



**FRANCIS XAVIER**<sup>™</sup>  
**ENGINEERING COLLEGE**  
**AN AUTONOMOUS INSTITUTION**

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## DEPARTMENT OF MECHANICAL ENGINEERING

### MONTHLY NEWS - FEBRUARY 2022

#### **About Department of Mechanical Engineering**

The department offers UG program in B.E Mechanical engineering from the year 2005. The department started a PG program M.E Industrial Safety Engineering from this academic year 2018-2019. This course has wide range of job opportunity in the Industrial and Academic sector of India as well as abroad. The Department aims at providing the students with a perfect blend of intellectual and practical experiences with the support state-of-the-art laboratories and well defined academic structure. The UG program is accredited by National Board of Accreditation (NBA). The special feature of the Department has established three applied laboratories, in addition to the regular labs to support students to master skills to make each one industry-ready, with a solid grounding in the principles and practice of Mechanical Engineering. We also have a strong academy for training students to appear for GATE exam.

#### **Vision of the Department**

To produce competent Mechanical Engineers of excellent technical and managerial skills with profound morality for global, national and confront societal development.

#### **Mission of the Department**

1. To provide quality education in Mechanical Engineering with an interdisciplinary approach, encouraging innovation, research, and Entrepreneurship through world-class infrastructure and proficient teachers.
2. To make the department self-reliant through multiple programs with excellent curriculum, best practices, and industry exposure.
3. To inculcate technical, professional, leadership skills, moral ethics, and lifelong learning.

## Programme Educational Outcomes

Bachelor of Mechanical Engineering curriculum is designed to impart Knowledge, Skill, and Attitude on the graduates to

PEO 1: Have a successful professional career in Mechanical Engineering and allied industries, either by employment or through entrepreneurship.

PEO 2: Establish competency in Design, Thermal, Materials, and Manufacturing system with ethics and social responsibility.

PEO 3: Have a continual receptiveness for leadership and social challenges.

## Message from the Head of the Department

**Dear Colleagues,  
Greetings!**

I have great pleasure and pride to announce that the Department of Mechanical Engineering is publishing the newsletter for the month of February 2022. Amidst the Covid Pandemic situation, we strived hard to keep the students engaged, and utilize the time not only for quality education and also for self-development. We are steadfast in our progress as it involved various activities that enabled the hidden talents of the department students and faculty members to be brought into light. Besides the lockdown, our faculty members are continuously attending various training programs, publishing research papers, book chapters and are also working on getting patents.

This newsletter is the reflection of department activities which showcases all the events held in the department, contribution of faculty members, students and the best practices adopted. I would like to congratulate all the members of the editorial board for their sincere effort to realize this venture.



**Dr. I. Neethi Manickam, M.E., Ph.D.**  
Professor & Head  
[neethimanickam@francisxavier.ac.in](mailto:neethimanickam@francisxavier.ac.in)

## EDITORIAL BOARD

Dr. I. Neethi Manickam, Professor & Head of Department, Editor – in – Chief.

Dr. S. Balakrishnan, Assistant Professor, Mechanical Department, Faculty In charge.

# WEBINAR

A webinar on “Achieving Problem – Solution Fit & Product – Market Fit” was organized by Entrepreneurship Development Cell & Institution’s Innovation Council in association with the Department of Mechanical Engineering on 02nd February 2022 at 10:00 am. Dr. R.K.A.Bhalaji, AP/Mech coordinated the program. Mr. G. Prabu Ram, Assistant Professor (SG), Department of Mechanical Engineering, Ramco Institute of Technology, Rajapalayam was the resource person. The resource person highlighted how to achieve the problems in the current market trends and give the solutions to improve product quality. The objective of the webinar is to motivate the students to accomplish the problems faced by an entrepreneur in current market trends. The participants of the webinar were understood that what are the solutions to improve product quality as per current market trends.

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Vannarpettai, Tirunelveli - 627 003

**TOPIC** **Achieving Problem - Solution Fit & Product - Market Fit**

**Date & Time** **February 2, 2022**  
**10.00 AM**

Organized by **Entrepreneurship Development Cell (EDC)**  
In Association with **Department of Mechanical Engineering**

**RESOURCE PERSON**  
**Mr. G. Prabu Ram**  
Assistant Professor (SG) / Mechanical Engineering  
Ramco Institute of Technology, Rajapalayam.

