VISWAJYOTHI
COLLEGE OF ENGINEERING & TECHNOLOGY
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3.2.1 Institution has created an ecosystem for innovations and has initiatives for creation and transfer of knowledge

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1. Innovation and Entrepreneurship Development Centre (IEDC)

Innovation and Entrepreneurship Development is being promoted in educational institutions to develop institutional mechanisms to create entrepreneurial culture in academic institutions and to foster techno-entrepreneurship for generation of wealth and employment. IEDCs are established in academic institutions having requisite expertise and infrastructure. The Coordination committee of Innovation and Entrepreneurship Development Centre of VJCET was constituted on 20.10.2016 and activities are organized with the support of Kerala Start-up Mission(KSUM). The coordination committee has representation for students and faculty members from all departments.

IEDC of Viswajyothi college of Engineering and Technology is functioning with the technical and financial support of Kerala Start-up Mission. As suggested by KSUM, IEDC VJCET has opened a savings account in South Indian Bank Vazhakulam. The IEDC unit was recognized by Kerala Start-up Mission on 8.12.2016 and a financial grant of Rs. 2 lakhs was received and the amount was transferred to IEDC account. This amount is being used for conducting technical talks, interaction with innovators, Industrial visits and prototype product development activities.

The IEDC Summary report gives a brief summary of activities carried out by IEDC since its inception. Students and faculty members of VJCET are enthusiastic in attending programs like the IEDC summit and other KSUM programmes.

Fig.1: IEDC SUMMIT 2017 at Adlux International convention center, Angamali

Fig.2: IEDC SUMMIT 2019 at Sahrdaya college of Engineering and technology Kodakara

Following startups are incubated at IEDC

Sl. No	Name of Startup	Lead Entrepreneur	Contact Details
1	M/S Mj Kreatives	Shri Mohid Antony Jimmy	mohithantonygimmy@gmail.com Department of Electronics & Communications Engineering
2	M/S Volta Innovations	Shri Basil Eldhose	basileldhose618@gmail.com Department of Electrical and Electronics & Engineering
3	M/S Bellagio Digital Store	Shri Bennet Joy	bennetjoy03@gmail.com Department of Information Technology
4	M/S Beyond	Shri Amal Shyjo	amalshyjo@gmail.com Department of Electronics & Communications Engineering
5	M/S LET Innovations	Shri Jins Jolly	jincekallarackan@gmail.com Department of Electronics & Communications Engineering
6	M/S Wellctron	Shri Biju Narayanan	bijukn1970@gmail.com Department of Electronics & Communications Engineering
7	M/s Tromac Solutions	Tony Chacko	hellodude235@gmail.com Department of Mechanical Engineering
8	M/s ACCREDIT360	Andrews Jose	andrewsjoz@gmail.com Department of Computer Science and Engineering

ELAM STYLE - Startup

'Elam style' is an online retail shop targeting the youth customers started jointly by MBA and Computer Science and Engineering students. A website elamstyle.com was launched on January 1st 2018. GST registration was done on January 4th 2018 and the service was opened to the public on January 11th 2018. Elam style mainly concentrates on a variety of trendy T-shirts. The business had been shortlisted by "IDEA DAY", an entrepreneur supporting & development program of Start-up Mission of Kerala Government in the month of February 2018. The program was conducted at IIM Calicut. Experts analysed the business opportunity and they have suggested for scale up of the business and lined up proper agents for the same.

Fig.3: Elam style

2. Student Projects

Based on the excellent response from students in 2018 idea fest 2019 was organized. Seventy one teams participated in Idea fest-2019. Prior to the final round of VJCET Idea Fest-2019, a discussion meet was organised with Dr. K. C. Chandrasekharan Nair, co-founder of Technopark Trivandrum, former CFO,Techno park and Secretary & Registrar, Technopark TBI.

IEDC VJCET has selected six innovative student projects in the year 2019 for further development . They are

- AARIS –Automated Attendance Registering System
- Stroke Rehab and Exercising Glove
- Nut X - Portable Nutmeg Separator
- AGROBUY APP :Your Own Market
- Beyond : Connect And Learn
- Amphibious Structure for Lifestocks

Fig.4: Idea Discussion meet

VJCET has got several funding support for student projects sanctioned by funding agencies like BRNS, KSCSTE, KSUM etc with faculty as PI or supervisor. One VJCET team was selected for receiving the funding support of Two Lakhs in 2019. The name of the project was AGR-E (AGR- E is a CNC based Farming Machine). This was one of the 18 projects selected out of 1600 projects from all over Kerala.

AGR-E (CNC Farming Machine)

AGR-E is a precision agriculture CNC farming project consisting of a Cartesian coordinate robot farming machine. It is simple yet a reliable system which falls within an affordable limit. The system utilizes simple and easily replaceable parts. Being autonomous, the system requires little supervision and the maintenance is easy. The project aims to bridge the gap between quality and quantity of agricultural products available for consumption in urban households.

