

**VOL NO.1
ISSUE NO.02
OCTOBER 2024 to
DECEMBER 2024**



Learn Beyond

**KPR Institute of
Engineering and
Technology**

(Autonomous, NAAC "A")

EDITORIAL

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SPARK



VISION

To be recognized as a premier centre in the field of mechanical engineering education, research and development to meet the changing needs of industry and society.

MISSION

The Department of Mechanical Engineering is committed to,

- Provide fundamental and skill-based education in mechanical engineering through innovative practices in teaching and learning.
- Establish centers of excellence in collaboration with reputed industries, professional bodies and research laboratories.
- Promote entrepreneurship with leadership qualities, ethics, and human values for the society at large.

PROGRAM EDUCATION OBJECTIVES (PEO)

Graduates of BE Mechanical Engineering four years after graduation will:

- **PEO1:** Excel in their professional career with competencies in the field of mechanical and allied engineering.
- **PEO2:** Apply modern research and simulation tools to solve industrial and societal needs.
- **PEO3:** Practice professional and ethical values in respective organizations and society.

PROGRAM SPECIFIC OUTCOMES (PSO)

Graduates of Mechanical Engineering should:

- **PSO 1:** Design, develop and implement advanced mechanical systems by applying engineering principles for improved performance and less human effort.
- **PSO 2:** Apply quality tools to ensure quality, articulate maintenance principles and demonstrate managerial skills to comprehend the mechanical engineering processes, products and services.

DEPARTMENT EVENTS

PROGRAMS ORGANIZED

- ✦ The Department of Mechanical Engineering at KPR Institute of Engineering and Technology (KPRIET) organized an expert visit titled *"Solar Power Plant Design and Management"* on 3 October 2024, from 9:00 a.m. to 12:45 p.m., as an on-campus institutional-level activity for students. The visit aimed to provide practical exposure to solar energy technologies, renewable energy systems, and the operational aspects of solar power generation. Students gained insights into the fundamental principles of photovoltaic energy conversion, solar panel installation, plant layout, system sizing, energy generation, and performance monitoring. The programme highlighted the importance of efficient solar power plant design, preventive maintenance, energy management, and the integration of renewable energy into existing power systems. The expert interaction helped students understand the practical challenges associated with solar energy implementation, including energy efficiency, resource utilization, and sustainable power generation. The activity aligned with **SDG 7: Affordable and Clean Energy, SDG 9: Industry, Innovation and Infrastructure, SDG 11: Sustainable Cities and Communities, and SDG 12: Responsible Consumption and Production**, reinforcing the Department's commitment to experiential learning, environmental sustainability, and the development of energy-conscious engineers.



The Department of Mechanical Engineering organized the *Inauguration of the Mechanical Engineering Association for the academic year 2024–2025* on 15 November 2024, from 2:15 p.m. to 4:00 p.m. The programme was graced by Mr. Abhinay Sridharan, Operations Manager – Aerospace & Defense Group, CIRCOR Flow Technologies India Pvt. Ltd., Coimbatore, as the Chief Guest. The event aimed to encourage technical learning, professional development, and industry-academia interaction among mechanical engineering students. During the programme, the Chief Guest shared valuable insights into the aerospace and defence sectors, highlighting emerging engineering technologies, industrial practices, quality standards, and the importance of innovation in modern manufacturing. He emphasized the significance of technical competency, teamwork, problem-solving abilities, and continuous learning in preparing students for successful engineering careers. The programme encouraged active student participation in association activities and strengthened the connection between academic learning and industrial applications. The event aligned with **SDG 4: Quality Education, SDG 7: Affordable and Clean Energy, and SDG 9: Industry, Innovation and Infrastructure**, reflecting the Department's commitment to quality engineering education, technological advancement, and industry-oriented learning.