Registration Link: <https://forms.gle/GcbXFDaV3jRqXpQEA>

E-Certificate will be provided to all participants.

**Coordinator** **Dr. R.K.A. Bhalaji** AP/Mech  
**Dr. Lourdes Poopala Rayen** Director EDC & IIC President

**Convener** **Dr. I. Neethi Manickam** HOD/Mech  
**Dr. K. Jeyakumar** GM Development  
**Dr. V. Velmurugan** Principal

PRABU RAM G is presenting

Where does India stands?  
Invention Innovation

PRABU RAM G NISHWIN ANAS... JETHAN JASP...  
MOHAN RAJ S... VIGNESH S... MUTHU KRISHN...  
RISHAN SARANY... 22 others You

VIGNESH S 20:50:05 has raised a hand

10:14 AM | chh-pnha-wrk

# NON-TEACHING STAFF PROGRAMME

The Department of Mechanical Engineering has organized a Skill Training program for Non-Teaching Staff on 17.2.2022 from 2 pm to 5 pm. The resource person is Mr. S. Kathiresan, Senior

Technician, ISRO. He demonstrated how to assemble, disassemble, service and maintenance procedures for heat transfer apparatus in Thermal Engineering Laboratory.



## DESIGN HACKATHON COMPETITION

The Department of Mechanical Engineering - Design and Analysis Applied Lab organized Mini -Design Hackathon competition for First-year Mechanical Engineering Students on 09.02.2022. Dr. M. Kannan, Professor/Mech is a coordinator for the Hackathon competition. Design competition entitled “Motorized Temple Bell”. Totally 30 students actively participated and delivered the design (idea) concept on this event and finally Four design ideas are selected for prototype development from the competition.



# PAPER PUBLISHED

Mr. K. Robinston Jeyasingh Swikker and Dr. I. Neethi Manickam has published a paper on 25.02.2022. Entitled "Effect of MWCNT on mechanical characterization of glass/carbon hybrid composites" at Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering (SCI).

The screenshot shows the journal's website interface. At the top, it displays the journal title 'Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering' and the 'Institution of MECHANICAL ENGINEERS' logo. A navigation bar includes 'Journal Home', 'Browse Journal', 'Journal Info', 'Stay Connected', and a 'Submit Paper' button. A search bar is also present. The article title 'Effect of MWCNT on mechanical characterization of glass/carbon hybrid composites' is prominently displayed, along with the authors' names: K. Robinston Jeyasingh Swikker, H. Kanagasabapathy, and I. Neethi Manickam. The article is dated 'First Published February 26, 2022' and is a 'Research Article'. A 'Check for updates' button is visible. The article is available in 'OnlineFirst'. The journal's impact factor is shown as 1.620, with a 5-Year Impact Factor of 1.493. An 'Article Menu' on the left includes 'Access Options' and 'Full Article'. A 'SAGE Recommends' sidebar is on the right.

## Abstract

In this present study, the mechanical properties of Glass/Carbon hybrid composite reinforced with epoxy resin with and without multi-walled carbon nanotubes (MWCNT) were investigated. The composite under Experimental analysis were fabricated by using both Hand layup and Vacuum bag moulding processes. The main purpose of including MWCNT as a reinforcement material with epoxy is to reduce the existence of voids or cavities and to enhance the mechanical properties of Glass/Carbon hybrid composites. Because of their extraordinary mechanical properties and high aspect ratio, MWCNTs are considered to be ideal candidates for polymer reinforcement. The percentages of MWCNT selected for the study are 2%, 3% and 4% with the hybrid composites. The effect of MWCNT on mechanical properties such as tensile strength, compressive strength, flexural strength, impact strength, hardness and percentage of water absorption of the hybrid composites were determined as per American Society for Testing and Materials (ASTM) standards. The result from the study shows that the mechanical properties of hybrid composites were improved with the addition of small amount of MWCNT than without MWCNT. The fractured specimen from Tensile test is examined by using Energy Dispersive X-Ray Analysis (EDX) to study the alignment of the fibres, fibre-matrix adhesion, voids and filler agglomeration. This investigation provides proper guidelines to designers on enhancing mechanical properties of Glass/Carbon composite structures through MWCNT reinforcement for Aircraft structural components.

## Keywords

Epoxy, multi-walled carbon nanotubes, hybrid composite, carbon/glass fibre, tensile strength

Date received: 22 June 2021; accepted: 5 February 2022