AGR-E incorporates mechanical and electronic systems to create an autonomous farming system which will efficiently carry out the farming activities relieving the user of his / her inputs in terms of time and labour and ensuring the availability of fresh and safe vegetables. AGR-E uses linear guides in the X, Y and Z axis including the gantry and custom flat connecting plates that are part of the structural frame. It performs different tasks through automatically attaching different tools, including a seed injection, watering ,fertilizer spraying and sensing essential soil properties etc. AGR-E is controlled through a web based interface allowing remote access from any location on most internet enabled devices. Also through a web app the user can control the primary functions as well as monitor the plant growth. AGR-E's prime motive was to develop an easily accessible farming technology that would facilitate the growth of organic food for everyone by farming themselves. Group Members of the project were Firoz S ,Erfan Muhammed C.K,Sanjay M Sand Bilal Shamsudhin.

AGREEMENT FOR AVAILING IDEA GRANT, SCALEUP GRANT AND PRODUCTISATION GRANT

12.05.2020

This agreement made this 12th day of May Two Thousand and Twenty at Trivandrum by and between

KERALA STARTUP MISSION (TECHNOPARK TECHNOLOGY BUSINESS INCUBATOR), a society under the Travancore – Cochin Literary Scientific and Charitable Societies Registration Act 12 of 1955, and having its registered office at Technopark Campus, Kariavattom, Trivandrum - 695 581, represented by its Secretary-Registrar, Mr.B.Sreekumaran Nair, hereinafter referred to as "K-SUM" (which expression shall unless excluded by or repugnant to the subject or context be deemed to include its successors and assigns) of the FIRST PART.

AND

Mr.Erfan Muhammed C K, S/o Mr. C M Kochunni, Chathanattu, Mundangarapuram, West Vengola, Arakapady, Ernakulam - 683556 a student of the Viswajyothi College of Engineering & Technology, Vazhakulam and working as an innovator with the Innovation and Entrepreneurship Development Centre of the College hereinafter referred to as the "Awardee" of the SECOND PART

B. SREEKUMARAN NAIR **ERFAN MUHAMMED C K** **Dr. K K RAJAN**

AND

Innovation and Entrepreneurship Development Centre at the Viswajyothi College of Engineering & Technology, Vazhakulam **Established with the support of the Kerala Startup Mission** represented by **Mr. K K Rajan**, Professor/Coordinator IEDC, Department of Electrical & Electronics Engineering, Viswajyothi College of Engineering & Technology, Vazhakulam hereinafter referred to as the "IEDC" of the THIRD PART

WHEREAS Government of Kerala has a scheme to promote innovative idea by supporting through idea grant upto Rupees two lakh for developing the prototype of the idea, productisation grant upto Rupees five lakh for converting the prototype into a markettable product and scale up grant of Rupees Five lakh for scaling up of the product into a business. The ideas presented in the idea days conducted by the Kerala Startup Mission will be evaluated by the Expert Committee and grants under the scheme will be released according to the recommendation.

AND WHEREAS the Awardee has submitted a proposal to consider the idea " AGR-E" in the idea day for giving them grants under the above mentioned scheme.

B. SREEKUMARAN NAIR **ERFAN MUHAMMED C K** **Dr. K K RAJAN**

Fig.5 : AGR-E KSUM Funding agreement

3. Viswajyothi Business Incubation Centre (V-BIC)

Realising the need of entrepreneur development among students, Viswajyothi Business Incubation Centre (V-BIC) was launched in VJCET on 26.04.2019. Inauguration of V-BIC was carried out by Shri Eldho Abraham honourable MLA of Muvattupuzha. Dr. Saji Gopinath delivered the keynote address. In the business incubation centre, startup companies of students, faculty members, alumni and technically and professionally qualified youngsters are functioning for business incubation. The VJCET V-BIC occupies an area of 3000 square feet, with all infrastructure available for business development. As of now seven companies have registered under V- BIC. In VJCET, V-BIC provides opportunities to students to become entrepreneurs and they can be job providers rather than job seekers.

Fig. 6: VBIC Inauguration

The V-BIC is also the beginning of a stronger industry-academia-consumer linkage where ideas can flow to and fro, through the three stakeholder groups so that everyone benefits. The industry will benefit from technological developments initiated by the V-BIC as well as qualified students who have an innovative mind to join their workforce. Academia will stand to gain from its constant interaction with industry, and consumers will gain from the innovations that are rolled out through the association. Major objective of V-BIC is to achieve a transformation of minds of the students from being job-seekers to entrepreneurs themselves and become job providers by effectively utilizing the theoretical and practical knowledge they are acquiring from the institution. Students and faculty will be encouraged to find innovative solutions to social problems. Major activities of VBIC includes:

- Introduction of Entrepreneurial culture to the students, faculty and common people.
- Promote students and faculty to come up with commercially viable innovative products.
- Create student and faculty entrepreneurs.
- Help to create value-added jobs and services.
- Create effective networking for the development of technology based startups.
- Develop internationally accepted technologies.
- Promote small and medium industries.

