AUGUST, 2021 | VOL. 1

MECHAZINE

DEPARTMENT OF MECHANICAL ENGINEERING

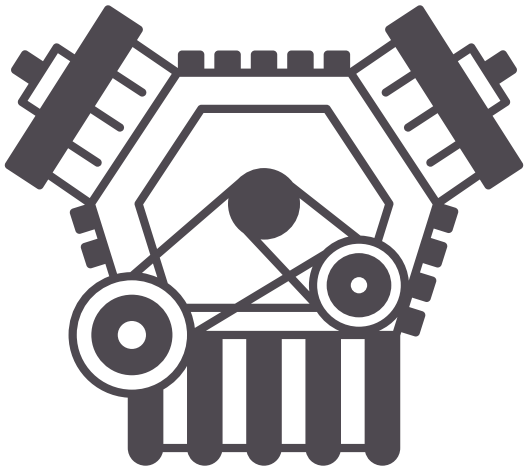
Proudly presented by

FLAMES

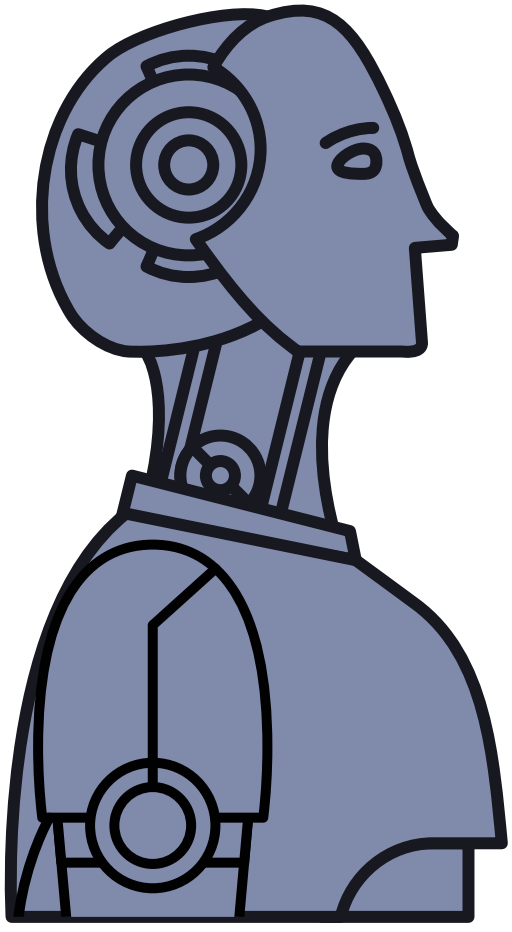
Fulfilling Aspirations of Mechanical Engineering Students

THIS ISSUE

1 INTRODUCTION



2 EVENTS



3 ARTICLES

ABOUT THE DEPARTMENT

Department of Mechanical Engneering

The Department of Mechanical Engineering was started in the year 2007, since then it has been produced graduates who are excelling in the industries, entrepreneurship and higher studies. Department has been implementing Outcome Based Education (OBE) with Continuous Quality Improvement (CQI) for holistic development of the students, which is an essential model for any institute which aspires to be leader in the field of education. Batchelor of Engineering program in the Department of Mechanical Engineering has been accredited by National Board of Accreditation (NBA) and also from Institute of Engineers (India).

DEPARTMENT VISION

- Create an ambiance for holistic learning by imparting quality education through professional ethics to cater social needs.
- Inculcate industrial practices through industry-institute interaction by providing skills and leadership qualities.
- Faster creative and innovative thinking skills among the faculty and the students by establishing state-of-the-art facilities to encourage life long learning and promote Entrepreneurship.

DEPARTMENT MISSION

- To be the center of excellence in education, innovation, and incubation in the field of Mechanical Engineering to cater to contemporary technological changes for sustainable development.

VALUES

- Excellence, Research, Innovation, Incubation, Integrity, Leadership, Diversity, Commitment and Empowerment

ABOUT THE DEPARTMENT

Department of Mechanical Engneering

DEPARTMENT GOALS

- Creating 50 leaders every year in the field of Technology, Social enterprise.
- 25 Interdisciplinary Projects related to Sustainable Development Goals(SDGs)
- 5 Community Industry Partnerships per individual program.
- 25 Research Publications, 2 Entrepreneurs, and 10 Innovations on SGDs for individual programs.
- Obtaining Academic Autonomy from Regulatory bodies.
- Digitalization of Campus.
- NIRF Ranking is better than 180.

PROGRAMME EDUCATIONAL OUTCOMES

- To design, develop and manage the industrial and social projects by applying modern tools in multidisciplinary environment
- To practice lifelong learning, professional ethics and apply engineering principles to achieve sustainable development.
- To demonstrate the leadership qualities and team building to take up innovation and Entrepreneurship..

