in the following sequence

- Role of engineers in automation field
- Job opportunities for electrical engineers in automation field
- Different methods for implementing automation
- Automation system design – different components
- Sinking and sourcing concept for discrete sensors
- Role of PLCs in electrical controls
- Architecture of PLCs – Different modules
- Up gradation of relay logic systems to PLC
- Different series of PLCs – Low end, medium and high end
- Digital inputs and analog inputs
- PLC CPU scan time
- Wiring of modules – sinking and sourcing
- Analog addressing
- Data file handling
- Forcing of I/O
- Interfacing of field instruments
- Ladder diagram implementation
- Ladder implementation for D.O.L starter, Star delta starter, transformer protection, generator automation.

Technical Session 4: Different methods for implementing Automation

With practical examples different implementation of automation in industry was explained in this session. The PLC programming by ladder diagram was also demonstrated with live examples.

Technical Session 5: Introduction to Motors and VFD

The following topics are covered in this session

- Motor drives- AC drives and DC drives.
- Basic terminology associated with motors and variable speed drives.
- Type of Motors, Construction and Their Operating Principle.
- Basic Principle of Starters and Variable Speed Drives.
- Methods of Starting Of Motors.
- Drives.
- Main Functions of Starters and Variable Speed Drives.
- Different Types of Drives- Variable Frequency and Variable Voltage.
- Different Control Modes of VFDs.
- Discrete and Continuous Control Schemes.

Technical Session 6: Different modes of VFD control

- Effect of Long Distance Cables on VFDs
- Different Types Of Braking
- Selection of VFDs Based on Application
- Hands on Experience on Integrated System
- Selection of Different Add-ons For VFDs

Technical Session 7: Sensors and Instruments for Industrial Automation

- Different Types of Sensors- Analog and Discrete.
- Technical terms used in instrumentation.
- Calibration and Testing of Sensors- Thermo Couples, RTD, Pressure Gauge, Level Sensors, Proximity Switches, Limit Switches Etc.
- Final Control Elements- Solenoid Valve, Control Valve, Motor Actuators, Solenoids, Bellows, Manual Valves Etc.
- Hands on Practices.

Technical Session 8: Soft Computing and Digital Image processing techniques for automation in engineering applications Dr. Anishin Raj M, Associate Professor, CSE Department, VJCET

Dr.Anishinraj covered the topic, Areas of Application of Pattern Recognition & Image Processing. He discussed about the application of image processing in Handwritten character identification, Slant correction of digital archives, Face Recognition, Voice recognition, Hand symbol identification, Trademark symbol identification, Content based Image Retrieval, Doctor assistance system using Fuzzy system, Image Reconstruction in CT system, Texture identification of cloth, Vehicle detection from satellite image, Runway identification, Detection of tiny fractures in bone, Detection of diseases from microscopic images and fruit defect detection from IR imaging.

Various Phases of Image processing are input image, processing, segmentation, feature extraction and recognition. Image reconstruction using simultaneous algebraic reconstruction technique (SART) is an iterative methodology which is best suited for solving large scale linear system where direct method fails due to very large time consumption. In iterative technology the cross section image is considered as an array of unknown values which are being represented as an algebraic equation in terms of projected data. The iteration is stopped once the single point of intersection of the hyper planes is achieved.Pre-processing techniques used are median filter, adaptive median filter, adaptive filter, mean filter, gamma correction, log transform and histogram equalization

Image processing by segmentation is the process of identifying objects from the images using mathematical concepts which is a time consuming and tough task. It is the process of partitioning the image pixels into various groups that correlate to one or more distinguishable objects in the image. Different Segmentation Techniques include Region Growing Segmentation and Hough Transform Segmentation. It is the transformation between image space and parameter space which means it transforms image in xy-plane to parameter space. Features are the information which is extractable which reduce the bulk data into smaller dimension without losing the vital information. Feature extraction is done using projection profile, geometric invariant moment Zernike moment and Radon transform.

Technical session 9: Induction Motors for Industrial Automation

Dr. K KRajan, Prof EEE Department and Dean IIIC, VJCET

Seventy percent of all electrical energy consumed in India is used for driving electric motors.Three-phase induction motors are the most common and frequently encountered machines in industry because of simple design, rugged construction, low-price, easy maintenance, wide range of power ratings; fractional horsepower to 10 MW. They run essentially as constant speed from zero to full load. Speed is power source frequency dependent. Variable-frequency power-electronic drive is used for optimal speed control. In one year time a motor consumes energy equivalent to 15 to 20 times its purchase price. Robust construction, absence of brushes and commutators slip rings etc. are making it cheap. Squirrel cage induction motors along with variable speed drive are widely used and most of the desired performance can be obtained by this combination. Earlier days DC shunt motor with armature voltage or field current control was used for speed control. Synchronous induction motors were in use for constant speed applications and DC series motors were used for traction purpose because of high starting toque.

Squirrel cage inductor motors (SCIM) play a dominant role in the industrial automation. SCIM with variable speed drive meets most of the industrial requirements for drive. In this session he covered principle of operation of SCIM , anatomy of induction motor standards , ratings and duty, enclosures and ingress protection, performance curves, motor control centers, control and power circuit components, starting and operation, insulation resistance of motor , energy efficient motors, name plate details, variable speed drives and performance assessment and maintenance. Squirrel cage inductor motors play a dominant role in the industrial automation. SCIM with variable speed drive meets most of the industrial requirements for drive. Features of the motor and their controls are briefly covered in the session. Any Electrical engineer in industry or academia should learn more in these lines.

Technical Session 10: Electrical Installation in Industry and Erection of Substations

Er. Manu John, MD, Empower Engineers, Thodupuzha

Established in the year 2013, Empower Engineers in Thodupuzha, Idukki is a top player in the category of Electrical Contractors in the Idukki. This well-known establishment acts as a one-stop destination servicing customers both local and from other parts of Idukki. Over the course of its journey, this business has established a firm foothold in its industry. This business employs individuals that are dedicated towards their respective roles and put in a lot of effort to achieve the common vision and larger goals of the company. In the near future, this business aims to expand its line of products and services and cater to a larger client base. Company is known to provide top service in the following categories: Electrical Contractors for Residential, Electrical Contractors for Office, and Electrical Contractors for

Power Plant Sub Station. Er. Manu John, MD, Empower Engineers covered the topic Electrical Installation in Industry and Erection of Substations in the following sequence. The rules and norms followed for three phase connection and single phase connection was explained. Similarly the rules and norms based on loads for HVsupply and LT supply connection was also explained. The procedure to be followed from the conceptual design to the commissioning of the power distribution system was explained. The design, specification, procurement, installation, connection, commissioning , operation and maintenance of a conventional power distribution system in industry was clearly explained with live examples. Photographs of various equipment being installed were shown to emphasize the procedure to be followed. He clearly explained the prerequisites of for an industry to go for automation.

Technical Session 11: General aspects of the Design of Electrical Installation

Er. Akhileshkumar.C, MD, MTTC Ernakulum

MTTC is a company expertise in specialized training for Mechanical, Electrical & Civil Engineers. MTTC is a Government Registered Institute affiliated to Scientific & Technical Education Development Council. Their Certificate is attested by Ministry of External Affairs – Govt. of India and emphasis received in almost all countries by the order of Labour& Employment Ministry. MTTC is a licensed MEP Contractor. They are associate member in Indian Society of Heating, Refrigerating and Air-conditioning Engineers (ISHRAE). They are also an active member of HVACR Employees Association, Kerala. Because of their course delivery training and interview skill, they have got 100% placements and their students are doing exceptionally well in the industry. They are providing live

project oriented MEP training. In his talk on "General aspects of the design of Electrical installation"Er.Akhileshkumar.C, covered the topic in the following sequence.

Electrical Design and Drafting

Electrical Engineering is the branch of engineering science that specializes in the electrical design, construction, and practical use of electrical systems. Electrical system design deals with analysis and application of power transmission and distribution, lighting systems, telecommunication, fire alarm systems, closed circuit television and public addressable systems etc.

Wiring and Cable Management Systems

- Rules & regulations.
- Types & selection of wiring systems.
- Applications and Selection of switches & sockets.
- Applications and Selection of wires and cables.
- Lighting, power circuit wiring diagrams.
- Conduit Layout Design.
- Load schedule & load balancing.
- Selection of Distribution Boards.
- Standard heights of mounting accessories.

Lighting Management System

- Lighting Schemes.
- Lighting load estimation and designing of lighting panel.
- Types and application of luminaries.
- Lighting designing of Auditoriums and Theatres
- Lighting designing for interior decoration and landscape.
- Worst -Case Egress Lighting Estimation.
- Emergency lighting system.

Power Distribution System

- Types & selection of Circuit Breakers.
- Importance & application of VCB, ACB, MCCB & RCBO.
- Isolators and SDF (Switch Disconnecting Fuse.
- Capacitors, Resistor and Reactors.
- Selection of AMF (Automatic Main Failure) & APFC (Automatic Power factor Correction) Panel.
- Coordination with HVAC, Plumbing, Firefighting, Mechanical systems like Chillers, AHU, FCU, water and Drainage pumps, Firefighting Pumps etc.
- Under Ground cable type & selection.
- LT Panel Board Design.
- Switchgears-types and selection.
- UPS & Inverters.

Earthing& Lightening Protection System

- Earthing Systems (Types,Method and Installation).
- Lightning Protection Systems.

Transformers & Generators (HT)

- Types and Selections.
- Installation – Rules and Regulations.
- Parallel operation of transformers and generators.
- Internal Connections & Testing.

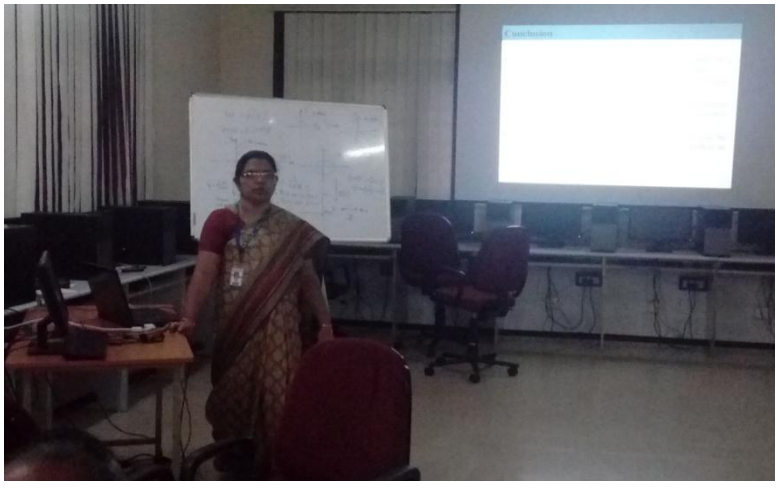
Technical Session 12: Robust Control of Paramagnet Motors in Industry

Dr B Aruna, HOD, EEE Department, VJCET

The main objective is to design a robust controller for PMSM using interpolation theory. From the state variable model of PMSM, transfer function relating speed and q-axis voltage is derived.Nevanlinna-Pick (N-P) interpolation theory is applied to derive the sensitivity function and finally robust controller for PMSM is derived. The gain of PMSM is allowed to vary over the range of values about a nominal value, and the effectiveness of the N-P approach based robust controller is verified through comparative simulations with PI control. She covered the topic in the following sequence:

- Permanent Magnet Synchronous Motor -Advantages and Applications.
- Control methods of PMSM.
- Robust Control of PMSM ,
- Nevanlinna-Pick (N-P)interpolation theory,
- PMSM model,
- Design of Robust Controller for PMSM and Simulation results.

She concluded that the Nevanlinna-Pick theory is applied to the design of a PMSM controller and illustrated the design procedure. The closed loop system with the PMSM controller is then simulated using Matlab/Simulink. The improved robustness property of the proposed (fixed) Nevanlinna-Pick controller against a tunable PI controller is demonstrated for the plant gain uncertainty. The technique, being fundamental and generalized, can be extended to induction motor and other machine models as well.



Technical Session 13: Automation in Wind Power Control

Dr. Sony Kurian, Associate Professor, EEE Department, VJCET

Intended Learning Outcomes of this talk was that the participant should be able to identify basic wind energy control systems and explain the operational states of wind turbines and the role of control systems in them. The speaker has covered the topic in the following sequence:

- Wind Turbine Automation.
- Wind Energy Control Systems.
- Dynamic Component Controllers.
- Control Systems of Wind Turbines.
- Control Systems of Wind Farms.
- Grid Connection of Wind Turbines.

In the talk he explained about Wind energy control system hierarchy, dynamic component control systems, Sensors and actuators used, Embedded controllers, Wind turbine control systems, Management of subsystems in a single wind turbine, Programmable logic controllers(PLCs), Wind farm control systems, PC-based SCADA, Monitoring and optimization wind energy system parameters and Remote operation and maintenance of wind energy systems.

Wind turbine sensors of production are used to monitor the parameters such as blade pitch, blade position, yaw position, wind direction (vane), generator speed, rotor speed, wind speed, yaw rate, direction of rotation, grid power, current, power factor, voltage, grid frequency, ground faults, and converter operation. Wind turbine sensors of operation and maintenance are to monitor temperatures of gear box oil, hydraulic oil, gear box bearing, generator bearing, generator winding, and electronics systems. Fluid parameters to be monitored for production are hydraulic and pneumatic pressures, hydraulic oil levels, and hydraulic oil flows. Operation and maintenance parameters to be monitored are tower top acceleration, tower strain, shaft torque, gear box vibration, blade root bending moment, Environmental conditions, Turbine and sensor icing, humidity and lightning. He explained

about controller hardware used in a typical system which includes mechanical mechanisms, tail rotors, linkages, springs, fly ball governors, electrical circuits , direct links from sensors to coils, relays, switches , embedded controllers , digital devices , programmable logic circuits and programmable logic controllers(PLCs).

Grid operators insist strict rules and codes to be followed by all stake holders. Grid codes aim to ensure safety, reliable, efficient and coordinated operation of wind turbines as parts of total high voltage grids. Different national codes exist on voltage, frequency, power control. Currently used Supervisory Control and Data Acquisition System (SCADA) /Energy Management System (EMS) lacks Synchronized wide area system view, dynamic measurement and representation of events, detection of power system oscillations, adaptive relaying in coordination with local relay , and handling of cascaded outages. WAMS is a wide area measurement system (WAMS) consists of advanced measurement technology, information tools, and operational infrastructure that facilitate the understanding and management of the increasingly complex behavior exhibited by large power systems. Key points of measurement and utilization of system quantities involves developing tools to gather useful information , Various infrastructure required , Understanding of system/process , Identifying patterns and managing grid. Hierarchical Phasor Data Concentrator installed at EHV substation to gather data from neighbouringsubstations.It has the Capability to accommodate approximately 20 to 40 PMUs. It has the ability to accommodate higher data rates, low internal latency (around 3ms to 10ms), Local historian and visualization, fast responding applications such as, special protection schemes and wide area protection and local control.

He concluded that Control and automation of wind turbines are important for integrated operation with advanced technologies. To make grid interactive wind farms and to achieve optimum output the use of intelligent controller is necessary. WAMs provide better visibility, offering control and subsequent automation.

Industrial Visit to M/s KELMamala.

Industrial visit was carried out at Kerala Electrical & Allied Engineering Co.Ltd, Transformer Division MamalaUnit,and Ernakulam District. On 30th June 2018, in connection with Faculty Development Programme organized by EEE department of VJCET, the faculties left for visit at 8.30 am and took about one hour to cover the distance.

To start with in a presentation General Manager KEL Transformer division explained about the plant in detail. After the presentation technical experts taken the faculty to different manufacturing shops such as core assembly shop, winding shop ,assembly area, drying area and inspection & testing lab.

Established in 1969 at Mamala, about 15 km from Kochi on a plot area of 52000 sq. m with a shop floor area of approximately 2700 sq. m . This unit was initiated with technical assistance from 'BHEL' to manufacture Distribution Transformers. Now it is one of the major players in the Transformer Industry with a rolling out capacity of 1500 MVA per annum. This division boasts of a long sustained list of extremely satisfied clients, many of whom who have stood by KEL, for decades. Over these years KEL has managed to make a brand name of its own in the transformer industry with its Highly Durable, Reliable and Energy Efficient Transformers. Relying on the unmatched quality of KEL transformers, electricity boards across India perfectly maintain a healthy power distribution supply system. Manufacturing custom-built transformers, for specific requirements, is yet another speciality of KEL.

This unit is one of the first transformer industry in Kerala to avail BIS Certification for Distribution Transformers and first few in India to get ISO 9001 Certification. With Lakhs of transformers working safely in Transmission and Distribution Network, and thousands in production line this unit of KEL stands tall with pride. Through in-house R&D efforts, KEL transformers were customized to suit stringent requirements and trends Innovations continue as an on-going process to deliver specific transformer types and designs of various ratings. In this pursuit of excellence, the resourceful design department of KEL uses state-of-the-art software to design world-class transformers, optimized for maximum reliability, durability, energy efficiency and compatible various Indian and International Standards. Banking on its inherent strength, in technological excellence gained over years and an uncompromised commitment to quality, the Transformer division of KEL, is all set for substantial growth. By new alliances. By exploring new vistas.ISO 9001 Quality Management System is being adhered from Enquiry process to design, procurement, manufacturing, testing, erection, commissioning and servicing of transformers.

VJCET Faculty in the KEL Transformer Winding Shop

Transformer Assembly

LV winding of Transformer

HV winding of transformer

This Industrial Visit Program gave the faculties an idea of construction of distribution transformers, and the major component in power distribution. The faculty members left the company by 2.30pm.

Valedictory Function

The valedictory function of the ISTE and AICTE sponsored faculty development programme 2018 on the Application of Power Electronics on Modern Power Systems was held on 29thJune in C lab of EEE department.

Prof. Paul Antony, Head of EEE Department welcomed all the dignitaries to the function. He mentioned the contribution of all faculties and participants towards the successful completion of the faculty development programme 2018. He also mentioned the interest taken by the delegates is appreciable.

Dr. B. Aruna, Head of EEE Department gave all the delegates best wishes and thanked them for their good participation. She pointed out the need for such events in future. She appreciated the efforts put forth by all the faculties in hosting and making the programme a huge success.

Prof. K. K. Rajan, EEE Department & Dean of Industry Institute Interaction cell and co-ordinator of FDP, has made the concluding remarks. In any automation basic elements are motors/actuators or machines and sensors along with computers, Programmable logic controllers etc. In order to meet the demand of successful automation, economic, safe, energy efficient, reliable, dependable, robust and eco-friendly designs of components and systems are very much essential. In the design manufacturing and quality control of these components lot of advancements are taking place all over the world. A flavour of such

advancements/ developments taking place all over the world , were bring to the attention of faculty members through few experts talks arranged in this faculty development programme. He also pointed out that the huge opportunities in the electrical engineering field are not known to the students as well as to the people looking for higher studies. The challenges faced by the engineering colleges now are due to the lack of awareness of the society towards the demand for engineers across the globe. This has to be changed by conducting more societal programmes with engineering base. He pointed out that the participation of industry professionals and academician in the FDP was highly beneficial to the delegates. The knowledge acquired can be complete only when the faculties are able to transfer it to the young engineering minds.