Thrust Areas

- Agro Technology.
- Green Technology.
- Information Technology.
- Robotics and Automation.
- Artificial Intelligence.
- Value added Products & Services.

4. National Innovation and Startup Policy Cell

The All India Council of Technical Education (AICTE) have initiated various measures to inculcate innovations and entrepreneurial culture in higher education institutions (HEIs). As Government of India and Government of Kerala is fiercely pursuing the goal of creating an enterprising India, in VJCET we have formed a National Innovation and Startup Policy Cell. The main objective of VJCET NISP cell is to raise entrepreneurship awareness among students, lay a solid foundation of knowledge on Entrepreneurship and to improve their entrepreneurial skills and abilities. VJCET also has Innovation and Entrepreneurship Development Centre (IEDC) and Viswajyothi Business Incubation Centre (V-BIC) functioning together with NISP to implement the startup policy laid down by the institution.

A webinar on "How to frame a startup policy" was organized by committee members of National Innovation and Start-up Policy (NISP), Centre for Research and Development(R&D), Innovation and Entrepreneurship Development Centre(IEDC) and Industry Institute Interaction Cell (IIIC) on 21st November 2020. The webinar was conducted with an intention to help faculty members of various innovation cells to frame a startup policy for the college.

The resource person was Mr. Gauthaum, Founder and Director Pupil First. The main objective of this webinar is to get guidelines for framing a startup policy and to know how to improve entrepreneurial skills and abilities among students. The startup policy of our college has been framed by incorporating the experiences and suggestions by the resource person. 26 faculty members who are part of various innovation cells participated in this webinar.

