DEPARTMENT OF MECHANICAL ENGINEERING

NEWS LETTER & MAGAZINE

DEC -2025

Moral and social Value Event - 1:

The Department of Mechanical Engineering organizes Moral and social value event on An innovative approach to effective communication and conflict management emphasizes active listening supported by empathy and emotional intelligence.Digital collaboration tools and data-driven feedback help identify misunderstandings early and promote transparency. Design thinking techniques encourage viewing conflicts as solvable problems rather than personal disputes. Open dialogue combined with cultural sensitivity builds trust and mutual respect among stakeholders. Continuous reflection and learning transform conflicts into opportunities for new professional journey and continue to inspire their peer.

Event Photo’s

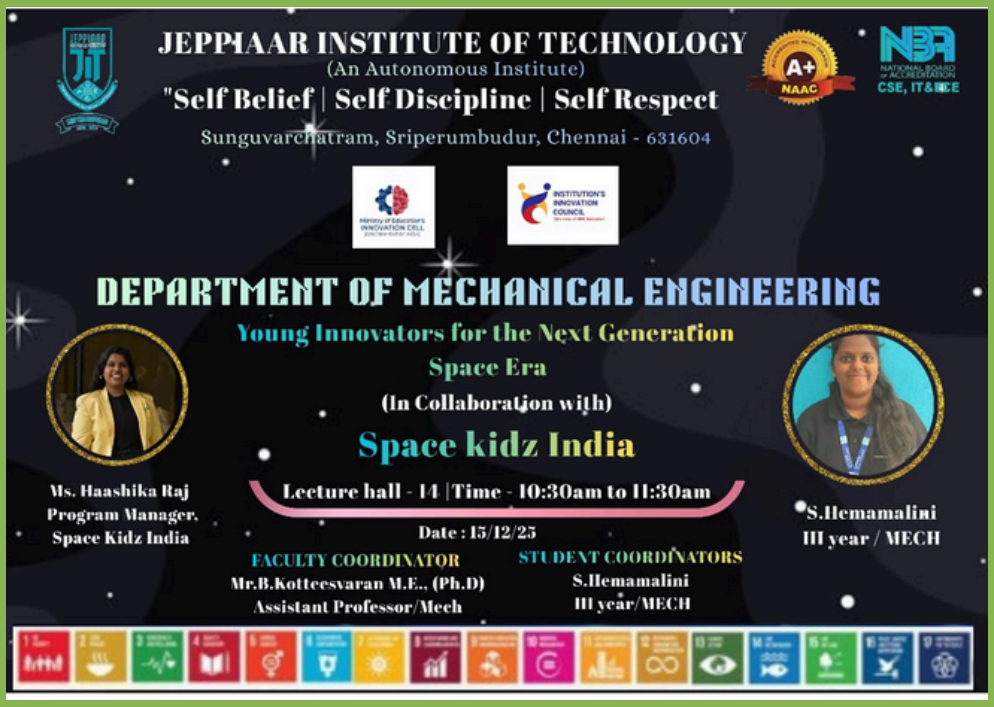
Moral and social Value Event - 2:

The Department of Mechanical Engineering organizes a Moral and Social Values–based event focusing on Sustainable Technologies for Smart Cities, with special emphasis on wastewater management and energy solutions. The event highlights ethical responsibility, environmental stewardship, and social well-being through engineering innovations. It creates awareness on sustainable wastewater treatment, renewable energy integration, and resource-efficient technologies. Experts and participants discuss how engineering decisions can positively impact society and future generations. The program encourages students to adopt sustainable and value-driven approaches in solving urban challenges.