PROGRAMME SPECIFIC OUTCOMES

- Solve complex engineering problems through innovative techniques in competitive environment to design mechanical systems.
- Apply the knowledge and competence in the field of manufacturing engineering.
- Apply the knowledge and skills to formulate sustainable solutions in the field of thermofluid and energy engineering.

EDITOR'S NOTE

Dear students,

I wholeheartedly welcome you to the Department of Mechanical Engineering at Sahyadri College of Engineering and Management. Our Department comprises focused, research-oriented, ambitious, creative, vibrant students, faculty members, and non-teaching staff who constantly challenge themselves by setting goals and ambitious high standards.

The Department of Mechanical Engineering hosts UG and Ph.D. programs in the field of MECHANICAL ENGINEERING. Our students and faculty are incredibly ambitious to do our research and design projects focusing on these two domains and their allied interdisciplinary areas such as Cyber-physical systems. Artificial Intelligence in mechanical systems, adaptive control systems, soft-robotics, robotic welding, metal-polymer composites, and electric vehicles. Our students and staff continuously strive to work on emerging technologies through "no borders" collaborations with neighboring universities aboard. We also have partnerships with medical hospitals in areas such as prosthetics and medical device design.

EDITORIAL MEMBERS

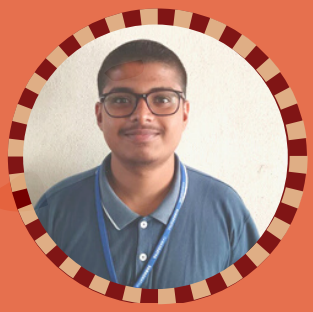
Flames

FLAMES

PROF. RAVICHANDRA K.R.
Head of Department Mechanical Engineering
PRESIDENT

MR. KIRAN PRAKASH A
Asst. Professor Mechanical Engineering
STAFF ADVISOR

SHOBITH R KAVA
COORDINATOR- EDITORIAL BOARD



PRATHVICHANDRA K
TEAM MEMBER

SHREERAJ
TEAM MEMBER

BRAJESH
TEAM MEMBER

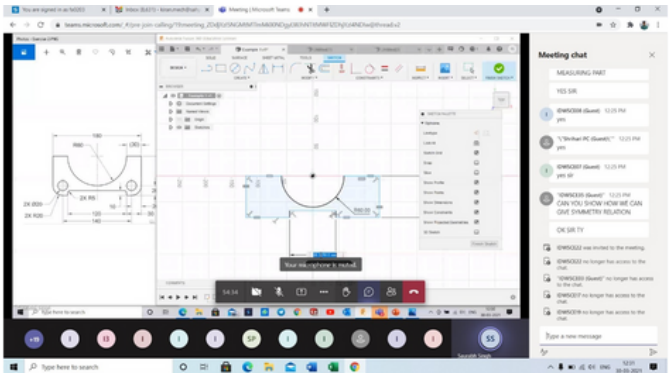
"DESIGN NOW CHALLENGE" - HANDS ON SESSION/PRODUCT DESIGN USING AUTODESK FUSION 360 SOFTWARE

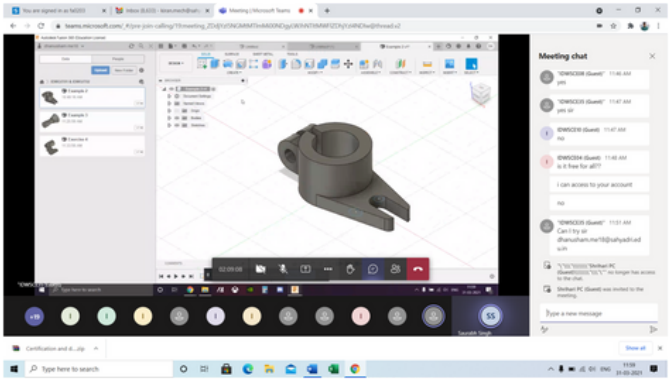
Dept. of Mechanical Engineering along with ICT Academy in association with Autodesk, Indian Society of Mechanical Engineers (ISME), Sahyadri Institute Innovation Council (IIC) and FLAMES-Mechanical Engineering Students Association has come up with an exclusive "Design now Challenge" followed by a National Level Challenge "India Design Week -2020"

The objective is to ignite the creativity from the young minds in the area of Design Thinking, Product Design & Advance Simulation using Autodesk Fusion 360 software.

As a first step, the department will conduct 3 days - 3 hours virtual students' workshop exclusively for the students of Sahyadri that has commenced on 30th March'2021 and closed on 1st Apr'2021.