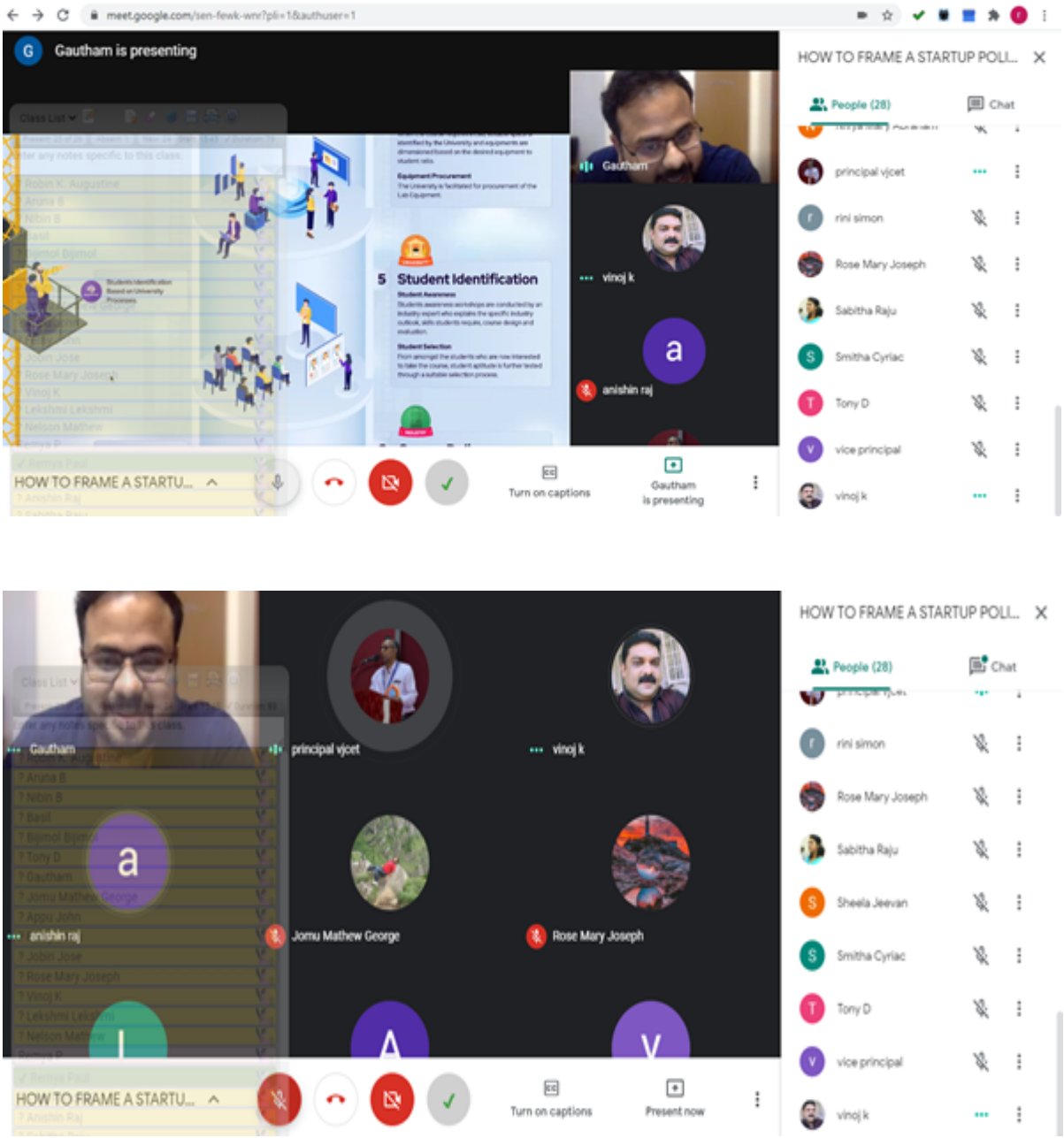
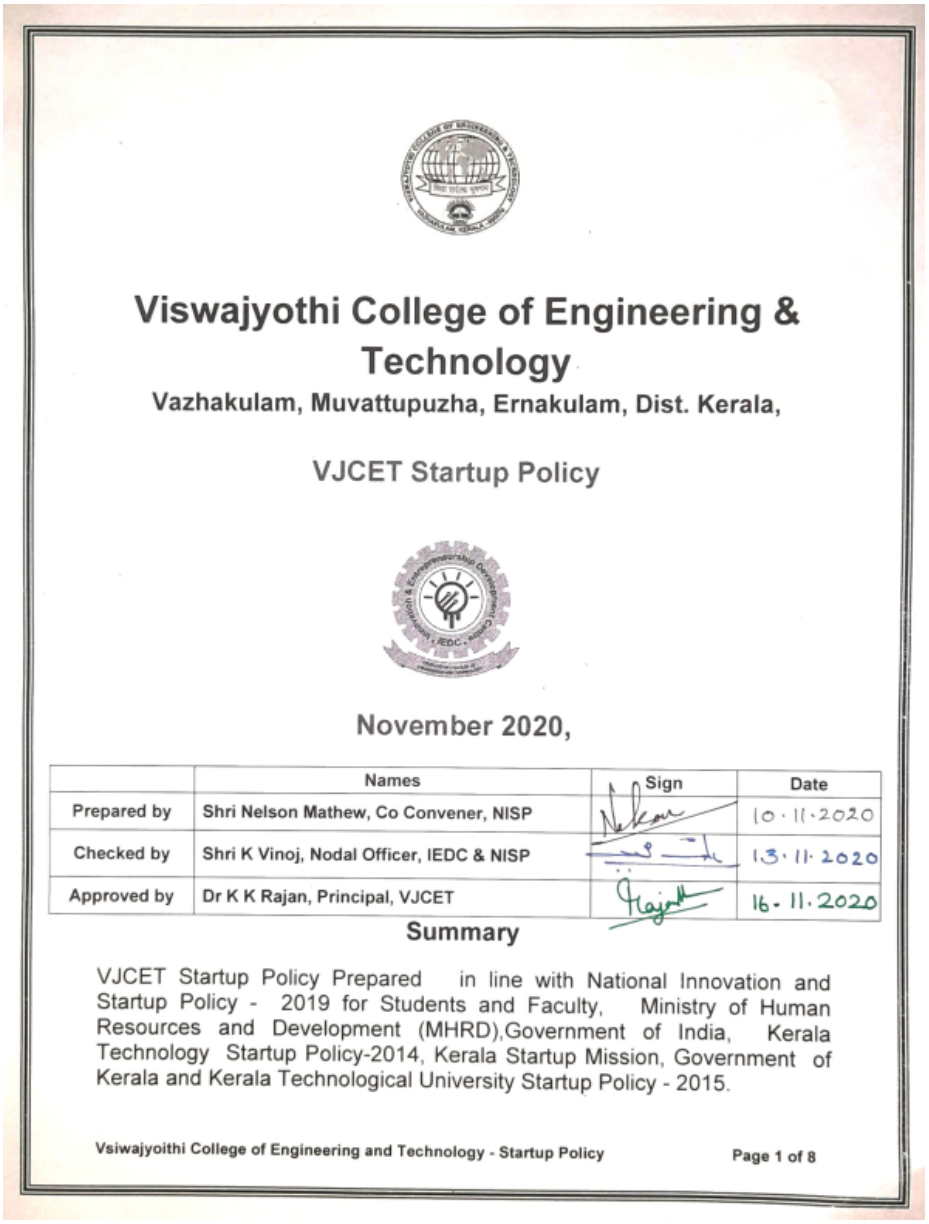


Fig.7: Screenshots of the Webinar on "How to frame a startup policy"



Viswajyothi College of Engineering & Technology

Vazhakulam, Muvattupuzha, Ernakulam, Dist. Kerala,

VJCET Startup Policy

November 2020,

	Names	Sign	Date
Prepared by	Shri Nelson Mathew, Co Convener, NISP		10.11.2020
Checked by	Shri K Vinoj, Nodal Officer, IEDC & NISP		13.11.2020
Approved by	Dr K K Rajan, Principal, VJCET		16.11.2020

Summary

VJCET Startup Policy Prepared in line with National Innovation and Startup Policy - 2019 for Students and Faculty, Ministry of Human Resources and Development (MHRD),Government of India, Kerala Technology Startup Policy-2014, Kerala Startup Mission, Government of Kerala and Kerala Technological University Startup Policy - 2015.