FACULTY PUBLICATIONS

INTERNATIONAL JOURNALS:

- ✿ Ganesan, K., **Selvan, D.K.** and Marimuthu, G.S., 2024. Fatigue crack growth study on rolled and cryogenically treated AZ31B Mg alloy plate. *Theoretical and Applied Fracture Mechanics*, 133, p.104530.
- ✿ Manoj Mohan Prasath, V., **Dharani Kumar, S.** and Mohammed Raffic, N., 2025. Effects of multi-objective optimization of friction stir welding process parameter on mechanical and ballistic properties of AA5754 aluminum alloy. *Journal of Adhesion Science and Technology*, 39(6), pp.879-909.
- ✿ Nataraj, G. and **Ramesh Babu, S.**, 2025. Enhancing mechanical properties of PLA-based bio composite filament reinforced with horse gram filler for 3D printing applications. *Journal of Vinyl and Additive Technology*, 31(2), pp.453-468.
- ✿ **Arunkumar, P., Balaji, D.**, Radhika, N., Rajeshkumar, L., Rangappa, S.M. and Siengchin, S., 2025. Effect of infill pattern on mechanical properties of 3D printed PLA-Zn composites for drone frame structures: A topology optimization integrated application study. *Results in Engineering*, 25, p.104107.
- ✿ Rajan, C.S., **Kumar, N.M.**, Kumar, K.V., Kannan, S. and Soundararajan, S., 2024. Investigation on Mechanical and Metallurgical Characterization of Micro-Alloyed Steel Produced by Friction Stir Welding (FSW). *Automotive Technical Papers* 358710.
- ✿ **Kumar, N.M.**, Thillikkani, S., Kannan, S., Soundararajan, S. and Bharti, K., 2024. Investigating Mechanical Performance of Load Vehicle Brake Liners Enhanced with Nanomaterials Using Finite Element Analysis. *Automotive Technical Papers* 358710.
- ✿ Sathesh Babu, M., Ramamoorthi, R., **Gokulkumar, S.** and Manickaraj, K., 2024. Mahua oil cake microcellulose as a performance enhancer in flax fiber composites: mechanical strength and sound absorption analysis. *Polymer Composites*, 46(3), pp.2221-2240.

- ✿ Ajithkumar, S. and **Arulmurugan, B.**, 2024. Microstructure and mechanical properties of Inconel 686 fabricated by gas metal arc welding-based wire arc directed energy deposition: impact of cryogenic treatments. *Journal of Materials Science*, 59(40), pp.19273-19302.
- ✿ Ajithkumar, S. and **Arulmurugan, B.**, 2025. Investigation of single and double pulse techniques on microstructure and mechanical anisotropy of Inconel 686 component fabricated by wire arc directed energy deposition. *Metals and Materials International*, 31(6), pp.1648-1673.
- ✿ Lalitha, B., Lakshmi, K., Karthick, A. and **Manoj Kumar, P.**, 2024. Performance analysis of photovoltaic module using eutectic phase change material. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 46(1), pp.14423-14435.
- ✿ **Murugesan, K.**, Lenin Singaravelu, D., Krishnan, R. and Palani, M.M.R., 2026. Experimental research on friction and wear behavior of dissimilar steel composite structure developed by wire arc-DED process for an automobile brake rotor application. *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*, 240(4), pp.4494-4502.
- ✿ **Dharani Kumar, S.**, Nitin, M.S., Kumar, S.S., Muthukumaran, N. and Magarajan, U., 2025. Mechanical and ballistic performance of individual and synergistic filler reinforced glass fiber epoxy composites. *Polymer Composites*, 46(8), pp.7555-7568.

STUDENTS ACHIEVEMENTS

The achievements of students from the Department of Mechanical Engineering in various events are displayed below.



Secured Second Prize in ANOKHA'24 Robo Racer at Amritha Vishwa Vidhyapreetham



Secured Second Prize in CONSCIENTIA'24 Drone Trix at Indian Institute of Space Science and Technology, Kerala



Secured Finalist in Fluid Power Society India Quiz 2024



Honored for District Disaster Management Camp at Indian Red Cross Society



Honored in PSG Tech Alumni Trophy



FACULTY ACHIEVEMENTS



Honored as Runner in Quality Conclave 2024

FACULTY AS RESOURCE PERSON



ResearchCare India PVT LTD

CERTIFICATE
OF APPRECIATION



Proudly present to :

Dr.S.Gokul Kumar

This certificate is given to Dr.S.Gokul Kumar for his effective session on **"AI Assistance In Research Writting"** On **10/10/2024**

Er.Karthe A.S
Organizing Chair