It was followed by a feedback session from delegates. Ms. Smitha Jacob and Mr. Sharone Varghese from VJCET gave a feedback on the entire course. Distribution of certificates for all the delegates was made. Dr B Aruna head of the Department and Prof Paul Antony, Prof. EEE Department has distributed the certificate of participation to all the delegates.

The valedictory session was concluded with a vote of thanks by Ms. Seethamma George, Associate Professor, EEE Department and co-ordinator of the Faculty Development Program. She thanked each one who attended the programme and EEE Department for the wholehearted support and motivation in bringing up such a programme. She thanked all the resource persons who have travelled a lot and for the most insightful sessions. She emphasized on the need for such faculty development programme in future.

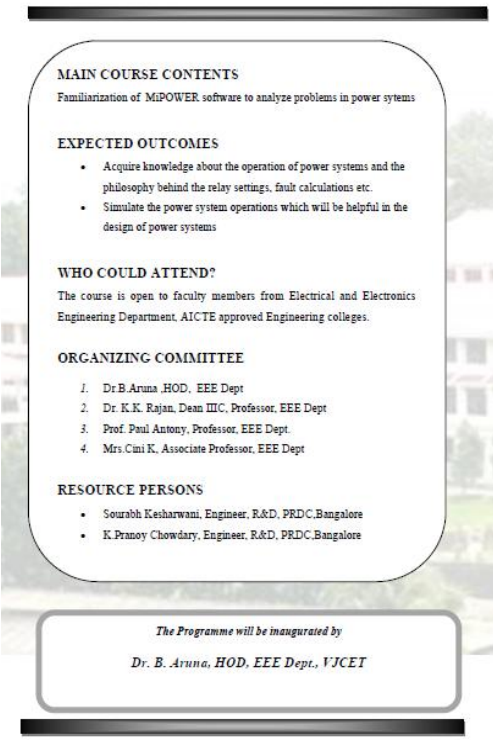
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

Released By

Department of Electrical Engineering

Viswajyothi College of Engineering and Technology

3.3 Three-day Short Term Training Programme on A Comprehensive Power System Design, Simulation and Analysis Software Mi-Power by Tridax Engineering Software's private Ltd.The Power System Software by EEED



MAIN COURSE CONTENTS

Familiarization of MiPOWER software to analyze problems in power sytems

EXPECTED OUTCOMES

- Acquire knowledge about the operation of power systems and the philosophy behind the relay settings, fault calculations etc.
- Simulate the power system operations which will be helpful in the design of power systems

WHO COULD ATTEND?

The course is open to faculty members from Electrical and Electronics Engineering Department, AICTE approved Engineering colleges.

ORGANIZING COMMITTEE

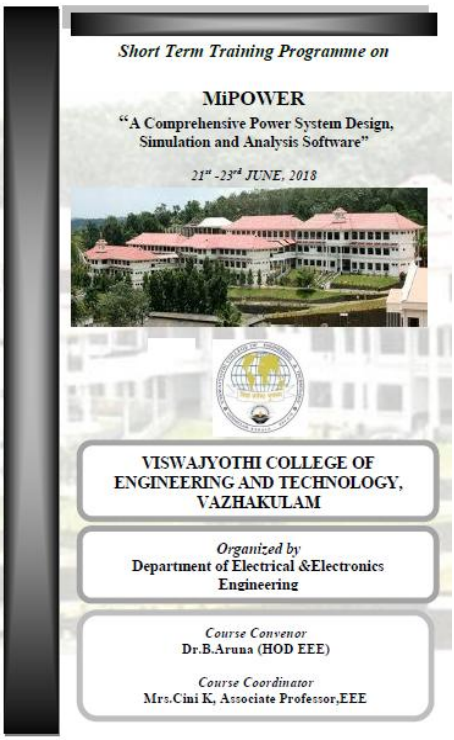
1. Dr.B.Aruna ,HOD, EEE Dept
2. Dr. K.K. Rajan, Dean IIIC, Professor, EEE Dept
3. Prof. Paul Antony, Professor, EEE Dept.
4. Mrs.Cini K, Associate Professor, EEE Dept

RESOURCE PERSONS

- Sourabh Kesharwani, Engineer, R&D, PRDC,Bangalore
- K.Pranoy Chowdary, Engineer, R&D, PRDC,Bangalore

The Programme will be inaugurated by

Dr. B. Aruna, HOD, EEE Dept., VJCET



Short Term Training Programme on

MiPOWER

"A Comprehensive Power System Design, Simulation and Analysis Software"

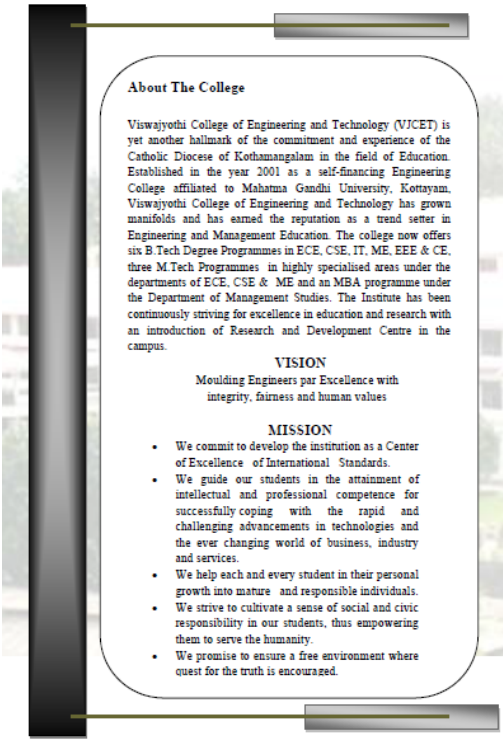
21st -23rd JUNE, 2018

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY, VAZHAKULAM

Organized by
Department of Electrical &Electronics Engineering

Course Convenor
Dr.B.Aruna (HOD EEE)

Course Coordinator
Mrs.Cini K, Associate Professor,EEE



About The College

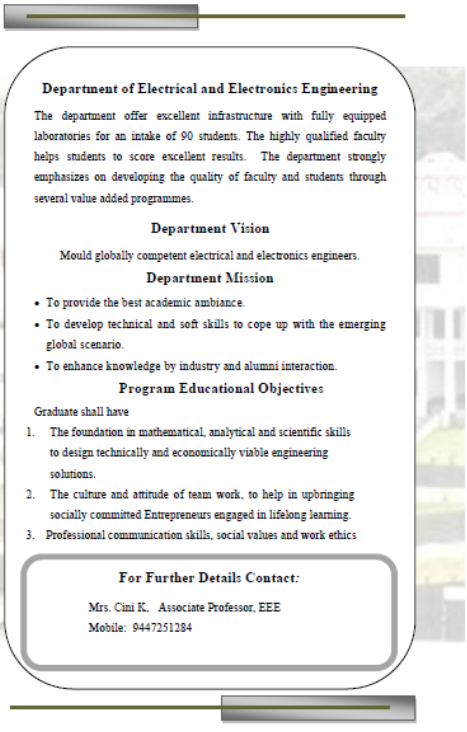
Viswajyothi College of Engineering and Technology (VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education. Established in the year 2001 as a self-financing Engineering College affiliated to Mahatma Gandhi University, Kottayam, Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trend setter in Engineering and Management Education. The college now offers six B.Tech Degree Programmes in ECE, CSE, IT, ME, EEE & CE, three M.Tech Programmes in highly specialised areas under the departments of ECE, CSE & ME and an MBA programme under the Department of Management Studies. The Institute has been continuously striving for excellence in education and research with an introduction of Research and Development Centre in the campus.

VISION

Moulding Engineers par Excellence with integrity, fairness and human values

MISSION

- We commit to develop the institution as a Center of Excellence of International Standards.
- We guide our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help each and every student in their personal growth into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, thus empowering them to serve the humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.



Department of Electrical and Electronics Engineering

The department offer excellent infrastructure with fully equipped laboratories for an intake of 90 students. The highly qualified faculty helps students to score excellent results. The department strongly emphasizes on developing the quality of faculty and students through several value added programmes.

Department Vision

Mould globally competent electrical and electronics engineers.

Department Mission

- To provide the best academic ambiance.
- To develop technical and soft skills to cope up with the emerging global scenario.
- To enhance knowledge by industry and alumni interaction.

Program Educational Objectives

Graduate shall have

1. The foundation in mathematical, analytical and scientific skills to design technically and economically viable engineering solutions.
2. The culture and attitude of team work, to help in upbringing socially committed Entrepreneurs engaged in lifelong learning.
3. Professional communication skills, social values and work ethics

For Further Details Contact:

Mrs. Cini K, Associate Professor, EEE
Mobile: 9447251284

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

3.4 Three day FDP on Advances in Environmental Engineering by CED

Three day Faculty Development Program
On "Advances in Environmental Engineering"
January 31st – February 2nd, 2018
REGISTRATION FORM

Full Name (in block letters): .....
.....
Designation: .....
Addresse.....
.....
.....
.....
.....
.....PIN:.....
Contact No: (O) .....
Mobile No: .....
Email: .....

Signature of the Participant

Important instruction

- Travel and accommodation expenses have to be borne by participants themselves.

For information and correspondence, please contact:

Ms. Devina Vipinan
Ms. Nivya Mary Abraham
Coordinators, Department of Civil Engineering
Viswajyothi College of Engineering and Technology
Vazhakulam, Muvattupuzha, Kerala 686670
Contact Details:
E-mail:devina88@gmail.com, nivyamary@yahoo.com
Phone: +91-9446926657, +91-9446965347

Advisory committee :

Msgr. Dr. Cherian Kanjirakombil
Manager
Rev. Dr. George Thanathuparambil
Director
Dr. Josephkunju Paul C
Principal
Dr. Pramod Kumar M
Dean, Research & Development
Prof. Dr. Anniamma Chacko
Adj: Professor, CED

Technical committee :

Ms. Shine George
Convener and HOD, CED
Mr. Eldhose M Manjummekudiyil
Assistant Professor, MACE Kothamangalam
Dr. Anoop C K
Associate Professor, CED
Ms. Soorya R
Assistant Professor, CED

Resource Persons:

Experts from reputed institutes,
Dr. Jai M Paul
Associate Professor , MACE, Kothamangalam
Dr. Divya P V
Assistant Professor, IIT Palakkad
Ms. Devika Venu
Assistant Professor, MACE, Kothamangalam.
Ms. Shine George
Associate Professor, HOD CED, VJCET, Vazhakulam
Dr. Anoop C K
Associate Professor, VJCET, Vazhakulam.

About the Institute

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Vision

Moulding Engineers par excellence with integrity, fairness and human values.

About the Department

The Department of Civil Engineering has been in existence since the inception of VJCET in 2001 and has emerged into a full-fledged department with the commencement of Civil Engineering program in 2010. It is trail blazed by highly competent, dedicated, well qualified and experienced faculty who are determined to instill in their students the right amount of confidence, knowledge and ethics to build our world. Over the years, the Department has grown in different spheres of activities. At present, the Department offers an undergraduate program in Civil Engineering leading to the B.Tech degree. The Department has well-equipped laboratories with facilities more than those prescribed in the course syllabus. The Civil Engineering Department is continuing the process of building strong links with the building construction and allied industries. Besides high quality teaching and instruction at undergraduate level, the department offers technical advisory support to various Governmental & Private organizations by way of consultancy services and testing facilities in its different Laboratories. The Department of Civil Engineering contributes to the interdisciplinary academic and research activity of the institute.

Vision

Building Professionally Competent and Motivated Engineers in the Arena of Civil Engineering with High Professional Ethics.

Mission

- To promote a better teaching learning process through academically proficient faculties, full fledged laboratories and excellent infrastructure facilities.
- To equip the graduates with knowledge, research and practical skills in modern construction practices and techniques.
- To inculcate knowledge of sustainability in various domains of Civil Engineering.
- To nurture Civil Engineers into ethically strong and responsible leaders to address global challenges through quality education.

About the FDP

The Three day Faculty Development Program on "Advances in Environmental Engineering" is scheduled during 31st January to 2nd February 2018. The main objective of this training program is to provide an insight into the recent trends and advances in environmental engineering. The program provides a platform to discuss and debate several issues related to Environmental pollution – causes, effects and control methods. The participants can gain knowledge to solve effectively various practical issues in the arena of Environmental Engineering. The proposed training program will bring together faculty members and researchers from varied realms of Civil Engineering with specific emphasis on Environmental Engineering; consequently paving the way to tackle with challenges in the respective fields by identifying new methodologies.

Course Objectives:

- To introduce the participants to various recently evolved modes of surface water management.
- To provide them with a generic understanding on sustainable solid waste management and advanced wastewater treatment techniques.
- To generate an awareness among them on the recent paradigm shift in disaster management scenario in India and its implications on the built environment.

Course Outcomes:

Participants will be able

- To understand the basic concepts of recently evolved modes of surface water management
- To select appropriate sustainable solid waste management and advanced wastewater treatment techniques
- To understand the basic concepts of the disaster management scenario in India

Who Should Attend

Engineering College teachers (both degree and polytechnic), research scholars and PG students from AICTE approved institutions and research organizations.

Registration

The registration for the course is free

Last date for Registration: **January 31st, 2018**

All the registered candidates will be given participation certificate.

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY VAZHAKULAM

DEPARTMENT OF CIVIL ENGINEERING

Faculty Development Program on

ADVANCES IN ENVIRONMENTAL ENGINEERING

PROGRAM SCHEDULE

08:30 a.m to 09:45 a.m	Registration
10:00 a.m to 10:45 a.m	Inaugural Meeting

Prayer

Welcome Address : Ms. Shine George
Head of the Department
Civil Engineering

Presidential Address : Dr. Josephkunju Paul C
Principal, VJCET

Introduction of Chief Guest : Ms. Vineetha Thankachan
Assistant Professor
Department of Civil Engineering

Inauguration and Inaugural address:
Dr. Jai M Paul
Associate Professor
MACE, Kothamangalam

Vote of Thanks : Ms. Nivya Mary Abraham
Assistant Professor
Department of Civil Engineering

Date : 31/01/2018
Venue: Civil Seminar Hall

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING
THREE DAY FACULTY DEVELOPMENT PROGRAM
ON
"ADVANCES IN ENVIRONMENTAL ENGINEERING"

Date and Day	10.00 a.m - 12.30 p.m	12.30 p.m - 1:30 p.m	1:30 p.m - 3:30 p.m
31-01-2018 Wednesday	Inauguration and Session on"SUSTAINABLE SOLID WASTE MANAGEMENT" By Dr.Jai M Paul	Lunch Break	Session on " SUSTAINABLE LANDFILL MANAGEMENT"by Dr. Divya P V
01-02-2018 Thursday	Session on INTEGRATED URBAN WATER MANAGEMENT" by Mr. Anoop C K	Lunch Break	Session on" ADVANCED OXIDATION PROCESS : PEROXI COAGULATION by Ms. Devika Venu
02-02-2018 Friday	Session on"DISASTER MANAGEMENT SCENARIO BY IN INDIA "by Ms.Shine George	Lunch Break	Valedictory function

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY VAZHAKULAM
DEPARTMENT OF CIVIL ENGINEERING
Faculty Development Program
Advances in Environmental Engineering

ATTENDANCE SHEET

SL.NO	NAME	SIGNATURE 31/01/18 FN	31/01/18 AN	01/02/18 FN	01/02/18 AN	02/02/18 FN	02/02/18 AN
1	Devina Vijinan						
2	Niya Mary						
3	Shine George					×	
4	Anoop C.K.			×			×
5	Minu C Joy						
6	Daniel A.V						
7	Basil Baby						
8	Reginal Joseph						
9	Jins Paul Kinalore						
10	Tina Jose						
11	Neena M Joseph						
12	Hannah S Mattam						
13	Vishnu Krishnan						
14	Abhijith R						
15	Rose Mary Xavier						
16	Soorya Rani P Thomas						
17	Any Benu C George						
18	Nisa Ann Mathew						
19	Soorya R						
20	Appu John						
21	Vineetha Thankachan						
22	Fiou John						
23	Jesin Jose						

SL.NO	NAME	SIGNATURE					
		31/01/18		01/02/18		02/02/18	
		FN	AN	FN	AN	FN	AN
24	Anu Paul.						
25	Tinku Shmi AL.						
26	Thresia Charly						
27	Stephy Jacqueline George						
28	Bilu Baby						
29	Tina Jose						
30	Simi M U						
31	JOBISH. K. JOSE						
32	Jibi Jose						
33	Wilson V George						
34	BIJU JOSEPH						
35	Shibu Augustine						
36	Annamma Chacko						
37	Doniya Johnson	Doni	Doni	Doni	Doni	Doni	Doni
38	Mahesh Sankar						

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY VAZHAKULAM
DEPARTMENT OF CIVIL ENGINEERING

Faculty Development Program,Jan 31st-Feb 2nd 2018

Advances in Environmental Engineering

Budget Utilization

Sl. No.	Particulars	Amount(Rs)	Reference
1	Transportation & Accommodation	2945	Train tickets,Bill no.10015 dated 31/01/18
2	Remuneration (resource persons)	10000	Cash Voucher
4	Lunch -external Participants	140	Bill no.402 dated 31/1/18
5	Printing	500	Bill no.1840 dated 2/2/18
7	Refreshment to Guests	34	Bill no.456 dated 1/2/18
8	Refreshment to Participants	2770	Bill no.402 dated 31/1/18
9	Registration Kit	50	Bill no.49 dated 27/1/18
10	Program conduct and miscellaneous	247	Bill no.2744 dated 29/1/18
	Total	16686	

Advance collected from Office (as against Rs. 25,000/- sanctioned)	20000
Balance settled	3314

Mrs.Devina Vipinan
Mrs.Nivya Mary Abraham
Coordinators

Mrs. Shine George
H.O.D - CED

3.5 National Conference on Security, Parallel Processing, Image Processing and Networking (SPIN 17) by CSED

3rd NATIONAL CONFERENCE ON SECURITY, PARALLEL PROCESSING, IMAGE PROCESSING & NETWORKING –SPIN 2K17
8th DECEMBER 2017

REGISTRATION FORM

Name: .....

Designation: .....

Educational Qualification: .....

Organisation: .....

Paper Topic .....

Address for communication: .....

.....

.....

.....

.....PIN:.....

Phone No: .....

Mobile No: .....

Email: .....