Vsiwajyothi College of Engineering and Technology - Startup Policy Page 1 of 8

Fig. 8: The front page of VJCET Startup policy

5. Centre for Research & Development (R&D)

VJCET always gives prime importance to research and development of faculty members, by encouraging them to pursue research in their field of study and work, publish papers, to organize workshops in the area of innovations and research, and applying for various project funding schemes of the government.

The Centre for Research & Development comprises a team of dedicated and hardworking personnel. The highly committed faculty members have published nearly eighty SCOPUS/UGC-CARE indexed research articles in the last five years (2015 to 2020) and have also published forty papers in international conference proceedings with ISBN or ISSN, with the noble vision of transforming Viswajyothi College of Engineering & Technology into an institute of research acumen.

The main focus of R&D centre are :

- Promoting SCOPUS/UGC/SCI Indexed publications
- Funded FDPs and Projects
- Conference Proceedings with ISSN/ISBN
- Ph.D Guideship

VJCET has KTU recognized Ph.D research guides in CSE, ME, EEE and MBA and three research scholars are doing PhD in MG University under the guidance of the research supervisor in MBA department and three have already completed Ph.D.

R&D has conducted several FDPs and workshops in the area of IPR filing to inculcate latest research ideas and innovations in the minds of faculty members.

VJCET has got several funding support for student projects sanctioned by funding agencies like BRNS, KSCSTE, KSUM etc with faculty as PI or supervisor. Faculty members of the EEE department have received grants for projects from governmental agencies such as the Department of Atomic Energy & Board of Research in Nuclear Science.Faculty members of ME have received grants from governmental and nongovernmental organizations for student projects as PI. Faculty members of the ECE department and CSE have received grants for student projects from government (KSCSTE)/non-government agencies (IEEE SIGHT) with Faculty as PI or supervisor.

R&D has conducted several FDPs and workshops to instil latest research ideas and innovations in the minds of faculty members and students.

Fig.9: Blockchain Cell Inauguration

Fig.10: KTU FDP on Geo-Hazards & Disaster Mitigation

Fig.11: National conference on Emerging trends in Power, Instrumentation Control and computing

R&D newsletter is released every year which comprises all the activities in association with the Center for Research and Development.