Mr. Saurabh Sing, Mesh Modelling, Freeform Modelling and Rendering. Prof. Kiran Prakash is coordinating the event and a total of 57 students have registered and participated in the first phase of the workshop. The second phase will be commencing in the third week of April for the other group of students.





TALK ON "HOW TO PREPARE FOR AN EFFECTIVE SEMINAR"

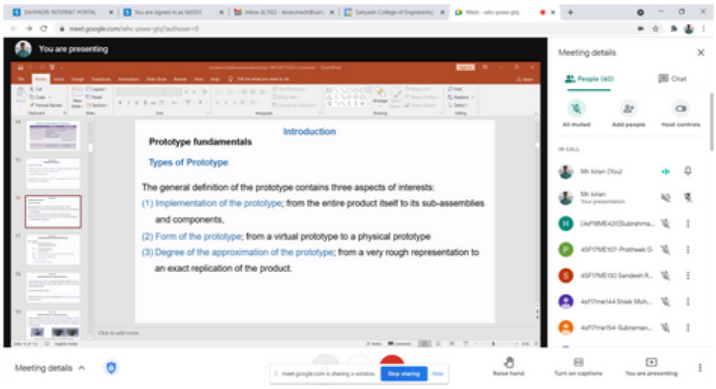
Dept. of Mechanical Engineering organised a webinar on the topic "How to prepare for an Effective Seminar" in association with ISTE, Indian Society of Mechanical Engineers (ISME), Sahyadri Institute Innovation Council (IIC) and FLAMES- Mechanical Engineering Students Association on 22nd May 2021, 12 noon onwards for the final year Mechanical Engineering students.

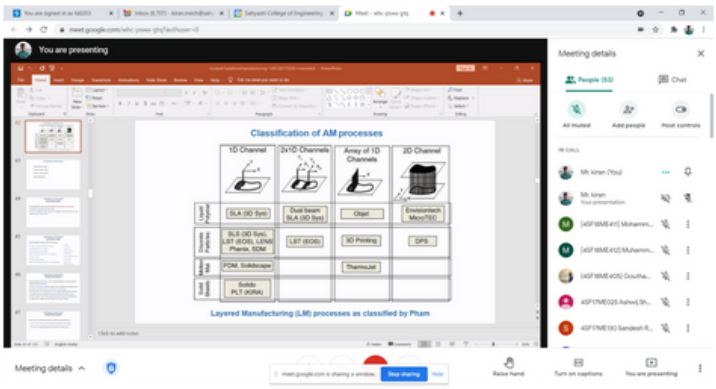
Dr.Ravichndra K.R. Head of the Department briefed about how to select the appropriate topics for the seminar, references to be considered, various sources etc.,

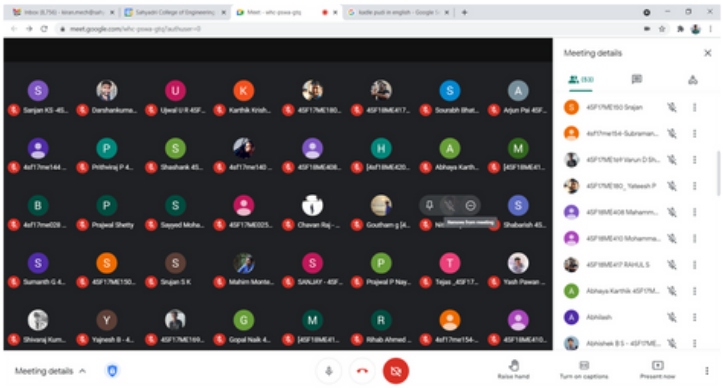
Prof.Vikas G., explained about the processes involved in the evaluation of academic seminars, rules, regulations, rubrics and templates to be followed to have a standard seminar.

Dr.Rathishchandra R Gatti explained about methods to be followed to download the reputed journals, articles.

Prof. Kiran Prakasha A, Dept. Coordinator-IIC coordinated the session and students were the beneficiaries of the session.







SEMINAR ON "DEVELOPMENT IN DESIGN AND AUTOMATION FOR INDUSTRY 4.0"

Dept. of Mechanical Engineering organized a webinar on the topic "Development in Design and Automation for Industry 4.0" in association with Conceptia KONNECT, Indian Society of Mechanical Engineers (ISME), Sahyadri Institute Innovation Council (IIC) and FLAMES- Mechanical Engineering Students Association which was held on 12th May 2021 for the final year and pre-final year Mechanical Engineering students. Around 75 students participated in the webinar.

Mr. Vinay S, Manager- Education & Training, Conceptia KONNECT, Conceptia Software Technologies Private Limited was the resource person.

The Key takeaways from the Webinar:

- Introduction to Industry 4.0
- Readiness to industry 4.0
- Interpersonal Skills, Creativity and problem-solving capabilities.
- DFM and simulation
- SOLIDWORKS in academia.