Signature of the Candidate

IMPORTANT DATES

Paper Submission	: 29th November 2017
Intimation of Acceptance	: 3rd December 2017
Date of Conference	: 8th December 2017
Registration Time	: 8th December 2017 9 am to 10 am on

Advisory Committee

Msgr. Dr. Cherian Kanjirakombil, Manager
Rev. Dr. George Thanathuparambil, Director
Dr. Josephkunju Paul C, Principal
Dr. Ravi Babu, Faculty, IIT Ropar
Dr. John Jose, Faculty, IIT Guwahati
Dr. Suji Pramila.R, Faculty ,NIU
Dr. Suryakala C.D, Director, School of OEUWT, KUFOS
Dr. Govind D, Faculty, Amrita Vishwa Vidyapeetham, Coimbatore
Dr. Sasidhar Babu, Professor, SNGCE Kadayirippu
Dr. K.N Ramachandran Nair, HOD- CSE,VJCET

Speakers :

Dr. Aji Joy, Associate Professor, MACE
Dr. Sujitha Juliet, Faculty, Karunya University

Organizing Committee

Convenors:

Dr. K. N. Ramachandran Nair, HOD- CSE, VJCET
Dr. Anishin Raj M. M., Associate Professor, CSE
Mr. Shibu K. R, Associate Professor, CSE
Mr. Jobin Jose, Assistant Professor, CSE

Student Co-ordinators

Anima Chandran, M.Tech CSE
Shilpa Sugathan, M.Tech, CSE

Address for Communication
Prof. Dr. K. N Ramachandran Nair
Department of Computer Science and Engineering
Viswajyothi College of Engineering & Technology
Vazhakulam P.O, Muvattupuzha, Ernakulam
Kerala, India - 686670
Telephone: 0485- 2262211
Mobile : +91 9961387538
Website: www.vjcet.ac.in

About the College

Viswajyothi College of Engineering & Technology (VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education.

Established in the year 2001 as a self- financing Engineering College affiliated to Mahatma Gandhi University, Viswajyothi College of Engineering & Technology has grown manifolds and has earned the reputation as a trend setter in Engineering & Management Education. The College is situated in a sprawling campus of 26 acres, nestled among lush greenery over a hillock on the side of State Highway No.8, about 5kms from Muvattupuzha en-route to Thodupuzha.

A highly committed Management Team with the noble vision of transforming Viswajyothi College of Engineering & Technology into an International Center of Excellence in Engineering & Management Education with a competent and dedicated Faculty, scientifically planned infrastructural facilities, modern laboratories, workshops and full fledged teaching with an excellent work culture and campus atmosphere has enabled VJCET to carve a niche for itself amongst the self- financing colleges in Kerala within a short span of time. The college has also instituted various scholarships for meritorious students.

INSTITUTE VISION

"Moulding Engineers par Excellence with Integrity Fairness and Human Values".

INSTITUTE MISSION

- We commit to develop the institution as a Center of Excellence of International Standards .
- We guide our students in the attainment of intellectual and professional competence for successfully coping with the rapid advancements in technologies and the ever changing world of business, industry and services.
- We help each and every student in their personal growth into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, thus empowering them to serve the humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

DEPARTMENT VISION

"Moulding socially responsible and professionally competent Computer Engineers to adapt to the dynamic technological landscape"

DEPARTMENT MISSION

Foster the principles and practices of computer science to empower life-long learning and build careers in software and hardware development.

Impart value education to elevate students to be successful, ethical and effective problem-solvers to serve the needs of the industry, government, society and the scientific community.

Promote industry interaction to pursue new technologies in Computer Science and provide excellent infrastructure to engage faculty and students in scholarly research activities.

About the Department

The department of Computer Science and Engineering offers B.Tech degree programme with an intake of 120 students and an M.Tech programme with an intake of 24 students. The department provides the students an environment that stimulates their intellectual growth and personality development. Infrastructure facilities are excellent with well-equipped computer labs, classrooms and libraries. A team of competent and dedicated faculty is a major asset of the department.

About SPIN 2017

National Conference on Security, Parallel Processing, Image Processing & Networking (SPIN'17) is being jointly organized by Department of Computer Science & Engineering and R&D VJCET in association with ISTE. The Conference aims to provide an opportunity to all, to have scientific discussions on the latest developments in the fields of Computer Science and Engineering. The Conference encourages students, researchers and academicians to come with innovative ideas to promote professional interaction and lifelong learning.

Conference Topics

The papers are invited on the following areas in general, but not limited to:

- Cryptography & Network Security
- Natural Language Processing (NLP)
- Architecture & Parallel Processing
- Image Processing
- Networking & Communication
- Cloud Computing & Big Data Processing
- Information Systems
- Data Mining & Warehousing
- Mobile & Pervasive Computing
- Ad-hoc, wireless and Sensor Networks
- Internet of Things (IoT)

Call for papers

Faculty, research scholars, scientists and graduate students from academic institutions, universities, R&D organizations and consultants and practicing engineers from industries/professional bodies are invited to participate and present their technical papers with original ideas.

Information to Participants & Authors

The papers to be presented should reach us on or before 29th November 2017. The authors have to send one copy of the full paper in the IEEE double column format restricted to a length of eight pages. The papers will be reviewed rigorously & scrutinized by our expert reviewers and depending upon the reviewer's comments and ratings, the papers will be short listed for oral presentation. Turnitin plagiarism report will be taken. The papers submitted, should not be published or under review in any other journal or conference. Notification of acceptance/rejection of submitted papers will be sent to the authors by e- mail.

NB: - The papers should be sent in the editable format

Contact Email ID: vjcet.spin2017@gmail.com

REGISTRATION FEE

M-Tech Students & Research Scholars: Rs.500/-

Faculty: Rs.800/-

The registration fee can be paid in cash on 8th December 2017 at the time of registration.

SPIN 2k17

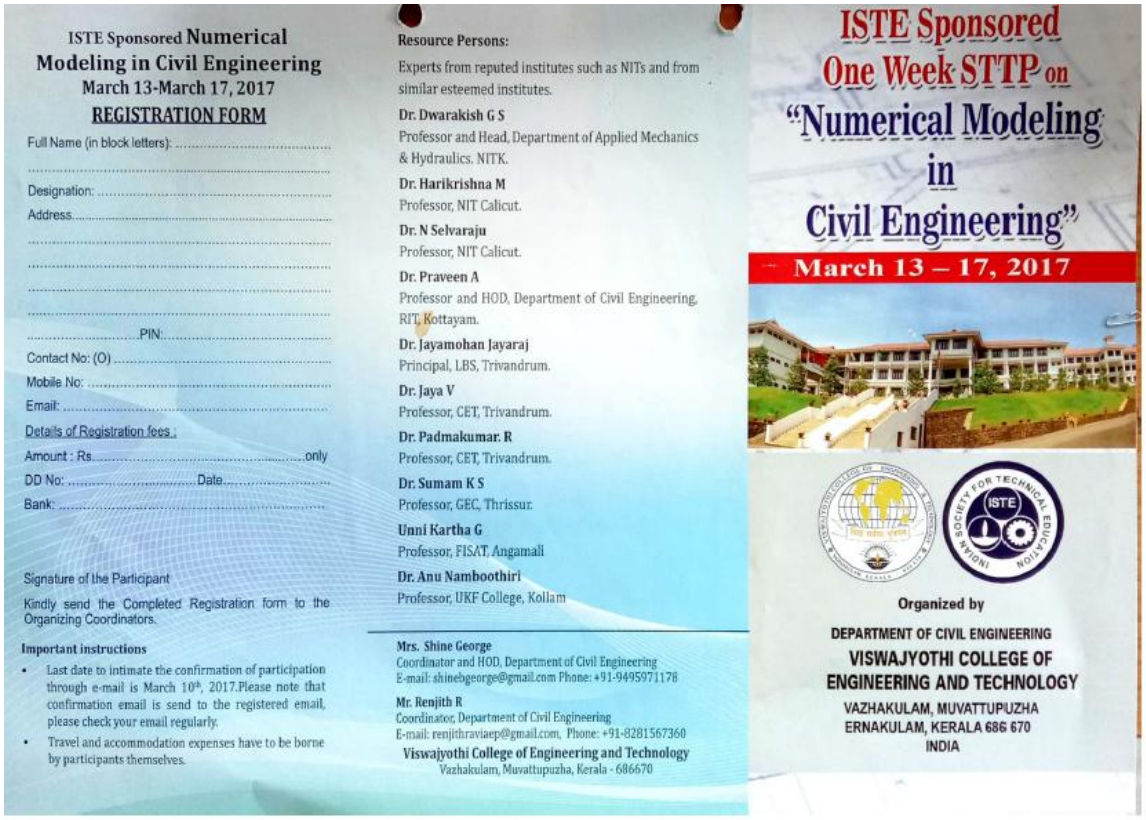
National Conference on Security, Parallel Processing, Image Processing & Networking (SPIN'17) is being jointly organized by Department of Computer Science & Engineering and R&D VJCET in association with ISTE. The Conference aims to provide an opportunity to all, to have scientific discussions on the latest developments in the fields of Computer Science and Engineering. The Conference encourages students, researchers and academicians to come with innovative ideas to promote professional interaction and lifelong learning.

Resource **Person: Dr.Aji Joy, ECE, M.A.College of Engineering, Kothamangalam**

Source: Annual Newsletter 2017 -18, Viswajyothi Digest

4. 2016 - 17

4.1 An ISTE sponsored FDP on Numeric Modeling in Civil Engineering by CED



ISTE Sponsored **Numerical Modeling in Civil Engineering**
March 13-March 17, 2017

REGISTRATION FORM

Full Name (in block letters): .....
.....
Designation: .....
Address.....
.....
.....
.....
.....
.....PIN:.....
Contact No: (O) .....
Mobile No: .....
Email: .....
Details of Registration fees :
Amount : Rs.....only
DD No: .....Date.....
Bank: .....

Signature of the Participant

Kindly send the Completed Registration form to the Organizing Coordinators.

Important instructions

- Last date to intimate the confirmation of participation through e-mail is March 10th, 2017.Please note that confirmation email is send to the registered email, please check your email regularly.
- Travel and accommodation expenses have to be borne by participants themselves.

Resource Persons:

Experts from reputed institutes such as NITs and from similar esteemed institutes.

Dr. Dwarakish G S
Professor and Head, Department of Applied Mechanics & Hydraulics. NITK.

Dr. Harikrishna M
Professor, NIT Calicut.

Dr. N Selvaraju
Professor, NIT Calicut.

Dr. Praveen A
Professor and HOD, Department of Civil Engineering, RIT, Kottayam.

Dr. Jayamohan Jayaraj
Principal, LBS, Trivandrum.

Dr. Jaya V
Professor, CET, Trivandrum.

Dr. Padmakumar. R
Professor, CET, Trivandrum.

Dr. Sumam K S
Professor, GEC, Thrissur.

Unni Kartha G
Professor, FISAT, Angamali

Dr. Anu Namboothiri
Professor, UKF College, Kollam

Mrs. Shine George
Coordinator and HOD, Department of Civil Engineering
E-mail: shinebgeorge@gmail.com Phone: +91-9495971178

Mr. Renjith R
Coordinator, Department of Civil Engineering
E-mail: renjithraviaep@gmail.com, Phone: +91-8281567360

Viswajyothi College of Engineering and Technology
Vazhakulam, Muvattupuzha, Kerala - 686670

ISTE Sponsored One Week STTP on "Numerical Modeling in Civil Engineering"

March 13 – 17, 2017

Organized by

DEPARTMENT OF CIVIL ENGINEERING
VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
VAZHAKULAM, MUVATTUPUZHA
ERNAKULAM, KERALA 686 670
INDIA

About the Institute

Viswajyothi College of Engineering & Technology (VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education. Established in the year 2001 as a self- financing Engineering College affiliated to Mahatma Gandhi University. Viswajyothi College of Engineering & Technology has grown manifolds and has earned the reputation as a trend setter in Engineering & Management Education. The College is situated in a sprawling campus of 26 acres, nestled among lush greenery over a hillock on the side of State Highway No. 8, about 5 kms from Muvattupuzha en-route to Thodupuzha.A highly committed Management Team with the noble vision of transforming Viswajyothi College of Engineering & Technology into an International Center of Excellence in Engineering & Management Education with a competent and dedicated Faculty, scientifically planned infrastructural facilities, modern laboratories, workshops and full-fledged teaching – learning set ups along with an excellent work culture and campus atmosphere has enabled VJCET to carve a niche for itself amongst the self- financing colleges in Kerala within a short span of time.

Vision

Moulding Engineers par excellence with integrity, fairness and human values.

Mission

- We commit to develop the institution into a Centre of Excellence of International Standards.
- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and c ic responsibility in our students, empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

About the Department

The Department of Civil Engineering has been in existence since the inception of VJCET in 2001 and has emerged into a full-fledged department with the commencement of Civil Engineering branch in 2010. It is trail blazed by highly competent, dedicated, well qualified and experienced faculty who are determined to instill in their students the right amount of confidence, knowledge and ethics to build our world. Over the years, the Department has grown many times in different spheres of activities. At present, the Department offers an undergraduate programme in Civil Engineering leading to the BTech degree. The Department has well-equipped laboratories with facilities more than those prescribed in the course syllabus. The Civil Engineering Department is continuing the process of building strong links with the building and construction industry. Besides high quality teaching and instruction at undergraduate level, the department offers technical advisory support to various Governmental & Private organizations by way of consultancy services and testing facilities for different building materials in the Strength of Materials Laboratory. The Department organizes career guidance classes for the students helping them to achieve a successful career through the various placement opportunities presented by the college. The Department of Civil Engineering contributes to the interdisciplinary academic and research activity of the institute.

About the STTP

The five- day Short Term Training Programme (STTP) on "Numerical Modeling in Civil Engineering" under ISTE' is scheduled during March 13 to March 17, 2017. The main objective of this training program is to provide an insight into the basics of numerical methods to solve engineering & applied science problems. This also includes facilitating the applications of advanced numerical methods for direct or indirect use in engineering and other allied fields. The workshop provides a forum in which the participants can learn about the needs of numerical methods, types of numerical methods and also obtain information about recent advances of numerical methods to develop new applications. The proposed training program will bring together faculty members and researchers from varied realms of engineering and industry to establish new collaborations so as to tackle with challenges in the respective fields by identifying new methodologies.

Who Should Attend

Engineering college teachers (both degree and polytechnic) PG Students, research scholars from AICTE approved institutions and research organizations.

Registration

The registration fee (includes working lunch and registration kit) for participants is Rs 750/-

The payment of the registration fee should be in the form of Demand Draft in favor of "Principal VJCET" payable at Vazhakulam, or by online bank transfer.

Our bank details are as follows:

Account Number: 0335053000001199

Bank Name: South Indian Bank, Vazhakulam

IFSC code: SIBL0000335

If fee is paid online then please email the transaction ID.

Last date for Registration [Completed Registration form may reach to institute along with DD]: March 10, 2017

Spot registration is also allowed.

All the registered candidates will be given participation certificates.

भारतीय तकनीकी शिक्षा संस्था
INDIAN SOCIETY FOR TECHNICAL EDUCATION

(Under the Societies' Registration Act XXI of 1860)

Prof. Vaidya Vijay Dattatray
Executive Secretary

ISTE/Proceedings/STTP-SF/2016-17 January 27, 2017

Proceedings of Executive Secretary, ISTE

Sub.: Sanction to conduct full time Short-term Training Programme on Self-financing basis for the financial year 2016-2017.

Sanction is hereby accorded to the following institution for the conduct of the programme indicated below:

Name of Institution	:	Viswajyothi College of Engineering & Tech Ernakulam – 686 670
Topic	:	Numerical Modeling in Civil Engineering
Name & Address of Coordinators	:	Mrs. Shine George, Associate Prof. Mr. Renjith R., Asst. Prof.
Duration	:	One Week (Minimum 05 Working Days)
Proposed dates	:	13-03-2017 to 17-03-2017

Terms and Conditions

1. The institution offering the Programme should have an ISTE Chapter with at least 25 ISTE members as on the date of commencement of the programme.
2. Only ISTE life members are allowed to attend this programme. However, in the case of participant/s who are not life member/s but want to attend the STTP they may be allowed provided they fill up life membership form and pay the prescribed fee at the spot initially to the course coordinator. Course coordinator will send this to ISTE with their forms and fee (DD only) alongwith the final report after the course.
3. There will be no financial commitment on the part of ISTE on account of this programme.
4. The course will be full time and of duration 1week / 2 weeks / 4 weeks.
5. The proposal will be scrutinized by Experts and if approved, the approval will be communicated to the Coordinator. The Section Chairman / Executive Council Member may monitor the programme and send an independent report to ISTE Headquarters if called for. ISTE Headquarters reserves the right to decline the approval without assigning reasons.

-/-

Shaheed Jeet Singh Marg, Near Katwaria Saria, New Delhi – 110 016
Phone: 91-11 26513542, 26963431, 26514234, Fax: 91-11 26852421, E mail: istehq@vsnl.net, Website: www.isteonline.in

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

6. A processing & operational charges of Rs.150/- per participant is to be paid to ISTE Headquarters along with the final report mentioned in Item 8 below.

7. The registration fee of the participants may be fixed by the host institution.

8. Within 15 days after completion of the Programme the final report including list of participants (with their ISTE Membership Number of filled up application forms for ISTE membership with requisite fee), schedule of the programme with dates, copy of the certificate issued and copy of course notes must be sent to ISTE Headquarters alongwith processing & operational charges as mentioned in point 6 above. via DD in favour of "**ISTE**" New Delhi.

9. The Certificate may be issued by the Head of the host institution quoting ISTE Sanction Order. The certificate should contain the ISTE emblem at the top and should read "This is to certify that _____attended a short term course on_____ sponsored by ISTE during _____at_____.