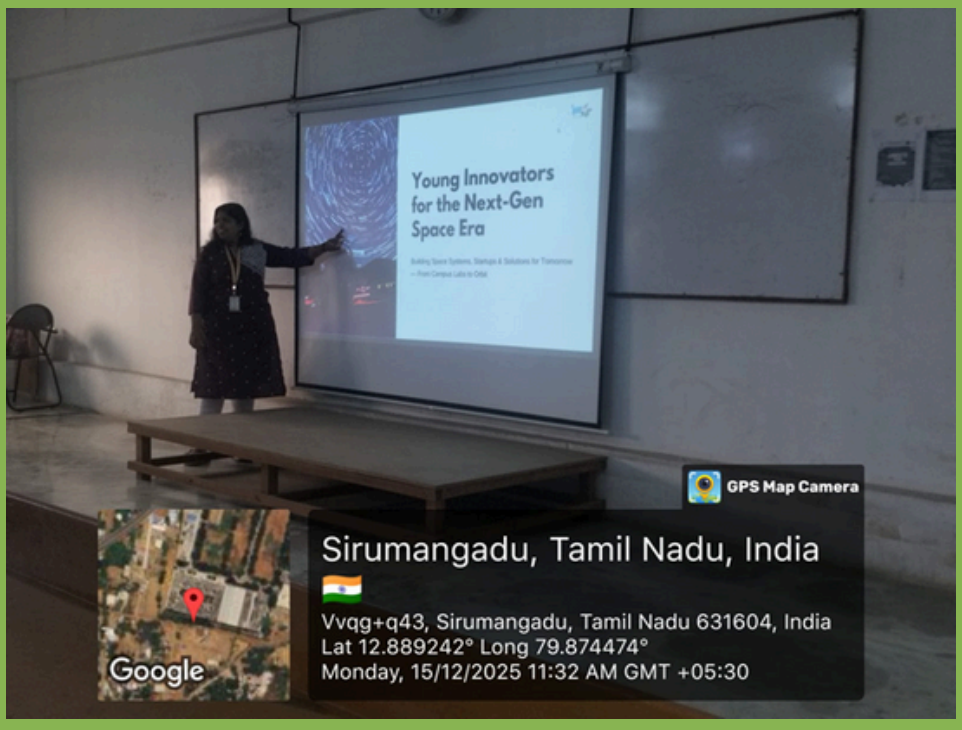
EVENT PHOTO'S

Workshop on "Young Innovators for the Next Generation Space Era":

The Department of Mechanical Engineering organizes a workshop on "Young Innovators for the Next Generation Space Era" to inspire students toward advanced space technologies. The event focuses on innovation in aerospace systems, propulsion, materials, and space sustainability. Experts share insights on emerging opportunities and challenges in the evolving space sector. The workshop encourages creativity, problem-solving, and interdisciplinary thinking among young engineers. It aims to nurture future-ready innovators who can contribute to the global space ecosystem.



EVENT PHOTO's




GPS Map Camera
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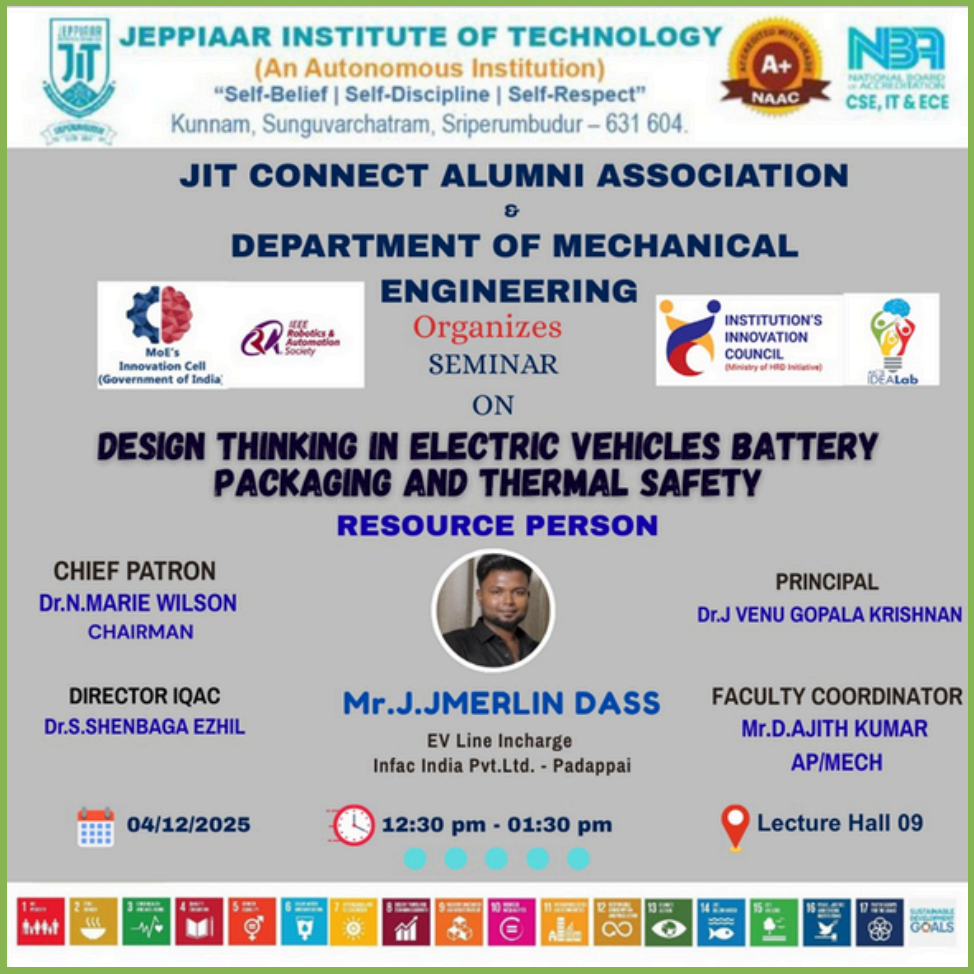
Google