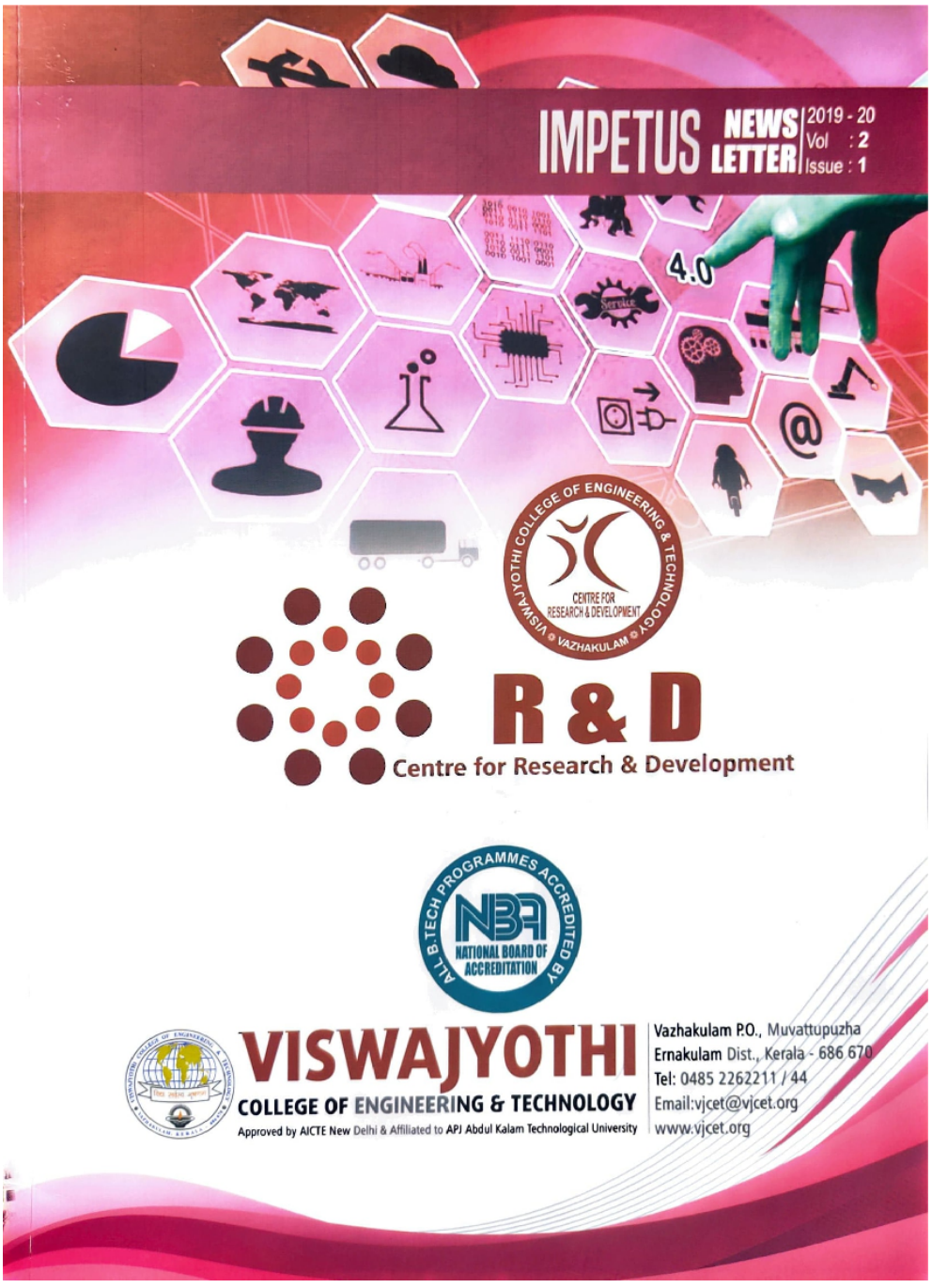


Fig.12 : Front Page of R&D Newsletter 2019-20

6. Industry Institute Interaction Cell (IIIC)

Better interaction between Technical Institutions and Industry is the need of the hour. Realizing the relevance and importance of this, Industry Institute Interaction Cell(IIIC) was formed in VJCET and had intensified its activities. Mr. Vinoj K was appointed as Convener of Industry Institute Interaction Cell with effect from 01.07.2020. He had served as Head of the Department, Department of Mechanical Engineering from 01.02.2011 to 30.11.2019. IIIC is looking for effective interaction between the industry, research organizations and reputed institutes so as to improve the quality of the technical education and enhance the employability of engineering graduates. It also helps to meet the needs of the industry. Industry-Institute interaction would provide an input to better teaching-learning processes, create awareness among the students about the environment of industry, provide real practical knowledge and self confidence to students.

Objectives

- To evolve educational programmes which are consistent with the broad requirements of the industry and which can give rise to engineering personnel capable of coping-up with the accelerating pace of the technological development
- To learn the industry practices and to create innovations and experiential learning environment for students
- To strengthen Industry partnership for the students so as to expedite the process of beginning technology business Incubator for startups
- Establish contacts with international agencies, industries and research organizations and follow up for arranging joint interaction programmes
- Identify industries for internship, training and placement for students in the emerging areas of energy, Industrial automation and recycling.
- To identify and facilitate Guest Lectures, Interactive Workshops, Conferences, Seminars, Brainstorming Sessions, Technical Discussions, Industrial Training,

Orientation Courses and Industrial Visits with members of the Industry, outside experts and eminent personalities at regular intervals.

- To facilitate joint research work and consultancy involving faculty and students.
- To identify continuing education opportunities, short term programmes and training needs of the industry, which the institution can provide.

IIIC of VJCET has organized many activities including workshops and seminars in VJCET from its inception. Nuclear Energy Awareness Seminar is one among these.

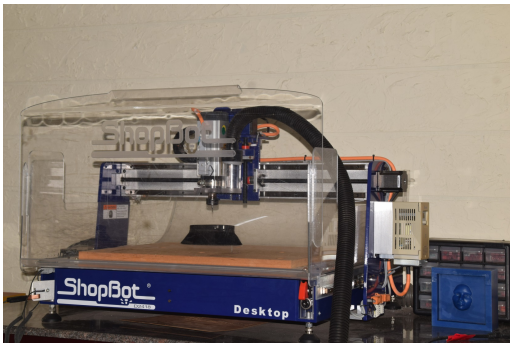
Industry Institute Interaction Cell (IIIC) of Viswajyothi College of Engineering and Technology(VJCET) in association with IGCAR Kalpakkam, Board of Research in Nuclear Science (BRNS), Mumbai, Nuclear Power Corporation of India Ltd, Mumbai and Koodankulam Nuclear Power Project organized a Nuclear Energy Awareness Seminar (NEAS) to address the myths about the use of Nuclear Energy especially among the young generation on 30 th September and 1st October 2018. Faculty and students from Engineering and Arts & Science Colleges in the central region of Kerala & Professionals and Engineers from Industry were the target group of this seminar. An exhibition on nuclear energy, exhibition competition and quiz competition were also conducted as part of the seminar. Nuclear energy awareness seminar was the first of its kind in Kerala. The need for Nuclear Energy was well presented by the speakers and was fully appreciated by the delegates. Around 25 resource persons including seven invited speakers, participated in the seminar. The seminar was funded mainly by BRNS.