Prof. Kiran Prakasha A, Dept. Coordinator-IIC coordinated the session and students were the beneficiaries of the session.

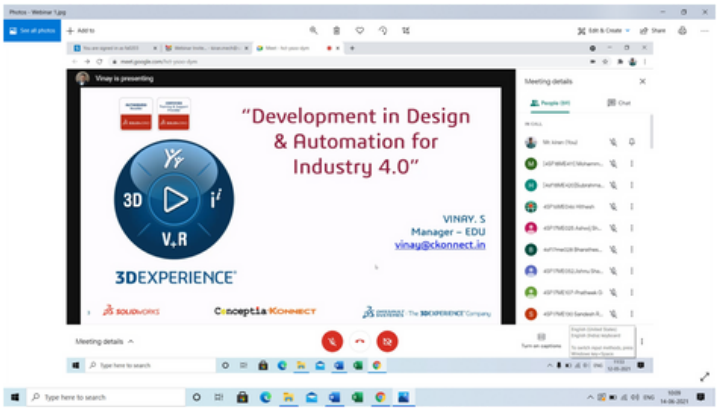
About the Resource Person: Mr. Vinay S

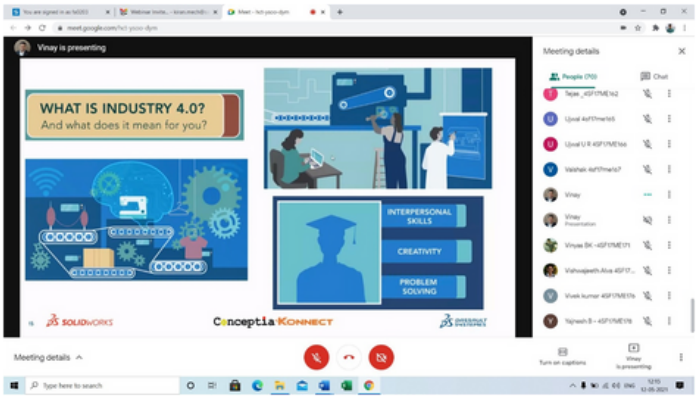
Mr. Vinay S is expertise in

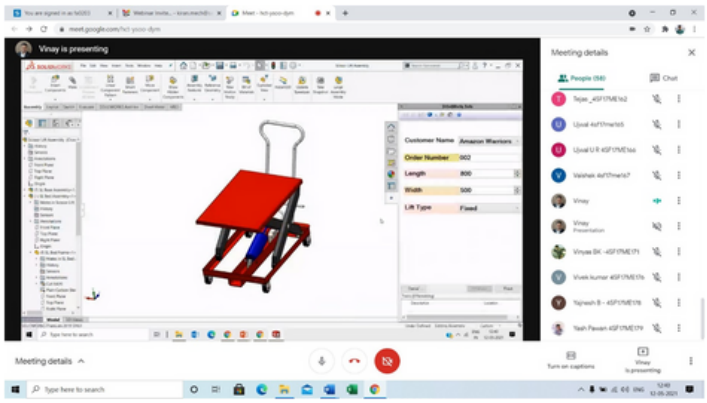
·Product Development from concept design to end of its life by analysing with the help of software's.

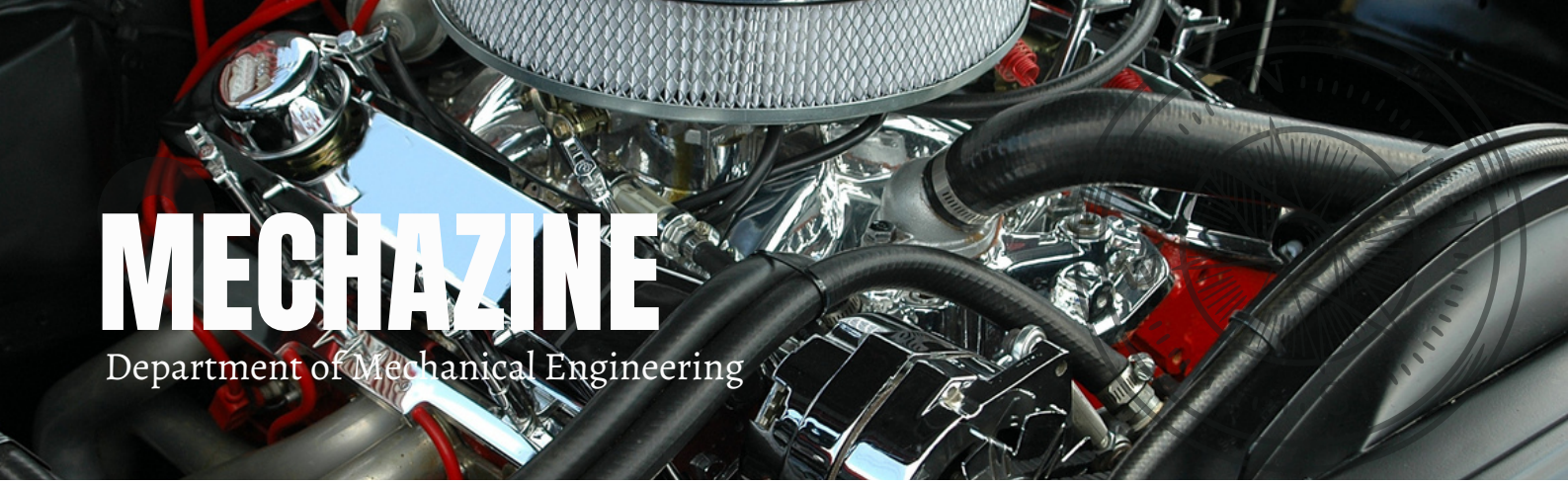
·Experience in different types of Design & Manufacturing process.