10. The EC/SMC Member of ISTE preferably from nearby area may be invited during the STTP.

Executive Secretary

To,

Dr. Josephkunju Paul C.
Principal
Viswajyothi College of Engineering & Technology
Vazhakulam P.O., Muvattupuzha, Ernakulam Dist.
Kerala – 686 670

Copy to:

Mrs. Shine George
Coordinator
Viswajyothi College of Engineering & Technology
Vazhakulam P.O., Muvattupuzha, Ernakulam Dist.
Kerala – 686 670

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF CIVIL ENGINEERING

ISTE SPONSORED FACULTY DEVELOPMENT PROGRAMME ON 13th to 17th MARCH 2017

NUMERICAL MODELING IN CIVIL ENGINEERING

PROGRAM SCHEDULE

Day 1 13th March 2017	8:30am -9:30am	Registration of Participants
	9:30am -10:30am	Inaugural Meeting
	10:30am -10:45am	**Tea Break**
	10:45am -11:45pm	Session 1 Application of Numerical Modeling in Sediment transport (Dr Dwarakish G S, Professor, NIT K)
	11:45am -12:45pm	Session 2 RS and GIS applications in Coastal Engineering (Dr Dwarakish G S, Professor, NIT K)
	12:45 to 1:30	**Lunch Break**
	1:30 to 2:30	Session 3&4 Modelling of Transportation Data (Dr Harikrishna M, Assistant Professor NIT, Calicut)
	2:30 to 3:30	
Day 2 14th March 2017	10:00am -11:00am	Session 5 Ground Vibration Monitoring and Modeling in ABAQUS (Jaya V, Professor GEC, Trivandrum)
	11:00am -11:15pm	**Tea Break**
	11:15am -12:30pm	Session 6 Ground Vibration Monitoring and Modeling in ABAQUS (Jaya V, Professor GEC, Trivandrum)
	12:30 to 1:15	**Lunch Break**
	1:15 to 2:15	Session 7&8 Analytical and Numerical Modeling of Reinforced Soil (Dr Jayamohan Jayaraj, Professor LBS, Trivandrum)
	2:15 to 3:15	
Day 3 15th March 2017	10:00am -11:00am	Session 9 Introduction to Finite Element Modelling (Dr Praveen A, Professor RIT, Kottayam)
	11:00am -11:15pm	**Tea Break**
	11:15am -12:30pm	Session 10 Application of Numerical Modelling for Sediment transfer (Dr Praveen A, Professor RIT, Kottayam)
	12:30 to 1:15	**Lunch Break**
	1:15 to 2:15	Sessio11 Parallel Finite Element Method using OpenSess (Mr Unni Kartha G Assis-
	2:15 to 3:15	Session 12 Parallel Finite Element Method using OpenSess (Mr Unni Kartha G Assis-

Day 4 16th March 2017	10:00am -11:00am	Session 13Applications of Numerical Modeling in Fluid Mechanics and Water Resources (Dr Sumam K S, Associate Professor GEC, Trichur)
	11:00am -11:15pm	**Tea Break**
	11:15am -12:30pm	Session 14 Applications of Numerical Modeling in Fluid Mechanics and Water Resources (Dr Sumam K S, Associate Professor GEC, Trichur)
	12:30 to 1:15	**Lunch Break**
	1:15 to 2:15	Session 15 Applications of Numerical Modeling in Civil Engineering (Shiv Shankar Nair (FEA/Durability Engineer, Amritha University Kollam)
	2:15 to 3:15	Session 16 Applications of Numerical Modeling in Civil Engineering (Shiv Shankar Nair FEA/Durability Engineer, Amritha University Kollam)

Day 5 17th March 2017	10:00am -11:00am	Session 17 Air quality data analysis using source receptor modeling (Dr.Anu Namboothiri, Professor UKF, Kollam)
	11:00am -11:15pm	**Tea Break**
	11:15am -12:30pm	Session 18 Air quality data analysis using source receptor modeling (Dr.Anu Namboothiri, Professor UKF, Kollam)
	12:30 TO 1:15	**Lunch Break**
	1:15 to 2:15	Session 19 Experimental Modeling in Environmental Engineering (Dr N Selvaraju, Professor NIT, Calicut)
	2:15 to 3:15	Session 20 Experimental Modeling in Environmental Engineering (Dr N Selvaraju, Professor NIT, Calicut

Coordinator

Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
Numerical Modeling in Civil Engineering
13th March to 17th March 2017
Department of Civil Engineering

Sl No	Paticulars	Cost	Quantity	Total
1	Food (5 Days)	130	175	22750
2	Registration Kit	100	35	3500
3	Remuneration - Resource Persons	7500	10	75000
4	Memento	750	10	7500
5	Brochure	20	40	800
6	Certificates	20	50	1000
7	Flex	750	2	1500
8	Transportation & Accomodation			17000
	Total Budget			129050
Sl No	**Income**	**Cost**	**Quantity**	**Total**
1	Funding from College			110000
2	From Registration	750	10	7500
3	From Internal Participation	500	25	12500
	Total			130000

Staff Coordinator

RENJITH.R
APCED

HOD Department of Civil Engineering

SHAJI GEORGE

22/3/17

VISWAJYOTHI COLLEGE OF ENGINEERING & TECHNOLOGY

VAZHAKULAM P. O., MUVATTUPUZHA, ERNAKULAM, KERALA 686670

Website: www.vjcet.org, E-mail: e-mail: eeegcrs@vjcet.org
Phone: 0485-2262211/44/55.

Principal
Dr. Josephkunju Paul C.

Coordinator
Shine George

Faculty Coordinators
Shine George
Renjith R

Date..20/01/2017.

Respected Sir/Madam.

Sub: ISTE - STTP: *Numerical Modeling in Civil Engineering*

We are glad to inform you that the Department of Civil Engineering in association with ISTE is organizing a five day FDP on "*Numerical Modeling in Civil Engineering*" from 13th – 17th March, 2017. In Continuation to the telephonic conversation, we request you to visit Viswajyothi College of Engineering & Technology, and share your expertise with the participants of the STTP.

We look forward for your co-operation in making this program a success.

Thanking you,

Yours sincerely,

Shine George
Course Coordinator & HOD
Department of Civil Engineering
Viswajyothi College of Engineering & Technology
Vazhakulam P. O., Muvattupuzha,
Ernakulam, Kerala 686670

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY VAZHAKULAM

DEPARTMENT OF CIVIL ENGINEERING

ISTE Sponsored STTP on

NUMERICAL MODELING IN CIVIL ENGINEERING

PROGRAM SCHEDULE

08:00 am to 09:30am	**Registration**	
09:30 am to 10:30am	**Inaugural Meeting**	
	Prayer	
	Welcome Address	: **Mrs. Shine George** **Head of the Department** **Civil Engineering**
	Presidential Address	: **Dr. Josephkunju Paul C** **Principal, VJCET**
	Introduction of Chief Guest	: **Ms. Vineetha Thankachan** **Assistant Professor** **Dept of Civil Engineering**
	Inauguration and Inaugural address :	
	Dr. Dwarakish G S **Professor and Head** **Dept of Applied Mechanics & Hydraulics** **NIT Surathkal**	
	Vote of Thanks	: **Mr. Renjith R** **Assistant Professor** **Dept of Civil Engineering**

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING
ISTE SPONSORED FACULTY DEVELOPMENT PROGRAMME ON 13th to 17th MARCH 2017
NUMERICAL MODELING IN CIVIL ENGINEERING
Attendance Sheet

Sl. No	Name of the faculty	13-03-2017		14-03-2017		15-03-2017		16-03-2017		17-03-2017	
		FN	AN	FN	AN	FN	AN	FN	AN	FN	AN
1	Mrs Shine George										
2	Dr Anoop C K										
3	Mrs Tina Jose										
4	Mrs Bijimol Joseph										
5	Mrs Minu C Joy										
6	Mrs Amrutha S										
7	Ms Bilu Baby										
8	Ms Soorya R										
9	Mrs Devina Vipinan										
10	Mr Appu John										
11	Mr Lins Paul Kuriakose										
12	Mrs Tintu Shine A L										
13	Mrs Jeh Jose										
14	Ms Stephy Jacqueline George										
15	Ms Hannah S Mattam										
16	Mrs Nivya Mary Abraham										
17	Ms Anu Paul										
18	Mr Daniel A V										
19	Mrs Soumya Rani P Thomas										
20	Ms Rose Mary Xavier										
21	Ms Sharon Jacob										
22	Ms Vineetha Thankachan										
23	Mr Abhijith R										
24	Mr Vishnu Krishnan										
25	Mr. Sanoop G										
26	Ms. Bhavyalakshmi										

Coordinator — Renith R

VISWAJYOTHI COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING
STTP ON "Numerical Modeling in Civil Engineering"
March13-17 ,2017

SL NO	ITEM	CREDIT	DEBIT	BILL NO.
1	Total Amount Received	118000		
2	Registration fee 122 internal*500 Rs+ 2 external*7500Rs)	72000		
	Miscellaneous			
3	Workshop Kit(35)		3490	4650
4	TA(Less workshop kit)		300	9793
5	Flex print 1(9x3) 2 nos		1100	198
6	Certificates & Brochures		550	418
7	Mementos 10nos (& sticker printing		5960	1068
8	Banners 10nos)		200	1203
9	Food		21400	1335&1538
	DA & TA for the Speaker			
	DAY 1 -12/3/17			
10	DA for Speaker Dr Dwarakish,FN		6000	
11	TA for Speaker Dr Dwarakish		1700	VJCET-Kottayam 12/3/17
12	DA for Speaker Dr Hankrishna,AN		5000	
13	TA for Speaker Dr Hankrishna		3885	VJCET-EKM North 12/3/17 & No.55635& IRCTC(1235Rs)
	DAY 2 -14/3/17			
14	DA for Speaker Dr Jaya V,FN		4000	
15	TA for Speaker Dr Jaya V		2250	VJCET-Aluva 14/3/17,FN& IRCTC two bills(400Rs&360Rs)
16	DA for Speaker Mr Unni Kartha,AN		6000	
	DAY 3 -15/3/17			
17	TA for Speaker Dr Praveen,FN		3900	RIT-VJCET & VJCET -Aluva15/3/17
18	DA for Speaker Dr Jayamohan,AN		6000	
19	TA for Speaker Dr Jayamohan,AN		1400	VJCET-Aluva 15/3/17,FN
	DAY 4 -16/3/17			
20	DA for Speaker Dr Sumam		6000	
21	DA for Speaker Mr Shiv Shankar Nair,AN		6000	
22	TA for Dr Sumam and Mr Shiv Shankar Nair		1500	Cash Voucher attached
	DAY 5 -17/3/17			
23	TA for Speaker Dr.Anu Namboothiri,FN		1600	Angamaly-Vazhakulam & Vazhakulam-MVPA(17/3/17)
24	DA for Speaker Dr Anu Namboothiri		5000	
25	DA for Speaker Dr N. Selvaraju,AN		6000	
26	TA for Speaker Dr N. Selvaraju,AN		3300	Vazhakulam-Ekm north 17/3/17& Vazhakulam-Pala 17/3/17 &IRCTC (400Rs)
27	TA for Speaker Dr N. Selvaraju,18/3/17		2395	Vazhakulam-Ekm north 18/3/17 &IRCTC(695Rs)
		Balance	**17570**	

Mrs.Shine George
HOD, VJCET

Principal
VJCET, Vazhakulam

The department of Civil engineering organized an ISTE sponsored faculty development under the leadership of Mr. Renjith R (Asst,Professor,CED) on the topic of "Numerical Modeling in Civil Engineering" from 13/03/2017 to 17/03/2017and was inaugurated by Dr. Dwarakish G S, Professor and Head of Dept of Applied Mechanics & Hydraulics,NIT Surathkal.

4.2 Five-day Faculty Development Programme on Application of Power Electronics in Modern Power Systems by EEED

DECLARATION

I hereby declare that the details furnished above are true to the best of my knowledge and belief and agree to abide by the rules and regulations governing the conduct of ISTE -AICTE approved programmes.

Name and Signature of Applicant

SPONSORSHIP CERTIFICATE

Certified that Sri / Smt._____ _____is working as_____ at_____ in_____ _____ Department. If selected he/she will be permitted to attend the self-financing ISTE FDP on "*Application of power electronics in modern power systems*"

Place:

Date:

Head of the Institution

(Office Seal)

ADVISORY COMMITTEE

Mar. George Madathikandathil, Patron

Msgr. Dr. George Oliapuram, Manager

Rev. Dr. George Thanathuparambil, Director

Dr. Cyriac Thomas, Former V.C., MG University

Rev. Fr. Paul Nedumpurath, Secretary of the Trust

Dr. Josephkunju Paul C., Principal

Dr. Vijayakumar K, Chairman, ISTE Kerala Section

Shri. M. M. Kuriakose, Secretary, ISTE Kerala Section

ORGANIZING COMMITTEE

Prof. Paul Antony, H.O.D., EEE Dept.

Dr. K K Rajan, Professor, EEE Dept.

Mrs. Cini K, Asst. Professor, EEE Dept.

Programme will be inaugurated by

Dr. T L Jose,

Former Director and Dean, EEE Department, NIT, Calicut

For Queries/Clarifications,

Contact

Mrs. Cini K,
Asst. Professor,
EEE Department,
9447251284

For further enquiries:
cini@vjcet.org

VISWAJYOTHI
College of Engineering and Technology

ISTE
FACULTY DEVELOPMENT PROGRAMME
On

APPLICATION OF POWER ELECTRONICS IN MODERN POWER SYSTEMS

3rd – 7th January 2017

Organised by
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Viswajyothi College of Engineering and Technology
Vazhakulam P.O., Muvattupuzha, Ernakulam Dist.,
Kerala – 686670
Website: http://www.vjcet.org. e-mail: vjcet@vjcet.org

Vision
"Moulding engineers par excellence with integrity, fairness and human values"

OBJECTIVE OF THE PROGRAMME

To provide awareness and explore the latest trends and applications of power electronics in modern power systems.

PROGRAMME HIGHLIGHTS

- Power Scenario- Present & Future
- Integrated grid control
- Power electronics in renewable energy
- Speed control of high speed motors
- Modelling of power electronic system
- Generators of Renewable Energy Systems
- Advancements in nuclear power
- Industrial visit

RESOURCE PERSONS

Mr. Babu Cherian, Rtd. General Manager, Power Grid Corporation India Ltd.
Dr. Devi Balakrishnan, Professor Electrical Dept., NSS, Palakkad
Shri. Dhanesh P R, Senior Scientist, CDAC - Trivandrum
Dr. Isha, Professor Electrical Dept., Amritha Viswavidyapeedam, Coimbatore
Dr. K K Rajan, Former Group Director FRTG, IGCAR,Kalpakkam
Mr. Robins Anto, Professor EEE Dept, MBC, Kuttikkanam
Dr. K. K Sasi, Professor Electrical Dept., Amritha Viswavidyapeedam, Coimbatore
Mr. N N Shaji, Chief Engineer, Transmission & Sytem Operations, KSEB
Mr. S R Gurumurthy, Senior Scientific Officer RMP, BRC Mysore
Dr. Sudha Balagopalan, Principal, Professor in EEE Department, Vidya Academy of Science & Technology

PROGRAMME OUTCOME

The participants will be able to describe about integrated grid control, power electronics in renewable energy, modelling of power electronic system and advancements in nuclear energy.

ABOUT VJCET

VJCET is established in the year 2001 by the Technical Education Trust of the Catholic Diocese of Kothamangalam, with the approval of AICTE and affiliated to Mahatma Gandhi University. The college offers 6 B.Tech (CE, CS, EC, IT, ME & EEE), 3 M.Tech and MBA programs. Within 15 years after its inception, the college has grown as a front-runner among the new generation Engineering colleges of Kerala and is the preferred destination for technical education.

OUR MISSION

- We commit to develop the institution into a Centre of Excellence of International Standards.
- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, empowering them to serve humanity.

ABOUT EEE DEPARTMENT

The primary objective of the department is to impart quality education, training and research with broad emphasis on electrical and electronic systems. The department offers excellent infrastructure with fully equipped laboratories for an intake of 120 students. The highly qualified faculties help and motivate the students to score exemplary results in university exams with more than 90% placements. The department helps in transforming the individuals into globally competent electrical engineers to fulfill the technological needs of the society.

APPLICATION PROCEDURE

Faculties from Engineering colleges / Polytechnic colleges and professionals can apply in the prescribed format through email to cini@vjcet.org on or before 21st Dec 2016. Selected members will be intimated by mail on or before 23rd December 2016. The registration fee of Rs. 1000 can be paid at the time of registration on 3rd January 2016.

ISTE FDP
on
Application of Power Electronics in Modern Power Systems
3rd – 7th Jan 2017

APPLICATION FORM

Name: .....

Designation .....

Educational Qualification with Specialization .....

.....

Institution .....

.....

Address for Correspondence: .....

.....

.....

Teaching Experience .....

Whether ISTE Member.....

If Yes, ISTE Membership No: .....

Mobile No. .....

e-mail ID: .....

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

REPORT

ON

ISTESponsored

FACULTY DEVELOPMENT PROGRAMME

On

Application of Power Electronics in Modern Power Systems

3rd – 7th January 2017

Organised by

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Viswajyothi College of Engineering and Technology
Vazhakulam P.O., Muvattupuzha, Ernakulam Dist.,
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Dr. Josephkunju Paul C., Principal

Dr. Vijayakumar K, Chairman, ISTE Kerala Section

Mr. M. M. Kuriakose, Secretary, ISTE Kerala Section

Co-ordinators

Prof. Paul Antony, H.O.D., EEE Department

Dr. K KRajan, Professor, EEE Department

Mrs. Cini K, Asst. Professor, EEE Department

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY

Viswajyothi College ofEngineering and Technology (VJCET) established in the year 2001, is affiliated to M.G.University and APJ Abdul KalamTechnological University and has earned the reputation as a trend setter in Engineering Education. Presently Viswajyothi College of Engineering and Technology offers six B.Tech Engineering Degree courses and four Post GraduateCourses. The building complex of the College is situated in a sprawling campus of 26 acres,nestled among lush greenery over a hillock on the side of the Ernakulam, Thodupuzha State Highway, in central Kerala.

Our Vision

Moulding Engineers par excellence with integrity, fairness and human values

Our Mission

We commit to develop the institution into a Centre of Excellence of International Standards

- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students,empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

The Department of Electrical and Electronics Engineering of VJCET was established in the year 2004, with eminent and well qualified faculty and excellent infrastructure. The department is recognized for excellence in teaching and service to the profession and offers undergraduate programme with an intake of 120 students. In a very short span the department emerged with four university ranks. The academic strength of the faculty is reflected by the alumni, many of whom are in the top echelons of industry and academician both in India and abroad.

Vision of the Department

Mould globally competent Electrical and Electronics Engineers

Mission of the Department

- To provide the best academic ambiance.
- To develop technical and soft skills to cope up with the emerging global scenario.
- To enhance knowledge by industry and alumni interaction.

Program Educational Objectives (PEO)

- Graduate shall have the foundation in mathematical, analytical and scientific skills to design technically and economically viable engineering solutions.
- Graduate shall have the culture and attitude of team work, to help in upbringing socially committed Entrepreneurs engaged in lifelong learning.
- Graduate shall have professional communication skills, social values and work ethics.

Program Specific Outcome (PSO)

- Students will be able to apply the concepts of circuit analysis and design in the areas of electric power generation, transmission and distribution from conventional and nonconventional sources.
- Students will be able to develop Control and Power Electronic application circuits.
- Students will be able to design and interface microcontroller-based embedded systems.

Principal's Message

An educated, employable generation is the crux for any developing nation. Technical education focuses on a broad-spectrum of educational experience by creating expertise in technical and personality skills. The department of EEE with its sophisticated equipments and well developed infrastructure combined with a team of competent and dedicated faculty ensure a delightful and enriching learning experience.

Faculty development programmes aims at enriching and enhancing the spirit and passion of teaching professionals by refining or updating their knowledge in accordance with the industrial and societal needs. I wish this faculty development programme would help in formulating new perspectives in technical education by enlighting the dear participants with new convictions and crafts of teaching.

Dr. Josephkunju Paul C

HOD's Message

Over the past years, Electrical & Electronics Engineering Department has succeeded in moulding globally competent Electrical and Electronics Engineers. It's with immense pleasure EEE department is hosting a faculty development programme on "Application of Power Electronics in Modern Power Systems". Faculty development programmes are a requisite for enhancing the academic and intellectual environment in the institution by stipulating faculty members with ample opportunities to pursue research and to participate in seminars, conferences and workshops which in turn will enable them to update their research and pedagogical skills.