Fig.13 : Nuclear Energy Awareness Seminar

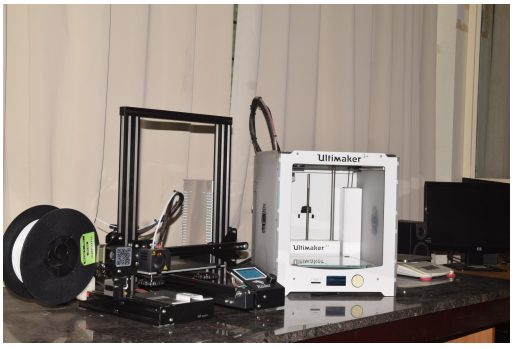
Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy , Govt. of India has awarded the research project (No. 39/14|0312017-BRNS/3430) entitled "Development of Level Sensor for Lead-Lithium Loop System" to Electrical and Electronics department of Viswajyothi College of Engineering and Technology, Vazhakulam. This project is carried out in collaboration with institute for Plasma Research (lPR), Gandhinagar. The project involves design, modeling, development and testing of mutual inductance type continuous type level sensor for Lead- Lithium system. Duration of the project is two years and a JRF is appointed for the same. Sanctioned amount for the project is 33,08,500 Rs.

7. Fab Lab

A Fabrication Laboratory (FabLab) provides a scientific prototyping platform for novelty and invention. Fab lab also helps in providing stimulus for local entrepreneurship and serves as a platform for learning and innovation. It is a miniature scale workshop offering digital fabrication which enables the clients to craft smart devices for themselves which can be tailored to local or personal needs. The FabLab also becomes a channel for linking to a global community of technologists, researchers and innovators.



Shop Bot



3D printer

Laser Cutter

Sand Blaster

Fig.14: Fab Lab machines

Viswajyothi college of engineering & technology secured 9th position in international level technical meet

Cybathlon 2020 global edition

Fig.15: Cybathlon Team

ETH Zurich is a public research university in the city of Zürich, Switzerland founded by the Swiss Federal Government. Robert Riener, head of the professorship for Sensory-Motor Systems at ETH Zurich, initiated the Cybathlon in 2013 as a platform for the development of everyday-suitable assistance systems. The Cybathlon comes out of collaboration with the Swiss National Center of Competence in Robotics Research, which intends to use the competition to promote the development and widespread use of bionic technology.

Viswajyothi College of Engg. & Technology is the only engineering college selected from India to the International Competition – Cybathlon 2020 Global Edition .The team designed & developed electromechanical arm prosthesis with PLA material. The robotic arm can assist a person who has lost his/her limb due to illness or injury, in doing his/her day to day activities with ease. The designed model will create a revolution. Prof. Ralph Snider, German

Scientists guided the team under the supervision of Mr. Somy P Mathew, the Team Manager. The team members are Jekson George, Nixon George, & Akhilraj (Technical staff from ECE and ME Department) ,Mr. Rahul Sathyan, Mr. Anjith P N and Mr. Harisankar S (Student members from Electronics & Communication Engineering) and Co-ordinated by Ms. Jessy Mathew and Mr. Sanoj Saju. The task was performed by the Pilot – Allen Mathew.

The competition was held online on Nov 13th 2020, at Zurich University. Among 49 participants from the top Technical universities from the 20 countries (Italy, Japan, Russia, France, South Africa, England, Germany etc), Viswajyothi College of Engineering & Technology was awarded the 9th position in the powered arm prosthesis. A proud moment to all Viswajyothians!

For competing in the contest, an innovative product "**Powered Prosthesis Arm"** was developed in the FABLAB of VJCET, so as to help the physically disabled people.

