Department of Mechanical Engineering
NEWSLETTER

2022

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Excel Engineering College

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ENGINEERING COLLEGE

DEPARTMENT OF MECHANICALENGINEERING

NEWS LETTER

2022-23-Volume-1: Issue-2-DECEMBER

VISION OF THE DEPARTMENT

To create competitive manpower in the field of Mechanical engineering for the advantage of mankind.

MISSION OF THE DEPARTMENT

To achieve the vision, the department wil:

- To create a conductive learning environment to make student as competent engineers.
- To nurture the entrepreneurial ability among students.
- To maintain sustainable development for creative learning to serve the engineering society.
- To inculcate human values and sensitivity.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOS)

PEO 1: Graduate will have the ability to handle industrial challenges through advanced engineering technologies.

PEO 2: Graduate will have the capability to become socially, intellectually, and ethically responsible Mechanical engineers.

PEO 3: Graduate experties with essential technical, managerial and soft skills that make them to be professionally competent.

PROGRAMME SPECIFIC OUTCOMES (PSOS)

On completion of the B.E (Mech) degree the Electronics and Communication graduates will be able to:

PSO1: Ability to apply their knowledge to design and analyze by using software tools**.**

PSO 2: Engage them professionally in industries or as entrepreneurs in the field of manufacturing and design.

PSO 3: Apply CAD/CAE tools to design and analyze the mechanical components.

KEY UPDATES IN MECHANICAL ENGINEERING

Ultra-coherent nanomechanical resonators:

Researchers developed nanomechanical oscillators (resonators) with extremely low dissipation (very high quality factors) by engineering phononic crystals with density variation via nanopillars. These enable isolation of phononic modes, enhancing Q-factors (quality × frequency) possibly towards 10^9 or beyond at room temperature.

Diffusion Models in Topology Optimization:

There has been a shift towards using *diffusion models* instead of GANs for topology optimization. One such work ("TopoDiff") shows much better performance in structural compliance (i.e. mechanical stiffness vs deformation), and better manufacturability, with fewer infeasible designs. This represents crossing the frontier between machine learning generative models and mechanical structural design.

Improved Cooling Jacket Geometries via Additive Manufacturing:

Through the SwRI (Southwest Research Institute) MAKERS program, engineers experimented with complex internal features (geometries) inside engine cooling jackets, enabled by additive manufacturing (AM). The results: significantly improved local heat transfer (especially in high-load regions like cylinder head decks), without increasing pumping work (i.e. energy cost of moving coolant).

ACADEMIC ACTIVITIES

A seminar on *"Industry 4.0"* was conducted in collaboration with ISTE on **22nd October 2022**. The session was delivered by **Dr. N. Natarajan**, Professor and Head of Mechanical Engineering, Excel Engineering College, Namakkal. The seminar provided insights into the emerging trends and technologies of Industry 4.0, focusing on its impact on modern manufacturing and industrial practices. A total of **60 participants** attended and benefitted from the session.

A seminar on *"Vehicle Aerodynamics"* was organized in collaboration with ISTE on **4th November 2022**. The resource person was **Mr. R. Premraj**, Assistant Professor, Department of Mechanical Engineering, Excel Engineering College, Komarapalayam. The session focused on the principles of aerodynamics in vehicle design and their role in improving performance and efficiency. A total of **68 participants** actively took part and gained valuable knowledge from the seminar.

A **Student Convention – Tier II Events** was conducted in collaboration with the **Indian Society of Mechanical Engineers (ISME)** on **29th December 2022.** The program featured **division-level student competitions**, providing a platform for participants to showcase their technical knowledge, creativity, and problem-solving skills. A total of **80 students** actively participated and benefitted from the event.

STUDENTS ACHIVEMENTS

P. Aravindhan (III Year) participated in an **Engine Assembly event** held on 29th October 2022 at the **Knowledge Institute of Technology** and secured the **Second Prize.**

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Saktheeswaran M (IV Year) participated in a **National Level Seminar** held on 10th November 2022 at **Shree Venkateshwara Hi-Tech Engineering College** and won the **Third Prize**.

Sakthees Waran M (IV year) participated in a **National Level Seminar** at Shree **Venkateshwara Hi-Tech Engineering College** on 14 November 2022 and secured **Third Prize.**

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