Power electronics is increasing in prominence with the need and demand for cleaner and quality power. The growing demand at the utility and consumer end for uninterruptable and safer power supply has led to an energy efficient system approach. Power electronics application into power system assures quality power distribution without interruption, to a certain limit. This has enhanced various researches in the field of power electronics that can aid the modern power systems which are designed to meet the ever growing demand for energy. A course regarding the importance and need for power electronics in power system is crucial for an electrical engineer so as to ensure themselves that they are exposed to the most modern trends and developments that can be enabled for energy needs of the society.

As the head of the department, I wish the faculty development programme all success. I sincerely hope the programme will facilitate the delegates to sharpen their knowledge and teaching skills.

Prof. Paul Antony

Resource Persons

Dr. T. L Jose, Former Director & Dean, *Electrical Department, NIT, Calicut*

Dr. T.L Jose had been working as the Head of Department, Electrical Engineering, National Institute of Technology, Calicut. He was the Dean and Director-in-charge of NIT, Calicut. He has guided 35 M. Tech and 3 Ph. D projects. He retired from NIT, Calicut in 2012.

Dr. K.K. Sasi, Professor, *Electrical Department, Amrita VishwaVidyapeetham, Amrita University, Coimbatore*

Dr. Sasi has published about 100 research papers, delivered about 200 invited lectures, chaired several sessions in national and international conferences, carried out nine sponsored projects and reviewed several papers for International Journals. He is guiding students in the area of Energy Studies for their Masters and PhD. Energy and Smart Micro Grid are his areas of interest.

Dr. I.B. Isha, Professor, *Electrical Department, Amrita VishwaVidyapeetham, Amrita University, Coimbatore*

The research interest of Dr. Isha includes Power Electronics and Drives, Special Machines, Energy Conversion systems and Control Systems. She had published several papers in National and International Journals and Conferences and carried out five sponsored projects, including a project on Energy Saver for Induction Motors by DRDO, India. Ms. Isha has guided several under graduate and graduate projects in the area of special machines, power electronics and drives, produced one PhD and presently supervising 4 PhDs.

Dr. Sudha Balagopalan, Principal, *Professor, EEE Department, Vidya Academy of Science & Technology, Trissur*

Dr. Sudha was awarded the prestigious "Bhabha award" for coming first among the 24th batch of BARC Training school students, in the year long orientation course. She has published numerous papers in national and international journals. She has guided several B. Tech projects in association with GIT, Atlanta, ISRO, Port Trust, Total Energy Security Mission, OEN, KSEB, BPCL, TELK etc and was the guide of the project that won the

student enterprise award of 1500 dollars from IEEE, USA. Her areas of interests include Power Systems, control systems, signals and circuits, Electrical Machines, Optimization and Game Theory.

Dr. Devi Balakrishnan, Professor, *Electrical Department. NSS College of Engineering, Palakkad*

Dr. Devi is having a teaching experience of 30 years and has published more than 30 papers in various national and international journals. She has conducted various conferences, workshops and symposiums. Her fields of interest are Power Electronics, control systems, soft computing and modeling of systems.

Dr. Prince A, Professor, *Electrical Department, RIT, Kottayam*

He was awarded with Best Teacher Award 2007(Alumni RIT) and has over 17 years of teaching experience. He is a research committee member of Anna University (MTech by Research/Ph. D) and reviewer in IEEE Power System Transaction and IEEE Power Industrial Electronics Transaction. He acted as technical chair of IEEE conferences; RAICS 2012, Trivandrum and 2013, SJCET, Palaand is the Chairman, M. Tech Industrial Drives and Control, MG University. His areas of interests include power systems, wide area measurements, Signal processing applications in power system, Power electronics applications in power system and renewable energy systems.

Mr. N.N. Shaji, Chief Engineer, *Transmission & System Operations, KSEB*

Mr. N. Shaji has 31 years of experience as Power Engineer. He has industrial experience in Distribution Transformers, Power Transformers & Switch Gears. He has worked in TELK as Testing, Quality Control & Commissioning Engineer. He visited almost all 400 kV and 220 kV substations in India during his tenure in TELK. He also attended Power Engineers Training at NPTI, Neiveli for six months in 1992 and Management Training at IIM Bangalore.

Mr. S.R. Gurumurthy, Senior Scientific Officer, *RMP, BARC Mysore*

Some of his important R&D contributions include High speed drives for special purpose machines and BLDC machines, Power supplies, Special instruments required for high speed rotor balancing like, Vibration Analyzers, True Power monitors, Controller for BLDC generators, Flywheel Energy Storage Systems. He has a patent in his name and

published various research papers in international journals and conferences.

Mr. Dhanesh P.R., Senior Scientist, *CDAC – Trivandrum*

Mr.Dhanesh joined as Junior Research Fellow in CDAC, Trivandrum during the period December 2005 to December 2007 and in 2008 January onwards promoted as Senior Scientist in power electronics group**.** His areas of interest are Digital Controller design for Power Electronics application, Power quality issues and solutions, electronics for electric vehicles and LVDC for home applications.

Mr. Babu Varghese, Rtd. General Manager, *Power Grid Corporation India Ltd.*

Mr. Babu joined NTPC as an Executive Trainee in 1980 and has an experience of 37 years in the power sector with major power utilities NTPC and Power grid coorporation of India Ltd. One of the major projects undertaken by him includes Kayamkulam Transmission System.

Dr. K.K. Rajan, Former Group Director, *FRTG, IGCAR, Kalpakkam*

Dr. Rajan has made significant contributions for the development of Fast reactor technology in the country and represented India in many international meetings. He is a member of Indian Nuclear Society, Instrument Society of India and a fellow of Institution of Engineers (India). He has more than 140 publications in national and international journals.

Participants

Sl. No	Name	College
1	Prathibha P K	RSET, Kakkanad
2	Jebin Francis	RSET, Kakkanad
3	Sreekala C S	UCE,Thodupuzha
4	Tanuja	UCE,Thodupuzha
5	Ambily V R	UCE,Thodupuzha
6	Preenu Paul	MITS,Puthencruez
7	Tony Mathew	MITS,Puthencruez
8	Linss T Alex	MET'S,Mala
9	Radhika R	CE, Munnar
10	ShahimolBasheer	CE, Munnar
11	Anuja Varghese	ISSAT,Pezhakappilly

12	AryaLakshmi M S	ISSAT,Pezhakappilly
13	Chinju E G	IGCET,Kothamangalam
14	Paul Mathew	IGCET,Kothamangalam
15	Anilkumar K K	IGCET,Kothamangalam
16	Deena George	Holykings,Pampakuda
17	Minu Mary Joy	MBITS,Kothamangalam
18	Rini Varghese P	MBITS,Kothamangalam
19	Paul Antony	VJCET, Vazhakulam
20	K. K. Rajan	VJCET,Vazhakulam
21	B. Aruna	VJCET,Vazhakulam
22	Sony Kurian	VJCET,Vazhakulam
23	Cini K.	VJCET,Vazhakulam
24	Seethamma George	VJCET, Vazhakulam
25	AneeshKurian	VJCET,Vazhakulam
26	Smitha Jacob	VJCET,Vazhakulam
27	Mereya Baby	VJCET,Vazhakulam
28	Dileep Kumar P	VJCET,Vazhakulam
29	Babu T. Chacko	VJCET,Vazhakulam
30	Sharone Varghese	VJCET,Vazhakulam
31	Jis Jose	VJCET,Vazhakulam
32	NeenaSkaria	VJCET,Vazhakulam
33	BreezaPoulose	VJCET,Vazhakulam
34	Jane Maria S.	VJCET,Vazhakulam
35	Jomu M. George	VJCET,Vazhakulam
36	Seena Paul	VJCET,Vazhakulam
37	Jose Jacob	VJCET,Vazhakulam

38	Merin Raphael	VJCET,Vazhakulam
39	Sonia Sunny	VJCET,Vazhakulam
40	Sherin Tom	VJCET,Vazhakulam
41	Aryasree. G	VJCET,Vazhakulam
42	SteffyTreasaLoui	VJCET,Vazhakulam
43	Merin Sunny	VJCET,Vazhakulam

Inaugural Function

The inauguration of ISTE sponsored faculty development programme 2017 on the Application of Power Electronics on Modern Power Systems was held on 3rdJan at the seminar hall of Research & Development block. The ceremony started with an invocation to God Almighty.

Prof. Paul Antony, Head of Electrical &Electronics department, formally welcomed all the dignitaries present and participants from various colleges and colleagues. He pointed out the need for energy sector to be future proof and insisted that the course will be a beneficial addition in our career.

Our beloved principal, Dr. Josephkunju Paul C has made the presidential address. He cleared out the idea of Faculty development programme to be the effective and intellectual learning process of faculties towards the socio-economic issues with an engineering perspective. He appreciated the department for coordinating such a programme with emphasis on the most crucial field of energy management.

It is followed by the formal inauguration of the function by the eminent guest of the day, Dr. T L Jose, former Dean and Director, NIT, Calicut. He made an excellent talk that invoked the minds of listener's with the ideas and need for newer technologies in the field of power sector. The importance of power electronics in the grid was clearly pointed out.

Prof. Naveen Jacob, Vice Principal, has offered the felicitation for FDP. He appreciated the idea of faculty development programmes towards the intellectual utilization of skills and brain power of staff members such that the students will get benefited with technological updation within classrooms. He congratulated the Electrical & Electronics Department for bringing such eminent resource persons from and around the country to cultivate awareness about the trends in modern power systems with the past and present power scenarios.

Prof. B. Aruna, Head of the Department (in-charge) felicitated the gathering by the ideas of most modern technological application on to power systems. She wished the programme all the success and thanked all the delegates for considering this as an opportunity to bring forth themselves onto a learning platform.

Prof. Vinod, Head of Mechanical Department, has offered felicitation for the faculty development programme. He wished the Electrical & Electronics Department all the success in bringing up such fruitful programmes. He added that the need to adopt new energy efficient technologies in power system is a topic to be considered for the energy security of nation.

Prof. K. K. Rajan, EEE Department & Dean of Industry Institute Interaction Cell and co-ordinator of FDP has proposed the vote of thanks. He thanked the most estimable chief

guest of the day, Dr. T. L Jose for coming and inaugurating the FDP with a remarkable talk. He extended gratitude to the management, colleagues and all the delegates for the support, motivation and participation. He extended his heartfelt thanks to all the resource persons who accepted the invitation and came. He pointed out the need of such a development programme on the growing importance of power electronics in the modern power systems. He assured that the programme will lead to an overall development of each delegate and wished everyone to make maximum use of the course.

Invited Talks

There were ten invited talks in the programme.

Technical Session: 1

Topic: Power Electronics in Renewable Energy

Resource Person:

Dr. K.K Sasi, Professor, *Electrical Department, Amrita VishwaVidyapeetham, Amrita University, Coimbatore.*

Dr. K. K. Sasi made his presentation on Power Electronics in Wind Energy in two sessions. In the introduction he indicated that Power Electronics emerged as a savior of Power system and it is the responsibility of electrical and electronics engineers to explore the area for further advancements in this field. His presentation started with power versus wind speed curve of the wind turbine generator (WTG). He informed that below the cut-in wind speed of around 3 m/s, the WTG will not produce power. The power generation gradually

increases from 3 m/s wind speed and the rated capacity is reached at a wind speed of around 12 m/s. Above the speed of 12 m/s the generator power output is saturated and the WTG is cut off at the speed of around 25 m/s for safety reasons. He has explained about various types wind energy technologies and classified them as fixed speed and variable speed systems. In fixed speed systems the generator speed varies over a range less than 50 rpm. If a gear box of ratio 1:50 is used such variation is invisible on WT side. Fixed speed squirrel cage induction generators need synchronous grid connection and they starts as motor. Wind turbine coupled with double winding induction generators with 4 poles and 6 poles operates on dual speed. This is the mostly used version. 6-pole, low power winding is used for low wind speed and it provides lower cut-in velocity and higher efficiency.

Fault ride through (FRT) capability of Wind Electric Generators means that the wind turbine should remain connected to the grid during the fault without getting tripped. Wind farms using Squirrel cage Induction generator directly connected to the grid would be disconnected from the power system when the grid voltage drops more than 30% below the rated value. The requirement of FRT capability can affect the cost of smaller wind farms in the present scenario.

With WTG basic equations he has shown that variable speed generators are preferred over fixed speed generators. He mentioned about innovation in the field of wind energy and shown photographs of Ladder Mill, airborne wind generators, micro wind energy generators and very small wind turbine generators. The concept of small wind turbine with solar PV hybrid system was introduced to the audience. He briefly explained about the Amrita wind energy centre at Amrita Institute of technology and shown photographs of the different systems in the centre. Dr. K.K. Sasi, in his presentation drew attention towards various Research areas in Wind power systems.

Technical Session: 2

Topic: Generators for Renewable Energy Systems

Resource Person:

Dr. I.B. Isha, Professor, *Electrical Department, Amrita VishwaVidyapeetham, Amrita University, Coimbatore*.

Prof. T B Isha has made a presentation on the various generators used for renewable energy extraction. The presentation inculcates an idea about the present scenario and the need for intelligent and efficient power transmission to make the energy system future proof. She gave a review about the conventional modes of energy generation like back- up or stand- by generation, cogeneration, and the newer advancements with particular reference to the wind energy harvesting.

She explained the need and importance of distributed generation. Distributed generation is an approach that employs small-scale technologies to produce electricity close to the end users of power. DG technologies often consist of modular (and sometimes renewable-energy) generators, and they offer a number of potential benefits. In many cases, distributed generators can provide lower-cost electricity and higher power reliability and security with fewer environmental consequences than traditional power generators. DG encompasses on the customer side such as storage technologies, end-use technologies and Demand Side Management(DSM) concepts. Distributed generation takes place in two-levels: the local level and the end-point level. Local level power generation plants often include renewable energy technologies that are site specific, such as wind turbines, geothermal

energy production, solar systems (photovoltaic and combustion),and some hydro-thermal plants. These plants tend to be smaller and less centralized than the traditional model plants. They also are frequently more energy and cost efficient and more reliable. Since these local level DG producers often take into account the local context, the usually produce less environmentally damaging or disrupting energy than the larger central model plants.

The different generators used in renewable energy sector are mainly classified into standalone (AC & DC) and grid connected (AC) generators. Small standalone systems are designed particularly to capture energy from intermittent energy flows such as wind and wave power. The voltage and frequency control is carried out electronically. In grid connected systems, the generator voltage and frequency are locked to the grid system. Changing the energy output from the prime mover does not affect the frequency and voltage, but will cause the output current to increase, resulting in an equivalent change in the generator output power.

She pointed out the different machines that can be used as generators for energy extraction from renewable energy. DC machines like Permanent Magnet DC Generator (PMDG) in which the velocity is independent of torque, asynchronous machines like Induction Stall (Squirrel Cage) (IG), Induction Rotor Current Control, Double-Fed Induction (DFIG), Induction Or Synchronous Full Power (FP) were explained.

Technical Session: 3
Topic: Current Trends in Power System Research

Resource Person:

Dr. SudhaBalagopalan, Principal, Professor, *EEE Department, Vidya Academy of Science & Technology, Trissur*

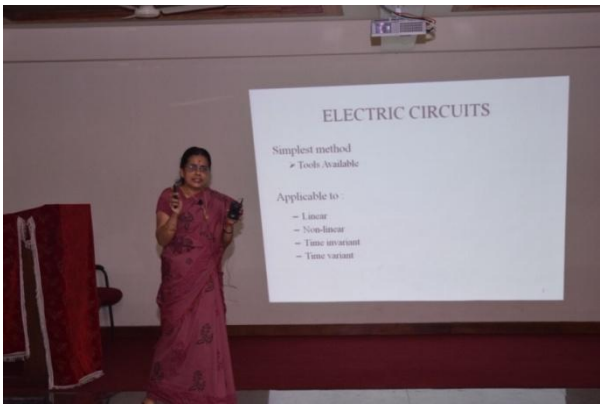
Dr. SudhaBalagopalan made a presentation on current trends in power system research. She started her presentation with an example of hydraulic power generation and hydro electric generators. She highlighted the complexity of the system, different modifications and improvements possible in the hydraulic power generation system and scope for research and development in this area. Research problem should be seen in global perspective and should not limit to any discipline. She emphasized the need for deep understanding of fundamentals. She asked faculty members to acquire knowledge through inter disciplinary interactions and through industry partnership. She highlighted the scope of research for faculty members in the area of power generation, transmission and distribution. She mentioned that application of Power electronics can play major role to achieve power system stability and reliability.

Different engineering materials are used for different applications in power system. The specific property of the materials decides the ultimate performance of the system components. Modern materials with enhanced properties can drastically improve the performance. She highlighted the possibility of multidisciplinary research and development in this area. Renewable energy technologies assume prime importance as they can avoid carbon dioxide emission and reduce the thrust on fossil fuel inventory. Scope exists for research and development in renewable energy technologies which will improve efficiency and economy. Modification of present transmission system is required to improve efficiency and reliability. She has highlighted different areas of research in transmission system with typical examples. Optimization of design and Construction of power system components such as transformers, circuit breakers and other protective devices shall be considered. Many improvements are possible in HVDC and EHV transmission system. Distribution system today is facing many problems. Automation of distribution system with additional safety features and parameter monitoring system will improve performance, enhance reliability, economy and energy efficiency. Application of low voltage DC system in domestic appliances and lighting at home will have many advantages. Solar power-LVDC hybrid system will increase the efficiency and avoid multiple power conversions. Dr.

SudhaBalagopalan concluded the session by mentioning that blending of Power system and Power Electronics will bring a new tomorrow.

Technical Session: 4

Topic: Role of Modeling in Performance Enhancement of Power Electronic Systems



Resource Person:

Dr. Devi Balakrishnan, Professor, *Electrical Department, NSSCollege of Engineering, Palakkad*

Dr. Devi Balakrishnan made a presentation on Role of Modeling in performance enhancement of power electronic systems. In her introduction, she explained the concept of system. She added that electric circuits are applicable to linear, non-linear, time invariant and time variant systems. She then discussed about circuit modeling and machine modeling. The concept for design comes from education and experience. The behavior of the system is determined by ideal circuit components. Any machine can be replaced by an equivalent two pole machine, named as direct axis and quadrature axis. The discussion is then proceeded with modeling of power electronic systems. Different modeling techniques like state space averaging, discrete modeling, sampled data modeling etc are used in power electronic systems due to unusual properties of switching elements. She also added that in order to control the output of switching systems, system topology has to be changed.

She also drew attention towards modeling through states of the system. She explained in detail about state space averaging. The method was published in 1977. In this method, all ripple frequency components should be less than the average ripple components. She pointed

out that the method must have the output filter corner frequency much less than switching frequency.

Dr. Devi discussed in detail about the modeling of boost converter and buck type DC-DC converter. She explained about discrete time models by Packard. Both state space and discrete model will results in small signal linear models. The discrete model describes the small signal behavior of the converter at a particular instant. The treatment in discrete time modeling is very same as that in state space averaging but the results are different. In her concluding session, she pointed out that the steady-state, dynamic and transient analysis can be done effectively through proper modeling. A wise choice of modeling will result in matching response through simulation and hardware.