Fig. 16: Fabrication Process

Fig.17: Powered Prosthesis Arm

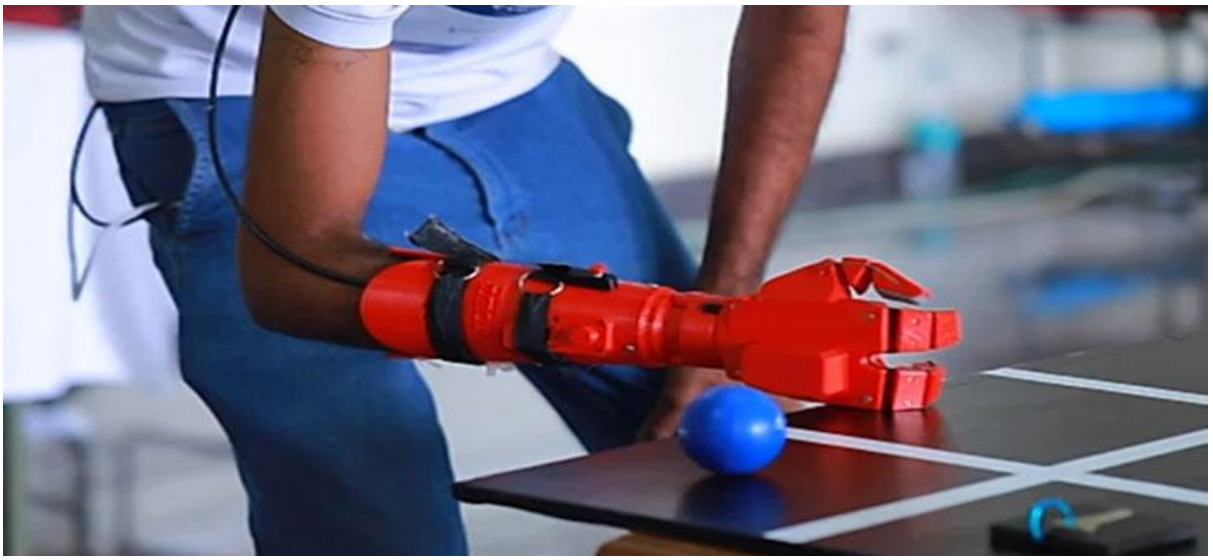


Fig.18: Cybathlon competition

8. SES Germany Collaboration

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.

- ➢ Department of Mechanical engineering and SES skilled in manufacturing procedures like turning jointly organized international symposium on innovative engineering Paradigms on 3rd – 21st December 2018.
- ➢ The International workshop on Databases was organized by the Department of CSE, VJCET in Collaboration with Senior Expert Service (SES), Germany from 3/12/2018 to 10/12/2018.The resource person was Dipl.-Ing. Mr. Jürgen Gau ,SES Faculty, Germany.The main objectives of the workshop were

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

Fig. 19: SES Database Workshop Inauguration

Fig. 20: SES Database Workshop

➢ Two weeks International workshop on Artificial Intelligence organized by Department of IT, VJCET & Senior Expert Service (SES),from 3/12/2019 to 13/12/2019. The resource person was Mr. Doepel, SES Faculty, Germany.

Fig.21: Mr. Doepel, SES Faculty

Fig.22: Inauguration of SES AI Workshop

9. Technology and Future - Biannual Journal

Research is the process by which an organization gains its cognizance to create new products and systems. It is a systematic search or investigation of knowledge through scientific methods for formulating hypotheses and making deductions based on data.

Journal named Technology and Future with ISSN is released to encourage in-house faculty publications. Technology and Future is a Biannual Research Journal published by Viswajyothi Research and publication Division. The objective of Technology and Future is to publish up-to-date high quality and original research papers and reviews. As such, the journal aspires to be vibrant, engaging and accessible and at the same time integrating and challenging.

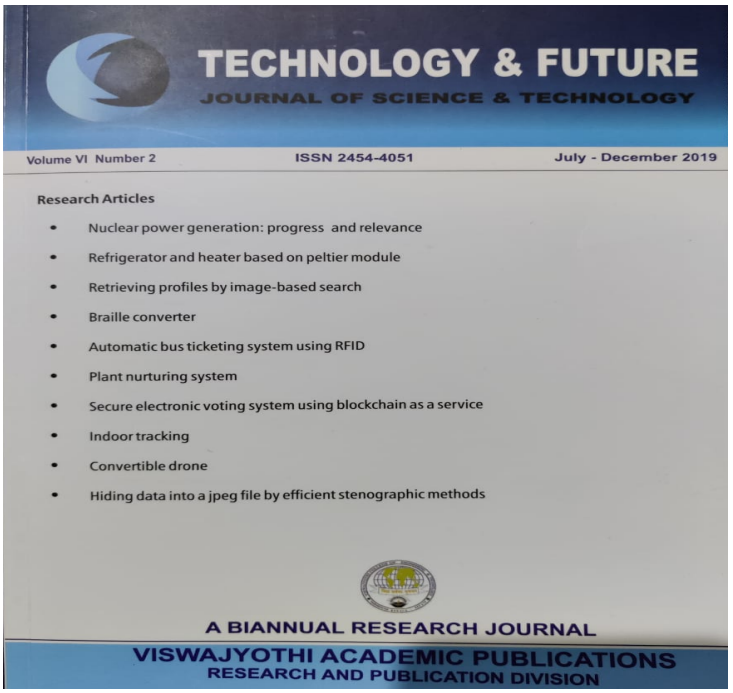


Fig.23: Front page of Technology and Future