·Successfully implemented the Design process.









MECHAZINE

Department of Mechanical Engineering

TALK ON "PREREQUISITES TO BE A DESIGN ENGINEER"

Dept. of Mechanical Engineering organized a webinar on the topic “Prerequisites to be a Design Engineer” in association with CADMAXX SOLUTIONS PVT LTD, ISTE, Indian Society of Mechanical Engineers (ISME), Sahyadri Institute Innovation Council (IIC) and FLAMES- Mechanical Engineering Students Association on 5th May’2021 for the final year Mechanical Engineering students. The topic was relevant & most valuable to Mechanical/Aero/Auto engineers, keen in areas of Mechanical design & development. Mr. Ashwin, Assistant Manager from CADMAXX SOLUTIONS PVT LTD, Bengaluru was the resource person. Through his session, he covered topics related to Preparation/readiness for a career in design, Role of an engineer, Career options for Mech/Aero/Auto engineers, Product Lifecycle and Introduction to CAD/CAE & industry.

Key points of discussion were,

·Different vertical of mechanical industries

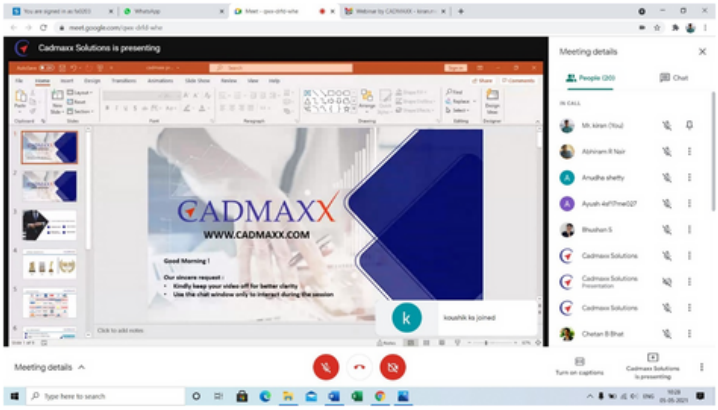
·Criterions for the Ideal job seekers

·Steps involved in digital product development

·Importance and steps involved in product life cycle

Around 100 students from Mechanical Engineering got exposure to the above said topics.

Prof. Kiran Prakasha A, Dept. Coordinator-IIC coordinated the session along with Industry professionals, faculties and students were the beneficiaries of the session.



"NAIN PROJECTS - INTERDISCIPLINARY PROJECTS - OPPORTUNITIES FOR MECHANICAL ENGINEERING STUDENTS"

Prof. Pradeep Kumar C, Dept. of Electronics & Communication Engineering, delivered a session on the "NAIN Projects - Interdisciplinary Projects - Opportunities for Mechanical Engineering Students" in association with ISTE chapter on 9th Feb, 2021. Through his session, he brought out the opportunities available for the Mechanical Engineering students and urged them to involve with the Interdisciplinary projects associated with NAIN. He also listed out the names of the LLP's associated with the NAIN Centre and briefed about the various ongoing projects and its status. Prof. Kiran Prakash, Dept. of Mechanical Engineering, coordinated the session.

MY STORY- MOTIVATIONAL SESSION BY SUCCESSFUL START-UP FOUNDER

Department of Mechanical Engineering in Association with Sahyadri IIC Organizes a Talk on "My Story- Motivational Session by Successful Start-up Founder".