Technical Session: 5

Topic: Power System Monitoring and Control

Resource Person:

Dr. Prince A, Professor, *Electrical Department, RIT, Kottayam*

Dr. Prince A gave a presentation on Power System Monitoring and Control. He explained in detail about Wide Area Measurements Systems (WAMS). One of the lines of technological development of power systems in the world, which provide increasing capacityand stability of power transmission lines, is creation and implementation of WAMS. They are based on the new data acquisition technology of phasor measurement and allow monitoring transmission system conditions over large areas in view of detecting and further counteracting grid instabilities. These systems provide time synchronized measurements of the parameters, which characterize the power system state in its various points with high

resolution. This data level enables us to observe transient states, estimate the current states of entire power system and analyze the causes and consequences of power system disturbances.

He added that measurements in WAMS systems are implemented by special-purpose equipment called Phasor Measurement Unit (PMU) which determines phase angles and amplitudes of currents and voltages, frequency, power etc. in various parts of a power supply system. These parameters are taken by PMU at selected locations in the power system and stored in a data concentrator every 100 milliseconds. It is essential for Smart Grid operation in which all measurements are synchronized by means of GPS accurate within 1 micro second.

He pointed out that data from PMU with time stamps are transferred to WAMS systems server on which the special software is installed, which provides data acquisition from all PMU`s in system and makes their processing, calculations, storage, and also displays in real-time power system state parameters and delivery of messages and signals.

Dr. Prince explained the improvements of WAMS over SCADA. He added that data may not be synchronized in SCADA. He also discussed about the Signal Processing Tools such as Fast Fourier Transform (FFT), Prony Analysis and Hilbert Transform. He concluded the topic by giving an overview of WAMS in Indian Power Grid.

Technical Session: 6
Topic: Kerala Power Sector- Present and Future & Functions of Load Dispatch Centre

Resource Person:
Mr. N.N. Shaji, Chief Engineer, *[Transmission & System Operations], KSEB*

Mr. N. N.Shaji made a presentation on 'Kerala Power Sector- Present and Future & Functions of Load Dispatch Centre'. In his introduction, he gave a brief idea about different organizations and electricity act 2003.He informed that the act came in to force on 10.6.2003 and it gave flexibility to State Govt. to choose suitable Reform models. Act 2003 and Electricity policy recognizes trading of Electricity as a distinct activity. Open access is provided in transmission sector so that any utility can buy power from any source in India or even from abroad. The transmission charges are payable to the transmission company and losses associated are to be borne by the beneficiary. He then mentioned the regulatory architecture in India which involves CERC (Central Electricity Regulatory Commission) and SERC (State Electricity Regulatory Commission). CERC determines interstate transmission charges specify grid code and fix trading margin and SERC determines tariff for generation, supply and transmission. It also regulates purchase and procurement process of distribution licensees.

He also drew attention towards power grid and its evolution. Grid is a national net work for bringing together the electrical energy generated at different states and to effectively distribute the electrical energy. The discussion is proceeded with communication and SCADA system in KSEB. SCADA system access data from various equipments /devices and control remotely. Major elements of SCADA system are transducers, Remote Terminal Units, communication system, SCADA hardware and software, auxiliary power supply system.

Mr. Shaji explained in detail about demand management. Hydro generation is stagnant with about 6500MU annually and 1700MW during peak. Hydro scheduling has first priority for peak load management. He also discussed that open access is a mechanism that allows generators to sell power to the highest bidders while consumers can source their needs from the most economic seller. When buying and selling entity belongs to different states, it is termed as interstate open access.

He then gave a detailed idea about load dispatching..He also pointed out that the generating pattern of each day is decided based on the storage in the dams and taking into account the irrigation and other social commitments. He concluded the session by giving a brief idea about new concepts and innovations in this area.

Technical Session: 7

Topic: Variable Frequency Drives for High Speed Applications

Resource Person:

Mr. S.R. Gurumurthy, Senior Scientific Officer, *RMP, BARC Mysore*

Mr.S.RGurumurthy made a presentation on Role of Power Electronics in Energy Processing Industries. He started the presentation with advantages of Electrical energy and various applications of electrical energy in the modern world. Ten he briefly discussed about energy convertors such as Servo & Stepper Motors, Generators, Solar cells, Solenoids and Heating coils. He also explained about Energy conversion parameters such as Voltage, Current, Duty cycle, Frequency Speed, Motion, Torque, Velocity, acceleration etc. Main topics covered in his presentation were Concept and implementation of Energy Conversion Systems, Energy storage and recovery system Inter connection of energy sources and DC-DC Power conversion. Major industrial energy use is from motors. Nearly 5 Lakhs LT AC motors get added to the Indian industry each year. The world motor market is set to grow by 30% in the next 10 years with the advent of new generation premium efficiency motors. By using variable speed drive or inverter parameters such as motor speed, motor torque, acceleration up and down motion (forward/ reverse) etc can be precisely controlled. Motion control can be linked to process parameters. He also explained about the challenges involved in the design of an Inverter and they are mainly, selection of power components, design of protections for the devices and the design of power circuit layout for low voltage surges and current spikes, isolation strategy for high voltage power circuit and low voltage control circuitry, heat sink design, thermal management and power rating of the drives up to 2.0 MW.

He covered energy recovery system concepts and its implementation with help of block diagram he explained about the kinetic energy recovery system built at BARC for some specific application. Hybrid cars are one of the best short term solutions to the over use of petroleum by the transportation sector.

He also described about smart grid concepts in modern power system and explained about the advantages of Smart Grids. They are reduction of distribution losses,enable decentralized power-generation and optimize usage, handle peak-demand better, manage demand and supply at all points of time by using storage and high-cost instantaneous power-source and intelligently decide where to do load shedding if no other options.

Technical Session: 8

Topic: Low Voltage Direct Current Architecture for Domestic Application

Resource Person:

Mr.Dhanesh P.R, Senior Scientist, *CDAC, Trivandrum*

Mr. Dhanesh P R gave a presentation on Low Voltage Direct Current Architecture for Domestic Applications. HehighlightedthatDC holds a great promise in home/office/building environment where local generation (wind or photovoltaic) is available. He noted that the fastest growing portion of residential electricity use is consumer electronics and small appliances. By using a low voltage DC distribution network in residences, the need for power conversion is reduced and produces better quality power. Only highly efficient DC to DC converter will be needed to run some of the DC appliances. DC distribution architectures within the home through corresponding DC-DC converters arise as an attractive option not only in terms of enhancing efficiency due to reduction of conversion steps, but

also for having power quality independence from the utility mains. These kinds of systems generally provide improved reliability in comparison with their alternating current (AC) counterparts. Besides that, control design in DC systems is significantly simpler since there are no reactive and harmonic power flows or problems with synchronization. DC provides significant reduction in the cost of electricity, operation and maintenance and the space needed for electrical infrastructure when compared to AC. The approach may also allow easier integration of renewable energy and direct energy storage.

He also drew attention towards different outlets such as LVDC power sockets and LVDC power switches. He informed that the user comfort and easy access all the subsystems such as LVDC system controller, AC-DC converter, distribution and protection unit, LVDC power converter and battery bank are incorporated in a single rack called power rack.

Mr. Dhanesh explained in detail about the expected advantages of DC distribution system and LVDC architecture for residential applicationsAll the subsystems such as LVDC power converter, AC-DC converter, solar converter (MPPT), battery bank, LVDC system controller, and protection and distribution unit are incorporated in power rack and the LVDC system controller acts as the master controller of the system. In his concluding remarks, the different loads in LVDC system with their specifications were discussed.

Technical Session: 9

Topic: Integrated Grid Control

Resource Person:

Mr. Babu Varghese, Rtd. General Manager, *PowerGrid Corporation India Ltd.*

Mr. Babu Varghese made a presentation on integrated grid control. He started his talk by explaining the history of grid development in India. Electricity generation, transmission and distribution were entrusted to the states. In 1964 decision was taken to integrate the grids on a regional basis for optimal utilization of resources. Central sector companies such as NTPC and NHPCformed to augment power generation. Concept of large pit-head power generation emerged in late seventies. This resulted in phenomenal growth in generation and transmission for power system. Major long EHV transmission lines constructed to evacuate power from these pit-head stations. Inter- regional power transfer capability developed on asynchronous mode utilizing HVDC back to back links. Formation of national grid had to wait for the 765kV system to stabilize.

Subsequently, Mr. Babuexplained the actual process of grid control in detail. He described the role of state load dispatch centre (SLDC), Regional Load Dispatching Centre and National load dispatch centre (NLDC) in power generation, distribution and grid control. Actual power drawn by any state is determined by special energy meters installed at specified load transfer points in the grid. These energy meters record energy transfer in 15 min blocks i.e., 96 records in a day along with the average frequency during this time block. Central electricity regulatory commission fixes the Unscheduled Interchange (UI) rates.

Govt. of India entrusted modernization of load dispatch centers to power Grid Corporation in 1992. Power Grid Corporation in coordination with the state electricity boards finalized the scheme for modernization of load dispatching centers in all the five regions. These projects were termed unified load dispatch (ULDC) project which comprises of energy management system (EMS) and SCADA system associated with digital communication system. The recent developments in integrated grid control are wide area measurement systems to provide advance warning on system exigencies.Dedicated wideband fiber optic communication network provides fast data communication and control.

Technical Session: 10

Topic: Advancements in Nuclear Power

Resource Person:

Dr. K.K. Rajan, Former Group Director, *FRTG, IGCAR, Kalpakkam*

Dr. K. K. Rajan made a presentation on recent advancements in Nuclear Power. In the introduction he has pointed out about the challenges faced by nuclear power today, such as disposal of high level waste, making nuclear power economically viable, continuing to assure non-proliferation and physical safety of nuclear plants and developing economic reactors for small electricity grids. He explained about different types of Nuclear Reactors, three stage nuclear power programme of India, evolution of different Generation of nuclear reactors in the world and Generation IV reactor concepts. He indicated that in India and in abroad liquid metal cooled Generation IV reactor designs are selected for future development. In India development of Sodium cooled Fast Breeder Reactors are in progress. Fast breeder reactors can produce more nuclear fuel from fertile materials than the fuel it consumes. The power generation and fuel breeding can go together in fast breeder reactors. The large percentage of fertile isotope of Uranium and large quantity of Thorium reserves available in the country can be converted into nuclearfuels in fast breeder reactors and the huge energy demand for the future can be met in a sustainable way. Indira Gandhi Centre for Atomic Research at Kalpakkam is exclusively meant for the development of sodium cooled fast breeder reactors. The Fast Breeder Test Reactor is in operation for the past three decades at IGCAR. The 500 MW capacities, Prototype Fast Breeder Reactor is in the advanced stage of construction. He explained in detail about the role of Electrical Engineers in SFR technology development. Since sodium being good conductor of electricity, Electromagnetic pumps without any moving parts can be used for pumping. EM devices are used for measurement of flow, level and other

process parameters. Low efficiency and Low power factor of EM pumps are the issues a yet to be addressed.

Fusion power has the potential to provide sufficient energy with a relatively small impact on the environment. Furthermore, a fusion reactor would produce virtually no CO_2 or atmospheric pollutants, and its radioactive waste products would be very short-lived compared to conventional nuclear reactors. International Thermonuclear Experimental Reactor (ITER) project jointly being carried out through international cooperation with a dominant role for India. The heat transport system of Fusion reactor also uses lead lithium alloy which is good conductor of electricity. Hence electromagnetic devices are likely to play key role in fusion reactor too. Application of power electronics can enhance performance of electromagnetic devices used in Nuclear reactors.

Industrial Visit-TELK Angamaly

Industrial visit was carried out at Transformers and Electricals Limited Kerala (TELK), Angamaly on 7th January 2017, in connection with Faculty Development Programme organized by EEE department of VJCET. The faculties left for visit at 8.30 am and took about one and half hours to cover the distance. The company is located at Angamaly in Ernakulum district.

The main objective behind the visit was to make faculties aware about different power transformers manufactured at TELK. It was great to know that TELK manufactures Extra High Voltage Power Transformers and other equipments such as CT and PT. The main sections visited include core section, core winding and insulation section, equipments like current transformer, potential transformer, On Load Tap Changer etc. The core section deals with the procedure of fabrication CRGO, lamination, assembly of transformer core and manufacture of ring core for current transformer, tank sheet and lamination for PT. Generally, rectangular Paper Covered Copper Conductors (PCC) is used for winding. For very high power transformers, continuously transposed conductors (CTC) are used. Oil and drying shop is assigned with the task of oil impregnation, proper drying and cleaning of the transformer and its various parts. Drying is done using vacuum as well as hot dry air. Thermistors are used to measure the temperature of transformer winding and core. Hot air

circulation is continued till the temperature rises to 100º C at the top of the coil. TELK manufactures hermetically sealed, oil impregnated, paper insulated and oil filled outdoor type current transformers up to 400 kV. The winding and insulation of 400 kV current transformers are carried out in humidity controlled, dust free atmosphere. Current Transformers with primary current up to 2000A has been manufactured. TELK manufactures hermetically sealed, oil impregnated paper insulated, oil filled, porcelain type outdoor electromagnetic potential transformers up to 245 kV. Potential Transformer (PT) manufactured is suitable for connection between the line and effectively earthed systems. The body of the transformer and other equipments are manufactured in the plate workshop. Mild steel are used for making the different parts. They are cut into the desired shapes by employing gas cutting or shear cutting. TELK has got the whole range of equipments for conducting tests for power and instrument transformers. Three million volts impulse Generator, 800kV EHV testing transformer, 500kV testing transformer, 900kV peak volt meter, Partial discharge detectors on all the test systems to automatically monitor partial discharge of the products, Material laboratory, Oil laboratory etc are some of the facilities at the test laboratory for tests conducted as per Indian standards. In larger electrical power transformer, for proper voltage regulation of transformer, on load tap changer is required. Various types of On Load and Off Load Tap changers are offered to suit the number of taps, current rating, step voltage and number of poles. TELK make on load tap changers are resistor transition equipments which are used to vary the ratio of oil immersed transformers under load.

Transformers And Electricals Limited Kerala is one among the prestigious industries of Kerala. The industry plays a vital role in the power distribution system of countries like Oman. The Industrial Visit Program gave the faculties an idea of construction of Transformers, the major component in power generation and distribution. The faculties left the company by 1 pm.

Valedictory Function

The valedictory function of the ISTE sponsored faculty development programme 2017 on the Application of Power Electronics on Modern Power Systems was held on 6thJan at the seminar hall of Research & Development block. With over 40 participants the programme was a success.

Prof. Paul Antony, Head of EEE Department welcomed all the dignitaries to the function. He mentioned the contribution of all faculties and participants towards the successful completion of the faculty development programme 2017 under the joint auspices of ISTE.

Director, Rev. Dr. George Thanathuparambil, in his presidential remarks, referred to the collaborative effort made by the Electrical & Electronics Engineering Department and ISTE and the relevance and usefulness of such efforts.

In his valedictory, Principal, Dr. Josephkunju Paul C, spoke on the scope of the course as a professional one and appreciated the Electrical & Electronics Engineering Department for bringing up such a course in the college. He also mentioned the interest taken by the delegates as appreciable.

Dr. B. Aruna, Head of EEE Department (in- charge),gave all the delegates best wishes and thanked them for their good participation. She pointed out the need for such events in future. She appreciated the efforts put forth by all the faculties in hosting and making the programme a huge success.

It was followed by a feedback session from delegates. Mr. Lins T Alex from METS, Mala, Ms. Anuja Varghese from ISSAT,Pezhakappilly,Ms. Smitha Jacob and Mr. Sharone Varghese from VJCET gave a feedback on the entire course.

Distribution of certificates for all the delegates was made. Director, Rev. Dr. George Thanathuparambil, Principal, Dr. Josephkunju Paul C and Prof. Paul Antony, Head of EEE Department has distributed the certificate of participation to all the delegates.

Prof. K. K. Rajan, EEE Department & Dean of Industry Institute Interaction cell and co-ordinator of FDP, has made the concluding remarks. He pointed out that the participation of industry professionals and academician in the FDP was highly beneficial to the delegates. But the knowledge acquired can be complete only when the faculties are able to transfer it to the young engineering minds. He also pointed out that the huge opportunities in theelectrical engineering field are not known to the students as well as to the people looking for higher studies. The challenges faced by the engineering colleges now are due to the lack of awareness of the society towards the demand for engineers across the globe. This has to be changed by conducting more societal programmes with engineering base.

The valedictory session was concluded with a vote of thanks by Ms. Cini K, Associate Professor, EEE Department and co-ordinator of the Faculty Development Program. She thanked each one who attended the programme and EEE Department for the wholehearted support and motivation in bringing up such a programme. She thanked all the resource persons who have travelled a lot and for the most insightful sessions. She emphasized on the need for such faculty development programme in future.

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Department of Electrical Engineering
Viswajyothi College of Engineering and Technology

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COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

4.3 Three Day Nuclear Energy Awareness Seminar (NEAS-2016) by III Cell, VJCET (EEED)

REGISTRATION FORM

NEAS 2016

Name of Faculty/Student	
Year and Branch/Department	
Name of College and Address	
Address for Communication	
Mobile No.	
Email ID	
Signature of the Student	
Signature of the Institution Head with seal	
Date	

NO REGISTRATION FEE

Kindly mail the registration form to kkrajan@vjcet.org

Last date of registration : **20.09.2016**

Speakers and topics

Topic	Name of Speaker
Keynote address on theme of the seminar	**Dr. M. Saibaba,** AD, RMG, IGCAR, Kalpakkam
Power scenario and role of nuclear energy	**Dr. K. K. Rajan,** Former Director, FRTG, IGCAR, Kalpakkam
Kudankulam Nuclear Power Plant, the past, the present & the future	**Shri. P. A. Suresh Babu,** CE, KKNPP, NPCIL
Nuclear radiation effects and protective measures	**Dr. M. T. Jose,** Head, RSS, IGCAR, Kalpakkam
Relevance of FBRs and experience on FBTR	**Shri. K. V. Suresh Kumar,** Station Director, FBTR, IGCAR, Kalpakkam
Research and Development on FBRs	**Shri. G. Padmakumar,** Head, CTD & SEHD, IGCAR, Kalpakkam
Societal applications of Nuclear energy	**Dr. R. Bhaskaran,** Head, RSD, IGCAR, Kalpakkam

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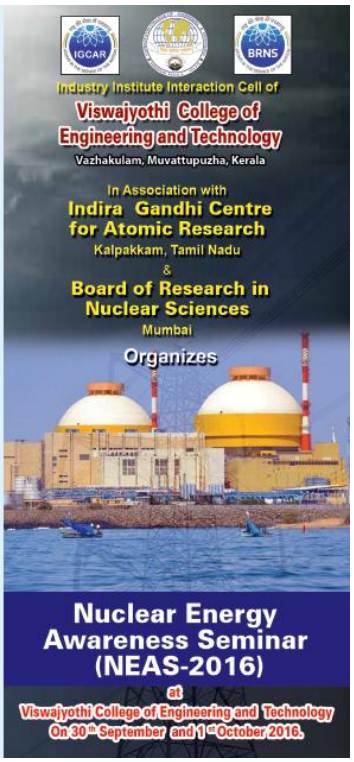
Professor & HOD, ECE

Mr. Aneesh Kurian, Secretary
Asst. Professor, EEE.