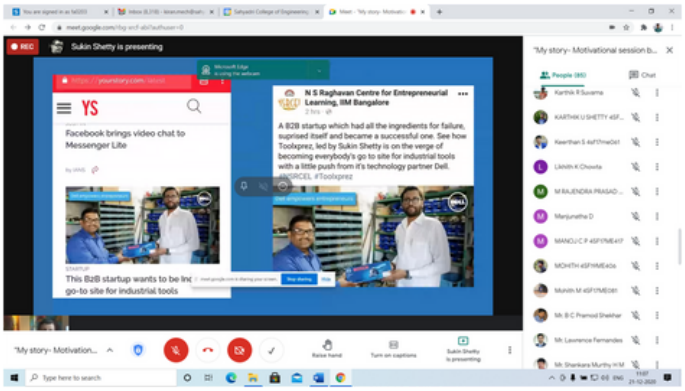
The Talk titled " My Story- Motivational Session by Successful Startup Founder " organized by Dept. of Mechanical Engineering, in association with Sahyadri Institute Innovation Council (IIC), was facilitated by Mr. Sukin Shetty, Startup Founder, Toolxprez a B2B ecommerce Startup. It was held on 21 Dec'2020 through Google Meet Platform.

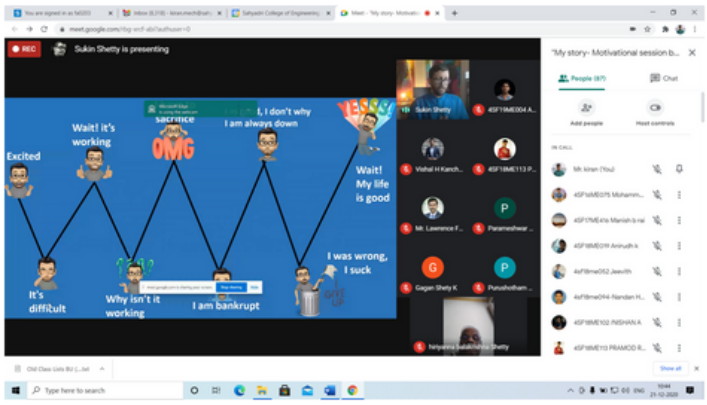
The session was very informative and spokesperson motivated the participants by narrating his own life story with journey towards the successful entrepreneur and becoming a startup founder. He motivated the participants by inspiring with own experience which included various challenges, difficulties faced also proper rewards and awards for the effort.

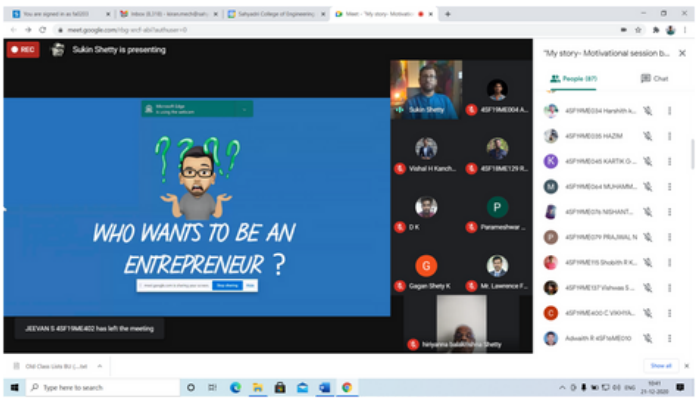
Prof. Kiran Prakasha A, Dept. Coordinator-IIC coordinated the session along with Industry professionals, faculties and students were the beneficiaries of the session.

Mr.Sukin has been mentoring aspiring entrepreneurs to help them to launch their idea and convert it to growing business. He has mentored more than 300 aspiring entrepreneurs and many have launched their business and grown.

Now he is working on to launch online courses to help people convert their passion to business idea and grow it. He is writing a book titled 'How to Build from scratch' which will be published by the end of 2021.







SEMINAR ON "AUTODESK FUSION 360 – LEADING WITH GENERATIVE DESIGN"

Dept. of Mechanical Engineering, Sahyadri and USAM Technology Solutions Pvt Ltd, in association with Indian Society of Mechanical Engineers (ISME), Sahyadri Institute Innovation Council (IIC) and FLAMES-Mechanical Engineering Students Association organised Two-day workshop for faculty on "Autodesk Fusion 360 – Leading with Generative Design" held on 10th to 11th June 2021 from 2.00pm to 4.30pm which was a Hands-On session through Zoom platform.

The workshop included topics related to:

·Introduction to Autodesk Fusion 360 and how it supports collaboration and distance learning.

·Design Tools

·Generative Design

·Animation, Rendering

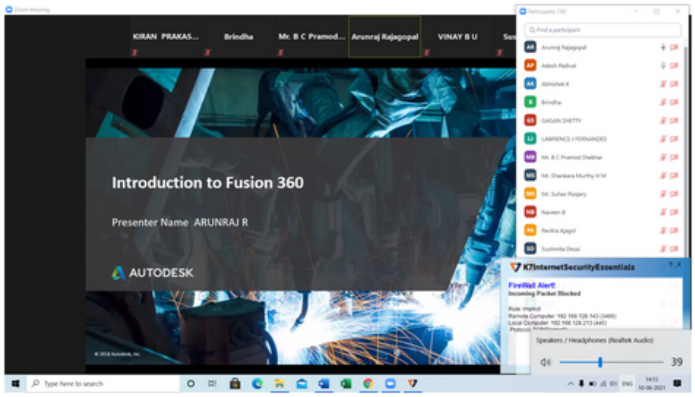
·Building a curriculum that helps today's students land those engineering jobs.

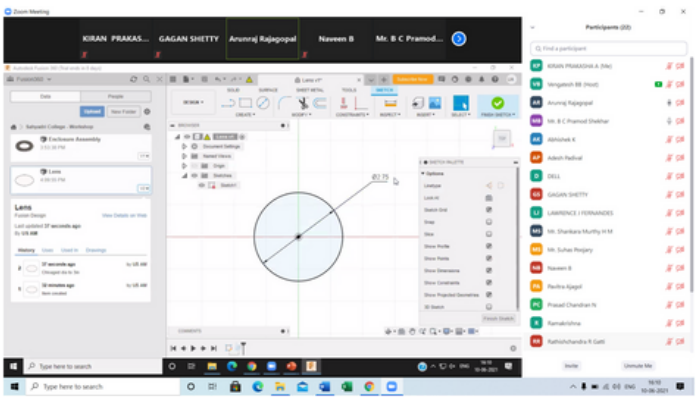
·Latest trends and shifts in the design & manufacturing industry, including the Future of Work.

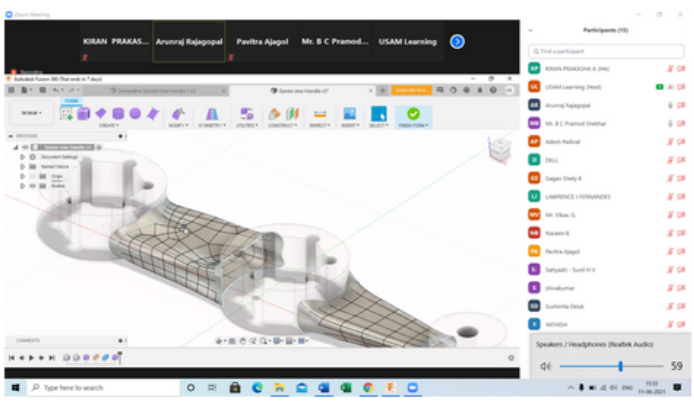
·Distinguishing between traditional task-based mindsets and holistic engineering.

Fusion 360 is the first 3D CAD, CAM, and CAE tool of its kind – connecting an entire product development process into one unified platform. Fusion 360 allows your students and educators to design, test, and fabricate within a single tool from anywhere.

Prof. Kiran Prakasha A, Dept. Coordinator-IIC coordinated the session along with Industry professionals, faculties were the beneficiaries of the session.







ARTICLES

Discovering the treasures of our country

MECHATRONICS AND ROBOTICS: IMPACT OF FOURTH REVOLUTION IN THE INDIAN INDUSTRY

Source: Automotive Skills Development Council on LinkedIn

Industry 4.0 is assimilating more and more sensors, machines, and other operations in order to connect with internet and cloud platforms. The fast technology will help the industry in lowering costs and increasing productivity which will, in turn, lead to a swift development in the products and services offered by businesses and manufacturers. Furthermore, the link between robotics and automation also directs the boost in the demand of machine-based, machine-to-machine, and machine-to-network technologies.

Industry 4.0 has brought a substantial change in the global market by overhauling and shaping the technology, Mechatronics and Robotics have contributed immensely to this evolution.

echatronics is a broad discipline that emerges primarily from the fusion of mechanical and electronics engineering, while also borrowing from electrical, control system, telecommunication, and computer science engineering. Robotics, on the other hand, is a sub-discipline of technology which deals in design, construction, operation, and application of the robots. Robotics has progressively become a key tool to offer cutting-edge technology worldwide. It has become a crucial link to Industry 4.0 as the need of smart machines, dedicated and digital systems, and autonomous robots increased quickly.