For more details, contact

Dr. K. K. Rajan
Prof. EEE & Dean, Industry Institute Interaction,
Viswajyothi College of Engineering and Technology,
Vazhakulam, Muvattupuzha, Ernakulam Dist, Kerala
E mail: kkrajan56@gmail.com; kkrajan@vjcet.org
Phone: 0485 226211, Mobile : 9072964417



About Viswajyothi College of Engineering and Technology

Viswajyothi is the lamp of God which brings light to the whole world. It aims to convey glow for the whole world and to bring all to radiance from darkness. Viswajyothi College of Engineering and Technology (VJCET), established in the year 2001, is affiliated to M.G. University and APJ Abdul Kalam Technological University and has earned the reputation as a trend setter in Engineering Education. A highly committed Management Team with the noble vision of transforming Viswajyothi College of Engineering and Technology into an International Center of Excellence in Engineering Education. Competent and dedicated Faculty, scientifically planned infrastructural facilities with state-of-the-art laboratories, workshops and full fledged teaching - learning processes along with an excellent work culture and campus atmosphere have enabled Viswajyothi to carve a niche for itself amongst the self- financing colleges in Kerala within a short span of time. Presently Viswajyothi College of Engineering and Technology offers six B.Tech Engineering Degree courses and four Post Graduate Courses. The building complex of the College is situated in a sprawling campus of 26 acres, nestled among lush greenery over a hillock on the side of the Ernakulam - Thodupuzha State Highway, in central Kerala.

Our Vision

Moulding Engineers par excellence with integrity, fairness and human values

Our Mission

- We commit to develop the institution into a Centre of Excellence of International Standards.
- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.

About NEAS 2016

Energy is an essential commodity for human development and per capita energy consumption is a measure of human development index. India's per capita consumption is close to 1000 kWh and is almost one third of world average. Our target is to achieve a percapita consumption of 5000 kWh by 2050. Considering the growing population and the increasing energy demand a five fold increase in installed capacity is required in the next 35 years. The estimated coal reserves are around 200 billion tonnes and it can last only for few years at the targeted consumption rate. Considering the environmental impacts and limitations of mining & transportation, the use of coal has to be minimized. Hydraulic sources are almost fully utilized. Additional hydro potential available is mostly in the north eastern region and those will lead to submergence of vast area of land, deforestation and evacuation of people. All non conventional energy sources has to be effectively used. However, the potential is no where near the requirement. Green house gas emission and global warming is an alarming issue and each country has to limit the emission. In this context, it is pointed out that solar and nuclear are the only two sources through which our target power generation can be achieved. Large area requirement, seasonal in nature and high maintenance challenges are the major issues with solar power. In the Indian specific situation, nuclear energy appears to be a choice for energy security. Around 400 nuclear reactors are in operation in the world and 12% of the electricity generated in the world today is from nuclear source. In India the contribution of nuclear energy is only 3%. Nuclear energy has significant application in agriculture, medical and in industrial sectors. Fortunately, in India, we have moderate quantity of Uranium and abundant quantity of Thorium resources. Fertile Thorium can be converted into fissile nuclear fuel, Uranium, through Fast Breeder Reactors.

Safety and economy are the major challenges in the development and utilization of nuclear energy. In spite of being an important energy resource, general public appears to have apprehensions mainly due to lack of awareness. The safety and economy issues related to nuclear energy has to be addressed by collaborative research and development involving academic institutes.

Objective

It is high time to spread awareness on nuclear energy among the public especially among young engineers. In this view, this seminar is proposed to address the myths about the use of nuclear energy especially among the young generation.

Who can attend NEAS 2016

Faculty and students from Engineering and Arts & Science Colleges, in the central region of Kerala & Professionals and Engineers in Industry are the target group of this seminar.

Exhibition at VJCET

In connection with the Nuclear Energy Awareness Seminar an exhibition on Nuclear Energy is arranged on 30th September and 1st October at VJCET. Materials, models and posters from Indira Gandhi Centre for Atomic Research, Kalpakkam and models from Kudankulam Nuclear Power Station will be displayed in the exhibition. Experts from Department of Atomic Energy will interact with visitors. An exhibition competition will be conducted on the theme "Energy for the future" for Higher Secondary School students. Students from central region of Kerala can participate in the competition. Exhibition will be open to all.

Quiz Competition

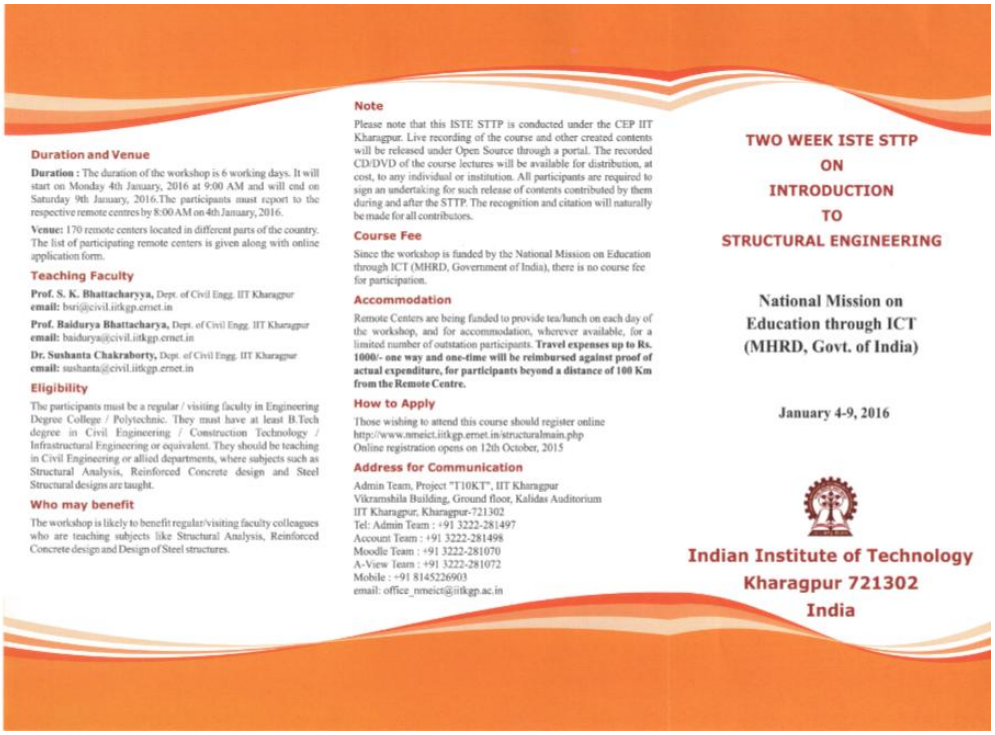
As part of the Nuclear Energy Awareness Seminar, Science Quiz Competition will be held at VJCET on 30th September and 1st October. Students of Higher Secondary Schools from central region of Kerala can participate in this competition.

Expected Outcome

- Delegates of this seminar will get an overview of the current nuclear energy progarmme in the country.
- Delegates will be exposed to the challenges involved in nuclear power generation.
- NEAS will help the delegates to select the best option for achieving energy security of the nation.
- An opportunity to interact with senior nuclear energy experts in the country.

5. 2015 - 16

5.1Two week ISTE STTP on Introduction to Structural Engineering, IIT Kharagpur by CED-VJCET



Duration and Venue

Duration : The duration of the workshop is 6 working days. It will start on Monday 4th January, 2016 at 9:00 AM and will end on Saturday 9th January, 2016.The participants must report to the respective remote centres by 8:00 AM on 4th January, 2016.

Venue: 170 remote centers located in different parts of the country. The list of participating remote centers is given along with online application form.

Teaching Faculty

Prof. S. K. Bhattacharyya, Dept. of Civil Engg. IIT Kharagpur
email: bsri@civil.iitkgp.ernet.in

Prof. Baidurya Bhattacharya, Dept. of Civil Engg. IIT Kharagpur
email: baidurya@civil.iitkgp.ernet.in

Dr. Sushanta Chakraborty, Dept. of Civil Engg. IIT Kharagpur
email: sushanta@civil.iitkgp.ernet.in

Eligibility

The participants must be a regular / visiting faculty in Engineering Degree College / Polytechnic. They must have at least B.Tech degree in Civil Engineering / Construction Technology / Infrastructural Engineering or equivalent. They should be teaching in Civil Engineering or allied departments, where subjects such as Structural Analysis, Reinforced Concrete design and Steel Structural designs are taught.

Who may benefit

The workshop is likely to benefit regular/visiting faculty colleagues who are teaching subjects like Structural Analysis, Reinforced Concrete design and Design of Steel structures.

Note

Please note that this ISTE STTP is conducted under the CEP IIT Kharagpur. Live recording of the course and other created contents will be released under Open Source through a portal. The recorded CD/DVD of the course lectures will be available for distribution, at cost, to any individual or institution. All participants are required to sign an undertaking for such release of contents contributed by them during and after the STTP. The recognition and citation will naturally be made for all contributors.

Course Fee

Since the workshop is funded by the National Mission on Education through ICT (MHRD, Government of India), there is no course fee for participation.

Accommodation

Remote Centers are being funded to provide tea/lunch on each day of the workshop, and for accommodation, wherever available, for a limited number of outstation participants. **Travel expenses up to Rs. 1000/- one way and one-time will be reimbursed against proof of actual expenditure, for participants beyond a distance of 100 Km from the Remote Centre.**

How to Apply

Those wishing to attend this course should register online
http://www.nmeict.iitkgp.ernet.in/structuralmain.php
Online registration opens on 12th October, 2015

Address for Communication

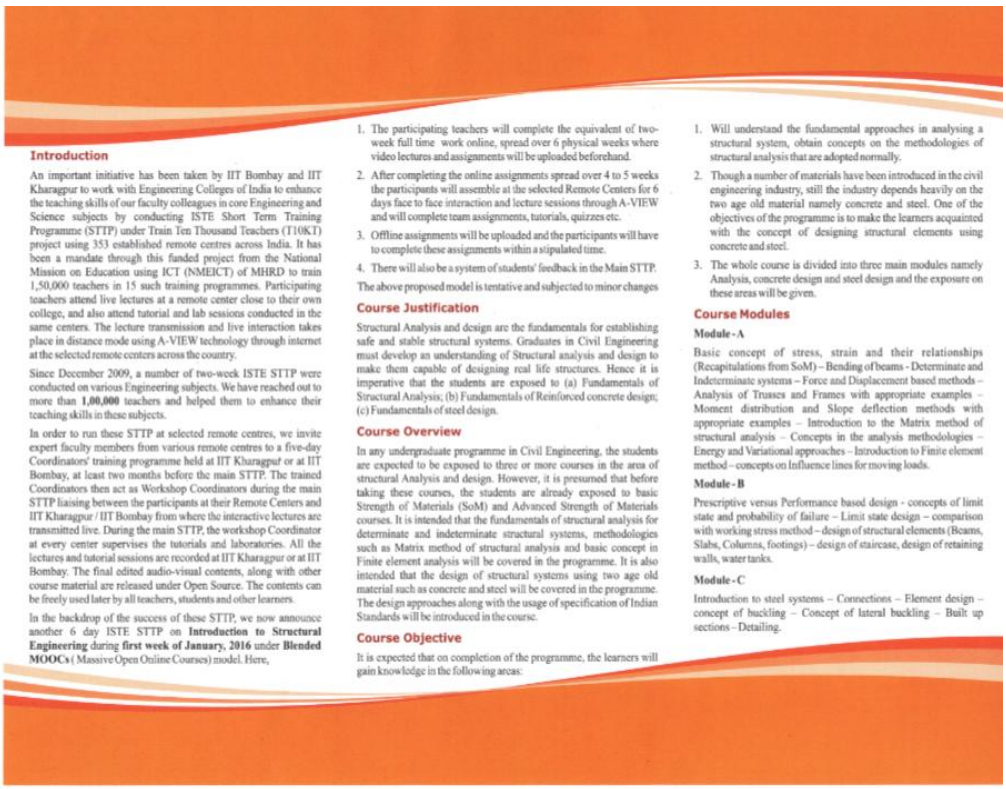
Admin Team, Project "T10KT", IIT Kharagpur
Vikramshila Building, Ground floor, Kalidas Auditorium
IIT Kharagpur, Kharagpur-721302
Tel: Admin Team : +91 3222-281497
Account Team : +91 3222-281498
Moodle Team : +91 3222-281070
A-View Team : +91 3222-281072
Mobile : +91 8145226903
email: office_nmeict@iitkgp.ac.in

TWO WEEK ISTE STTP
ON
INTRODUCTION
TO
STRUCTURAL ENGINEERING

National Mission on Education through ICT (MHRD, Govt. of India)

January 4-9, 2016

Indian Institute of Technology
Kharagpur 721302
India



Introduction

An important initiative has been taken by IIT Bombay and IIT Kharagpur to work with Engineering Colleges of India to enhance the teaching skills of our faculty colleagues in core Engineering and Science subjects by conducting ISTE Short Term Training Programme (STTP) under Train Ten Thousand Teachers (T10KT) project using 353 established remote centres across India. It has been a mandate through this funded project from the National Mission on Education using ICT (NMEICT) of MHRD to train 1,50,000 teachers in 15 such training programmes. Participating teachers attend live lectures at a remote center close to their own college, and also attend tutorial and lab sessions conducted in the same centers. The lecture transmission and live interaction takes place in distance mode using A-VIEW technology through internet at the selected remote centers across the country.

Since December 2009, a number of two-week ISTE STTP were conducted on various Engineering subjects. We have reached out to more than **1,00,000** teachers and helped them to enhance their teaching skills in these subjects.

In order to run these STTP at selected remote centres, we invite expert faculty members from various remote centres to a five-day Coordinators' training programme held at IIT Kharagpur or at IIT Bombay, at least two months before the main STTP. The trained Coordinators then act as Workshop Coordinators during the main STTP liaising between the participants at their Remote Centers and IIT Kharagpur / IIT Bombay from where the interactive lectures are transmitted live. During the main STTP, the workshop Coordinator at every center supervises the tutorials and laboratories. All the lectures and tutorial sessions are recorded at IIT Kharagpur or at IIT Bombay. The final edited audio-visual contents, along with other course material are released under Open Source. The contents can be freely used later by all teachers, students and other learners.

In the backdrop of the success of these STTP, we now announce another 6 day ISTE STTP on **Introduction to Structural Engineering** during **first week of January, 2016** under **Blended MOOCs** (Massive Open Online Courses) model. Here,

1. The participating teachers will complete the equivalent of two-week full time work online, spread over 6 physical weeks where video lectures and assignments will be uploaded beforehand.
2. After completing the online assignments spread over 4 to 5 weeks the participants will assemble at the selected Remote Centers for 6 days face to face interaction and lecture sessions through A-VIEW and will complete team assignments, tutorials, quizzes etc.
3. Offline assignments will be uploaded and the participants will have to complete these assignments within a stipulated time.
4. There will also be a system of students' feedback in the Main STTP.

The above proposed model is tentative and subjected to minor changes

Course Justification

Structural Analysis and design are the fundamentals for establishing safe and stable structural systems. Graduates in Civil Engineering must develop an understanding of Structural analysis and design to make them capable of designing real life structures. Hence it is imperative that the students are exposed to (a) Fundamentals of Structural Analysis; (b) Fundamentals of Reinforced concrete design; (c) Fundamentals of steel design.

Course Overview

In any undergraduate programme in Civil Engineering, the students are expected to be exposed to three or more courses in the area of structural Analysis and design. However, it is presumed that before taking these courses, the students are already exposed to basic Strength of Materials (SoM) and Advanced Strength of Materials courses. It is intended that the fundamentals of structural analysis for determinate and indeterminate structural systems, methodologies such as Matrix method of structural analysis and basic concept in Finite element analysis will be covered in the programme. It is also intended that the design of structural systems using two age old material such as concrete and steel will be covered in the programme. The design approaches along with the usage of specification of Indian Standards will be introduced in the course.

Course Objective

It is expected that on completion of the programme, the learners will gain knowledge in the following areas:

1. Will understand the fundamental approaches in analysing a structural system, obtain concepts on the methodologies of structural analysis that are adopted normally.
2. Though a number of materials have been introduced in the civil engineering industry, still the industry depends heavily on the two age old material namely concrete and steel. One of the objectives of the programme is to make the learners acquainted with the concept of designing structural elements using concrete and steel.
3. The whole course is divided into three main modules namely Analysis, concrete design and steel design and the exposure on these areas will be given.

Course Modules

Module - A

Basic concept of stress, strain and their relationships (Recapitulations from SoM) – Bending of beams - Determinate and Indeterminate systems – Force and Displacement based methods – Analysis of Trusses and Frames with appropriate examples – Moment distribution and Slope deflection methods with appropriate examples – Introduction to the Matrix method of structural analysis – Concepts in the analysis methodologies – Energy and Variational approaches – Introduction to Finite element method – concepts on Influence lines for moving loads.

Module - B

Prescriptive versus Performance based design - concepts of limit state and probability of failure – Limit state design – comparison with working stress method – design of structural elements (Beams, Slabs, Columns, footings) – design of staircase, design of retaining walls, water tanks.

Module - C

Introduction to steel systems – Connections – Element design – concept of buckling – Concept of lateral buckling – Built up sections – Detailing.

VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE New Delhi & Affiliated to APJ Abdul Kalam Technological University
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala - 686 670
Tel: 0485 2262211 / 44
Email:vjcet@vjcet.org
www.vjcet.org

VISWAJYOTHI COLLEGE OF ENGINEERING & TECHNOLOGY
(Approved by AICTE, Affiliated to Mahatma Gandhi University, Kottayam)
Vazhakulam P. O., Muvattupuzha, Ernakulam Dist., Kerala, India - 686 670
Ph: 0485 - 2262211, 2262244, 2262255, 2262977, Fax: 0485 - 2262211
Website - www.vjcet.ac.in E-mail: vjcet@vjcet.org, vjcvklm@gmail.com

Dear Sir/Madam,

We would like to invite you to attend the **Two-week ISTE workshop on "Introduction to Structural Engineering**". under the National Mission on Education through ICT, MHRD, Govt. of India being organized in the remote centre **Viswajyothi College of Engineering(Remote centre id:1179)** from **04th January to 09thJanuary, 2016**.This workshop will be conducted under BLENDED MOOCS(Massive Open Online Courses) model. The workshop will be transmitted live through internet (A-View software) to various coordinating remote centers across the country.**Prof. S. K. Bhattacharyya, Prof. Baidurya Bhattacharya, Dr. Sushanata Chakraborty (IIT Kharagpur)** are the resource persons for the workshop. The workshop will benefit faculty teaching subjects like Structural Analysis, Reinforced Concrete design, Design of Steel Structure. Faculty from Engineering colleges and Polytechnic colleges having at least BTech Degree in Civil Engineering/ Construction Technology/ Infrastructural Engineering or equivalent degree.