MChallenges faced by India

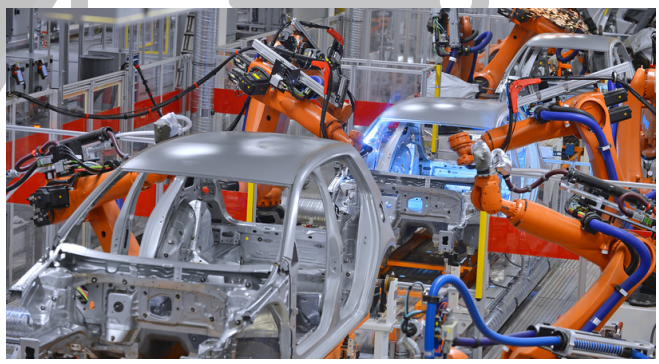
With significant advancements in technology, scientists have come up with robots that are programmed to take decisions autonomously. Hence, entrepreneurship and employment opportunities in the robotics industry are flourishing for technology enthusiasts who wish to enter this exciting sector.

But the question remains – Is India backed up with enough skilled and upgraded manpower to establish itself in the environment of constantly evolving technology? Apart from the financial constraints, developing India's workforce into the most advanced one still remains to be a tough challenge. A substantial step should be taken to meet global industry requirements.

Steps taken by Government

For becoming ready for this significant transition, acquiring and retaining quality talent is the first step. The Indian government has also understood that speed, and accuracy are the skills that create wonders.

Various schemes and associations have been launched by the Government to ensure the smooth development of skills. Skilling and upskilling will facilitate human capital creation which in turn, will increase economic activities creating job opportunities. Automotive Skills Development Council (ASDC) is one such government recognized sector skill council that allows the technicians to learn and upgrade their skills as per the current infrastructure to meet new technological challenges.

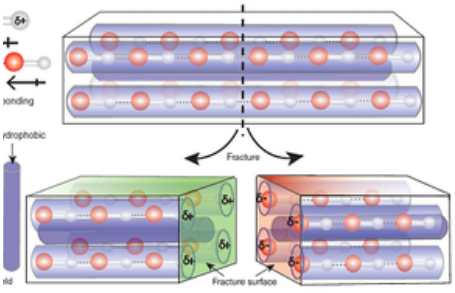


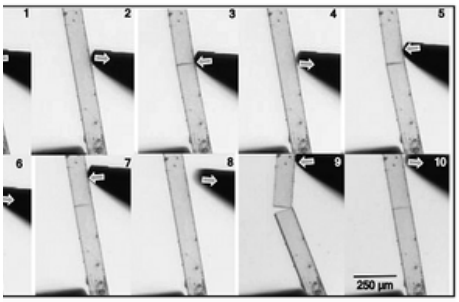
ARTICLES

Discovering the treasures of our country

INDIAN SCIENTISTS DISCOVER MATERIALS THAT SELF-REPAIR MECHANICAL DAMAGES

Source: Department of Science and Technology of Government of India





New materials may soon make it possible for damaged electronic components, such as in space crafts, to mend themselves. The materials recently developed by scientists can repair their own mechanical damages with the electrical charges generated by the mechanical impact on them.

Devices that we use daily often break down due to mechanical damage, forcing us either to repair or replace them. This decreases the life of the equipment and increases maintenance costs. In many cases, like in space crafts, human intervention for restoration is not possible.

Keeping such necessities in mind, researchers from the Indian Institute of Science Education and Research (IISER) Kolkata, teaming up with IIT Kharagpur, have developed piezoelectric molecular crystals that repair themselves from mechanical damages without need for any external intervention. Piezoelectric crystals are a class of materials that generate electricity when it undergoes a mechanical impact.

The piezoelectric molecules developed by the scientists called bipyrazole organic crystals recombine following mechanical fracture without any external intervention, autonomously self-healing in milliseconds with crystallographic precision.

In these molecular solids, due to the unique property of generating electrical charges on mechanical impact, the broken pieces acquire electrical charges at the crack junction, leading to attraction by damaged parts and precise autonomous repair. This research supported by the Department of Science and Technology, GoI via Swarnajayanti Fellowship to CM Reddy and Science and Engineering Research Board (SERB) research grants has been published in the journal 'Science' recently.

This methodology was initially developed by the IISER Kolkata team led by Prof. C Malla Reddy, a recipient of Swarnajayanti fellowship (2015) given by the Department of Science & Technology, GoI. Prof. Nirmalya Ghosh of IISER Kolkata, a laureate of the Society of Photo-Optical Instrumentation Engineers (SPIE) G.G. Stokes Award in Optical polarization 2021, used a custom-designed state-of-the-art polarization microscopic system to probe and quantify the perfection of the piezoelectric organic crystals. These materials with perfect internal arrangement of molecules or ions are called 'crystals', which are abundant in nature.

The IIT Kharagpur's team, Prof. Bhanu Bhusan Khatua and Dr. Sumanta Karan studied the performance of the new materials for fabricating mechanical energy harvesting devices. The material may find application in high-end micro-chips, high precision mechanical sensors, actuators, micro-robotics, and so on. Further research into such materials may eventually lead to the development of smart gadgets that self-repair cracks or scratches.


Thank
You