Enrollment will be strictly online. Details about the courses and other necessary information are provided in the brochure attached. We request you to register for attending the workshop on “Introduction to Structural Engineering” on or before **13TH NOVEMBER, 2015** and select the remote centre in **Viswajyothi College of Engineering** as the destination for attending this great intellectual exercise.

Thanking You,

Dr. Pramod M
Remote centre Coordinator
Mob: 9961188229

Mr. Daniel. A. V
Workshop Coordinator
Mob: 9895143580

Viswajyothi College of Engineering & Technology

Indian Institute of Technology Bombay,

Vazhakulam P.O, Muvattupuzha, Eranakulam,

Kerala, India-686670

Ph: 0485 2262211, 2262244

List of Participants

1	HANNAH MATTAM	hannahsmattam@yahoo.in	9567942835	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
2	SHARON JACOB	sharonj@vjcet.org	9495794705	VISWAJYOTHI COLLEGE OF ENGINEERING & TECHNOLOGY
3	APPU JOHN	appujohn87@yahoo.com	9747977173	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
4	Tina Jose	tinatresajose@gmail.com	9495675447	Viswajyothi College of Engineering and Technology, Vazhakulam
5	Lins Paul Kuriakose	linskuriakose@gmail.com	9847101711	Viswajyothi College of Engineering
6	ROSE MARY XAVIER	rosemaryx@vjcet.org	9745760823	Viswajyothi College of Engineering & Technology, Vazhakulam
7	BIJIMOL JOSEPH	cbmgconstructions@gmail.com	9744960145	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
8	NIVYA MARY ABRAHAM	nivyamary@yahoo.com	9446965347	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
9	BILU BABY	bilubaby19@gmail.com	7293810223	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
10	Jerin Jose	jerintjose86@gmail.com	9037847246	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
11	Devina Vipinan	devina88@gmail.com	9446926657	Viswajyothi College of Engineering &Technology,Vazhakulam
12	Soorya R	sooryaraghavan@gmail.com	9447762078	Viswajyothi College of Engineering and Technology
13	AMRUTHA S	amrutha@vjcet.org	9496333945	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY, VAZHAKULAM
14	TINTU SHINE A.L.	tintushineleo@gmail.com	9746839239	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
15	EMY PAULOSE	emypaulose@gmail.com	9446677169	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
16	SOUMYA RANI P THOMAS	soumyarani24@gmail.com	996107154	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY,VAZHAKULAM
17	VINEETHA THANKACHAN	vineetha1490@gmail.com	9746615581	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
18	TEPHY JACQUELINE GEORGE	stephyjg@gmail.com	9446821233	VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY VAZHAKULAM
19	Akhil Mohan	akhilmohan544@gmail.com	9884180432	Viswajyothi College of Engineering and Technology
20	NEETHU S	reachneethus@gmail.com	8589946170	INDIRA GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY FOR WOMEN
21	MINU ANNA JOHNY	minu.johny@yahoo.com	9946121039	INDIRAGANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY FOR WOMEN,NELIKUZHI
22	ASWATHY MOHANAN	aswathymohanan07@gmail.com	8281248943	INDIRA GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY FOR WOMEN
23	Basil Baby	basilpisharathu@gmail.com	9446789585	Holy Kings College of Engineering and Technology
24	Rosemol K. George	rosegeorge147@gmail.com	9497683966	Indira Gandhi Collage of Engineering and Technology
25	INDU SUSAN RAJ	indususanraj@gmail.com	9946736502	Indira Gandhi Institute of Engineering and Technology for Women

5.2 Five-day Faculty Development Programme on Grid Connected Renewable systems by EEED

DECLARATION

I declare that the details furnished above are true to the best of my knowledge and belief and agree to abide by the rules and regulations governing the conduct of ISTE-AICTE approved programmes.

Name and Signature of Applicant

SPONSORSHIP CERTIFICATE

Certified that Sri / Smt._____ _____is working as_____ at_____in_ _____ __ Department. If selected he/she will be permitted to attend the self-financing ISTE STTP on "*Grid connected Renewable systems*".

Place:

Date:

Head of the Institution

(Office Seal)

Advisory Committee

Mar. George Madathikandathil, *Patron*
Msgr. Dr. George Oliapuram, *Manager*
Rev. Dr. George Thanathuparambil, *Director*
Dr. Cyriac Thomas, *Former V.C., MG University*
Rev. Fr. Paul Nedumpurath, *Secretary of the Trust*
Dr. Josephkunju Paul C., *Principal*
Dr. Vijayakumar, *Chairman, ISTE Kerala Section*
Shri. M. K. Kuriakose, *Secretary, ISTE Kerala Section*

Organizing Committee

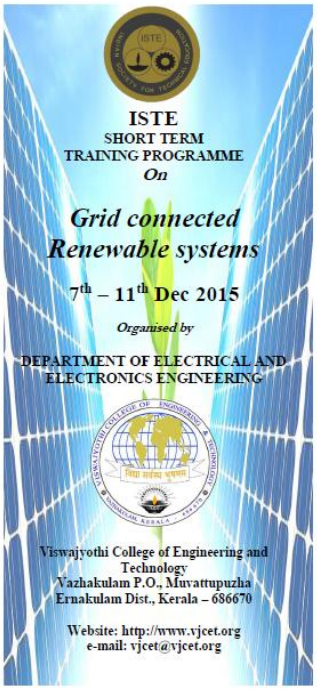
Prof. Paul Antony, H.O.D., *EEE Dept.*
Mr. Sony Kurian, Asst. Professor, *EEE Dept.*
Mr. Aneesh Kurian, Asst. Professor, *EEE Dept.*

For further details contact:

Mr. Sony Kurian : 94479 25215
Mr. Aneesh Kurian : 9946936642

Viswajyothi College of Engineering and Technology, Vazhakulam P.O., Muvattupuzha, Ernakulam 686 670.

Phone: 0485-2262211/44/55.
e-mail: eeegcrs@vjcet.org



ISTE
SHORT TERM
TRAINING PROGRAMME
On

Grid connected Renewable systems

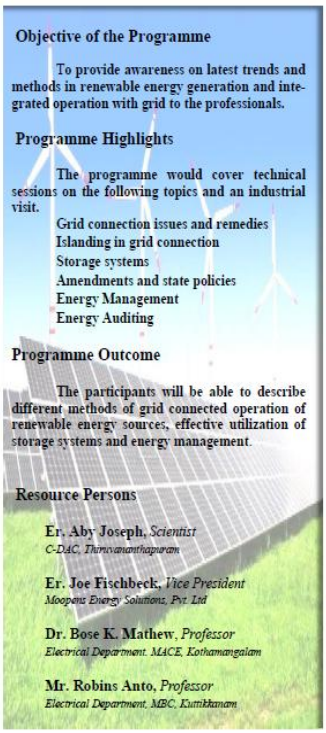
7th – 11th Dec 2015

Organised by

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Viswajyothi College of Engineering and Technology
Vazhakulam P.O., Muvattupuzha
Ernakulam Dist., Kerala – 686670

Website: http://www.vjcet.org
e-mail: vjcet@vjcet.org



Objective of the Programme

To provide awareness on latest trends and methods in renewable energy generation and integrated operation with grid to the professionals.

Programme Highlights

The programme would cover technical sessions on the following topics and an industrial visit.

- Grid connection issues and remedies
- Islanding in grid connection
- Storage systems
- Amendments and state policies
- Energy Management
- Energy Auditing

Programme Outcome

The participants will be able to describe different methods of grid connected operation of renewable energy sources, effective utilization of storage systems and energy management.

Resource Persons

Er. Aby Joseph, *Scientist*
C-DAC, Thiruvananthapuram

Er. Joe Fischbeck, *Vice President*
Moopens Energy Solutions, Pvt. Ltd

Dr. Bose K. Mathew, *Professor*
Electrical Department. MACE, Kothamangalam

Mr. Robins Anto, *Professor*
Electrical Department, MBC, Kuttikkanam

Viswajyothi College of Engineering and Technology, Vazhakulam.

VJCET is established in the year 2001 by the Technical Education Trust of the Catholic Diocese of Kothamangalam, with the approval of AICTE and affiliated to Mahatma Gandhi University. VJCET focuses its activities with a vision of moulding engineers par excellence with integrity, fairness and human values. The college is situated at Vazhakulam, the City of Pineapples, 7 kms from Muvattupuzha.

The college offers 6 B.Tech (CE, CS, EC, IT, ME & EEE), 3 M.Tech and MBA programs. The college has excellent infrastructure with fully equipped laboratories, hostels, etc. VJCET had produced a number of rank holders and hold excellent placement record. Within 14 years after its inception, the college has grown as a front-runner among the new generation Engineering Colleges of Kerala and is the preferred destination for technical education.

EEE Department

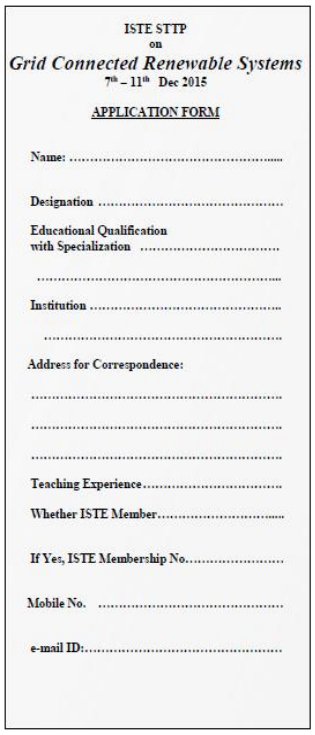
The department offer excellent infrastructure with fully equipped laboratories for an intake of 120 student per annum. The highly qualified faculty help students to score excellent results with University Ranks every year with more than 90% placements. The department strongly emphasizes on developing the quality of faculty and students through several value added programmes.

Who can Apply

The course is open to faculties from Engineering colleges / Poly Technique institutions and professionals from industry.

How to Register

Duly filled application forms in the prescribed format should reach the co-ordinators on or before 25th Nov 2015. The registration fee of the programme is Rs. 1000/- which can be paid at the time of registration on 7th December 2015. Selected members will be intimated by mail on 1st December 2015.



ISTE STTP
on
Grid Connected Renewable Systems
7th – 11th Dec 2015

APPLICATION FORM

Name: .....

Designation .....

Educational Qualification
with Specialization .....

.....

Institution .....

.....

Address for Correspondence:

.....

.....

.....

Teaching Experience.....

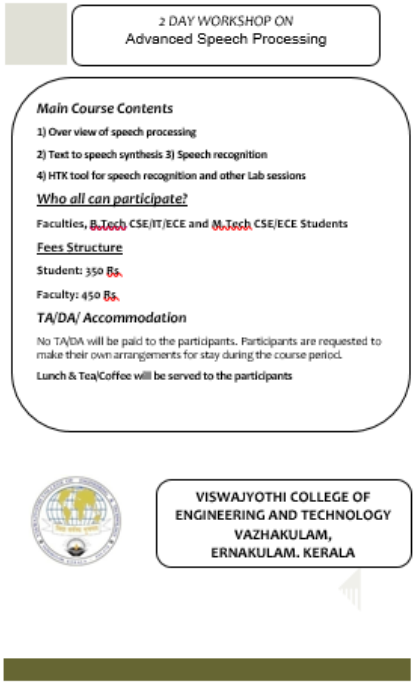
Whether ISTE Member.....

If Yes, ISTE Membership No.....

Mobile No. .....

e-mail ID:.....

5.3 Workshop on Advanced Speech Processing by CSED



2 DAY WORKSHOP ON
Advanced Speech Processing

Main Course Contents

1) Over view of speech processing

2) Text to speech synthesis 3) Speech recognition

4) HTK tool for speech recognition and other Lab sessions

Who all can participate?

Faculties, B.Tech CSE/IT/ECE and M.Tech CSE/ECE Students

Fees Structure

Student: 350 Rs.

Faculty: 450 Rs.

TA/DA/ Accommodation

No TA/DA will be paid to the participants. Participants are requested to make their own arrangements for stay during the course period.

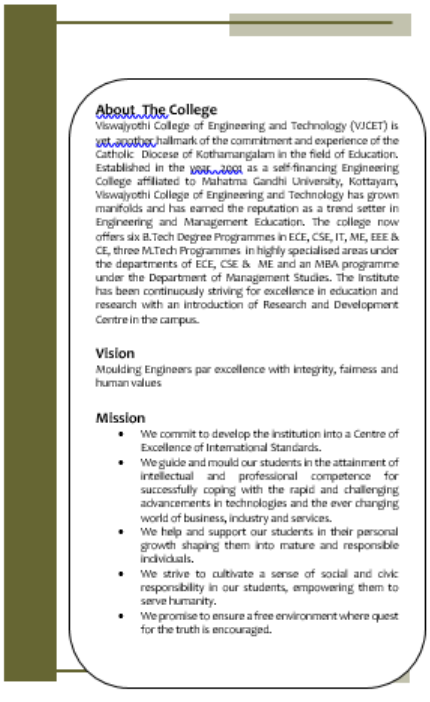
Lunch & Tea/Coffee will be served to the participants

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY
VAZHAKULAM,
ERNAKULAM. KERALA

2 DAY WORKSHOP
ON
Advanced Speech Processing
10th and 11th August,2015 ,10.00 am
Venue : R & D Hall & Lab

ORGANISED BY
Centre for Research and Development(R&D) and
Department of Computer Science
IN ASSOCIATION WITH
Indian Society for Technical Education (ISTE)
and

Course Coordinators
1. Dr. Anishin Raj M.M
2. Dr. Pramod Kumar



About The College

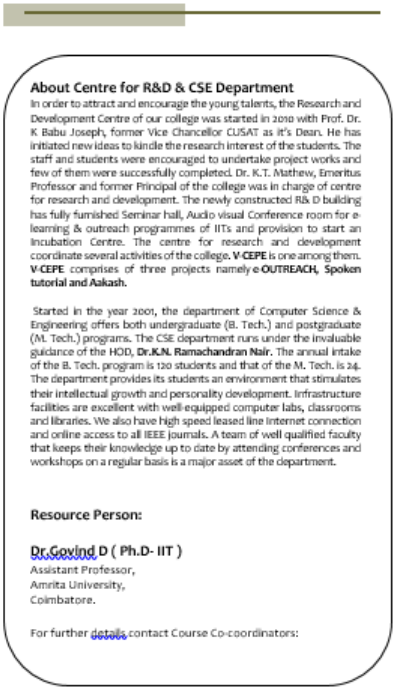
Viswajyothi College of Engineering and Technology (VJCET) is yet another hallmark of the commitment and experience of the Catholic Diocese of Kothamangalam in the field of Education. Established in the year 2001 as a self-financing Engineering College affiliated to Mahatma Gandhi University, Kottayam, Viswajyothi College of Engineering and Technology has grown manifolds and has earned the reputation as a trend setter in Engineering and Management Education. The college now offers six B.Tech Degree Programmes in ECE, CSE, IT, ME, EEE & CE, three M.Tech Programmes in highly specialised areas under the departments of ECE, CSE & ME and an MBA programme under the Department of Management Studies. The Institute has been continuously striving for excellence in education and research with an introduction of Research and Development Centre in the campus.

Vision

Moulding Engineers par excellence with integrity, fairness and human values

Mission

- We commit to develop the institution into a Centre of Excellence of International Standards.
- We guide and mould our students in the attainment of intellectual and professional competence for successfully coping with the rapid and challenging advancements in technologies and the ever changing world of business, industry and services.
- We help and support our students in their personal growth shaping them into mature and responsible individuals.
- We strive to cultivate a sense of social and civic responsibility in our students, empowering them to serve humanity.
- We promise to ensure a free environment where quest for the truth is encouraged.



About Centre for R&D & CSE Department

In order to attract and encourage the young talents, the Research and Development Centre of our college was started in 2010 with Prof. Dr. K Babu Joseph, former Vice Chancellor CUSAT as it's Dean. He has initiated new ideas to kindle the research interest of the students. The staff and students were encouraged to undertake project works and few of them were successfully completed. Dr. K.T. Mathew, Emeritus Professor and former Principal of the college was in charge of centre for research and development. The newly constructed R& D building has fully furnished Seminar hall, Audio visual Conference room for e-learning & outreach programmes of IITs and provision to start an Incubation Centre. The centre for research and development coordinate several activities of the college. **V-CEPE** is one among them. **V-CEPE** comprises of three projects namely **e-OUTREACH, Spoken tutorial and Aakash.**

Started in the year 2001, the department of Computer Science & Engineering offers both undergraduate (B. Tech.) and postgraduate (M. Tech.) programs. The CSE department runs under the invaluable guidance of the HOD, **Dr.K.N. Ramachandran Nair.** The annual intake of the B. Tech. program is 120 students and that of the M. Tech. is 24. The department provides its students an environment that stimulates their intellectual growth and personality development. Infrastructure facilities are excellent with well-equipped computer labs, classrooms and libraries. We also have high speed leased line Internet connection and online access to all IEEE journals. A team of well qualified faculty that keeps their knowledge up to date by attending conferences and workshops on a regular basis is a major asset of the department.

Resource Person:

Dr.Govind D (Ph.D- IIT)
Assistant Professor,
Amrita University,
Coimbatore.

For further details contact Course Co-coordinators:

Dr. Govind D

Assistant Professor
Center for Computational Engineering
Amrita Vishwa Vidyapeetham (University)
Coimbatore
Email: d_govind@cb.amrita.edu
Mobile: +91 9597616900

Dr. Govind D joined Amrita School of engineering, Amritanagar, Coimbatore, in the Center for Computational Engineering& Networking as Assistant professor in August 2012. He completed PhD from Indian Institute of Technology Guwahati and his core area of research is in speech signal processing. He also worked as project lead in the UK-India education research initiative project (2007-2011) titled "Study of source features for speech synthesis and speaker recognition", between IIT Guwahati and University of Edinburgh. Dr. Govind is currently investigating the ongoing DST sponsored project titled " Analysis, Processing and Synthesis of Emotions in Speech", at Amrita Viswa Vidyapeetham, Coimbatore.

Publications:

Dr. Govind has more than 20 research publications in reputed conferences and journals. He has publications in prestigious conferences in the area of speech processing, like INTERSPEECH and SPEECH PROSODY organized by international speech communication association (ISCA) .

Abroad Visits:

- Center for Speech Technology Research (CSTR), university of Edinburgh, UK, as a part of UK-India Education Research Initiative (UKIERI) project titled " study of source features for speech synthesis and speaker recognition", from May 30- Aug. 15, 2010
- Chicago, USA, May 11- 14, Speech Prosody 2010

Academic Qualifications:

PhD	:	IIT Guwahati June 2013
M-Tech (Computer Vision & Image Processing)	:	Amrita University, 2005-2007
B-Tech (Electronics & Communication Engg.)	:	Kannur university, 2000-2004

Areas of Interest:

Speech Synthesis

Emotions and expressive speech analysis