SEMINAR ON DESIGN THINKING IN ELECTRIC VEHICLE BATTERY PACAKING AND THERMAL SAFETY

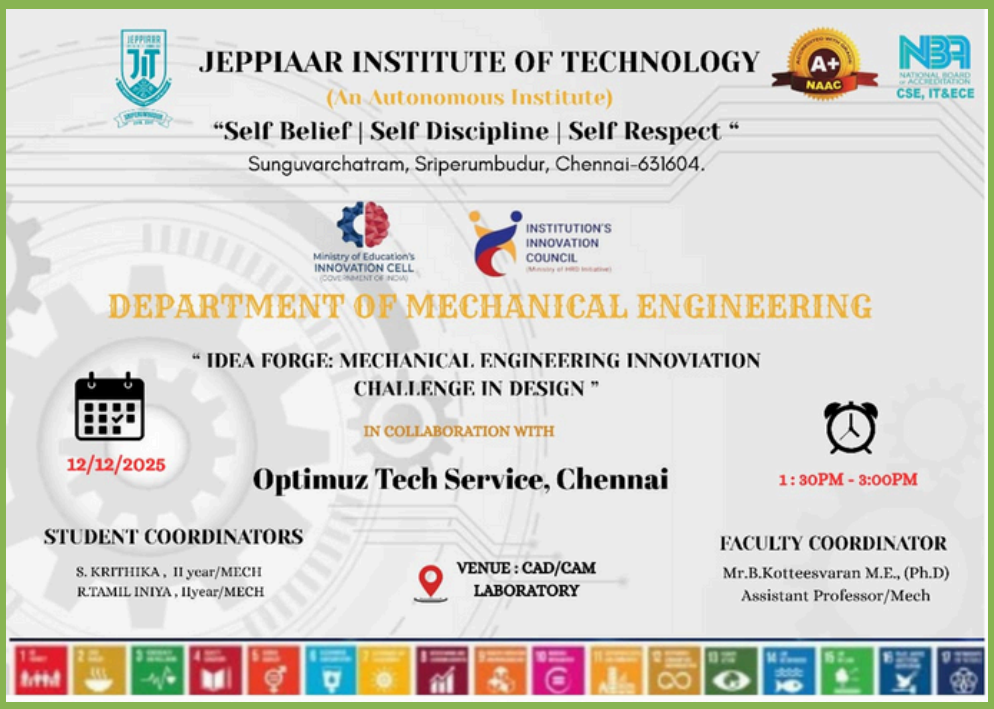
The Department of Mechanical Engineering organizes a seminar on "Design Thinking in Electric Vehicle Battery Packaging and Thermal Safety." The seminar focuses on innovative design methodologies for efficient battery packaging and robust thermal management systems. Experts discuss safety challenges, heat dissipation strategies, and reliability of EV battery systems. The event emphasizes user-centric design, sustainability, and compliance with safety standards. It aims to enhance students' understanding of next-generation electric vehicle technologies and safe engineering practices.



EVENT PHOTO'S

IDEA FORGE – a Mechanical Engineering Innovation Challenge in Design

The Department of Mechanical Engineering organizes IDEA FORGE – a Mechanical Engineering Innovation Challenge in Design to foster creativity and problem-solving skills among students. The event provides a platform for transforming ideas into practical engineering design solutions. Participants apply design thinking, analytical skills, and innovative approaches to real-world mechanical problems. Expert mentoring and peer collaboration encourage multidisciplinary innovation. IDEA FORGE aims to nurture future-ready engineers with strong design and innovation capabilities.



Professional Society – SAE

The Department of Mechanical Engineering, in association with theprofessional society SAE, organizes a seminar on "Human-Centered Design Thinking in Automotive Product Development." The seminar emphasizes user-focused design approaches to enhance safety, comfort, and performance in automotive systems. Industry experts share insights on integrating customer needs with engineering innovation. The event highlights the role of empathy, usability, and sustainability in modern vehicle development. It aims to equip students with design thinking skills aligned with current automotive industry practices.

EVENT PHOTO'S

Professional Society – ASME

The Department of Mechanical Engineering, in association with the professional society ASME, organizes a seminar on "Design Thinking Approach for Enhancing Driver Safety and Comfort." The seminar focuses on user-centric design principles to improve ergonomics, safety systems, and driving experience. Experts discuss innovative solutions integrating engineering design with human factors. The event highlights the importance of empathy, usability, and technology in modern vehicle design. It aims to equip students with practical insights into designing safer and more comfortable automotive systems.

EVENT PHOTO'S

Club Activity – IEEE RAS

The Department of Mechanical Engineering, in association with the IEEE RAS Club, organizes a seminar on "Driven Ideas for User-Centric Automotive Solutions."

The seminar focuses on innovative, user-focused approaches in automotive design and intelligent systems. Experts share insights on integrating robotics, automation, and human-Centered design in modern vehicles. The event emphasizes safety, comfort, and smart mobility solutions driven by user needs. It aims to inspire students to develop advanced automotive solutions aligned with future mobility trends.

EVENT PHOTO'S

FACULTY DEVELOPMENT PROGRAM – RECENT ADVANCEMENTS IN MECHANICAL ENGINEERING

The Department of Mechanical Engineering organizes a Faculty Development Program (FDP) on "Recent Advancements in Mechanical Engineering."
The program focuses on emerging technologies, modern research trends, and innovative teaching practices. Experts from academia and industry share insights on advanced materials, manufacturing, energy systems, and automation. The FDP promotes knowledge exchange and professional growth among faculty members. It aims to enhance academic excellence and research capabilities in the field of mechanical engineering.

PARTICIPANT'S COUNT: 190
RESOURCE PERSONS:

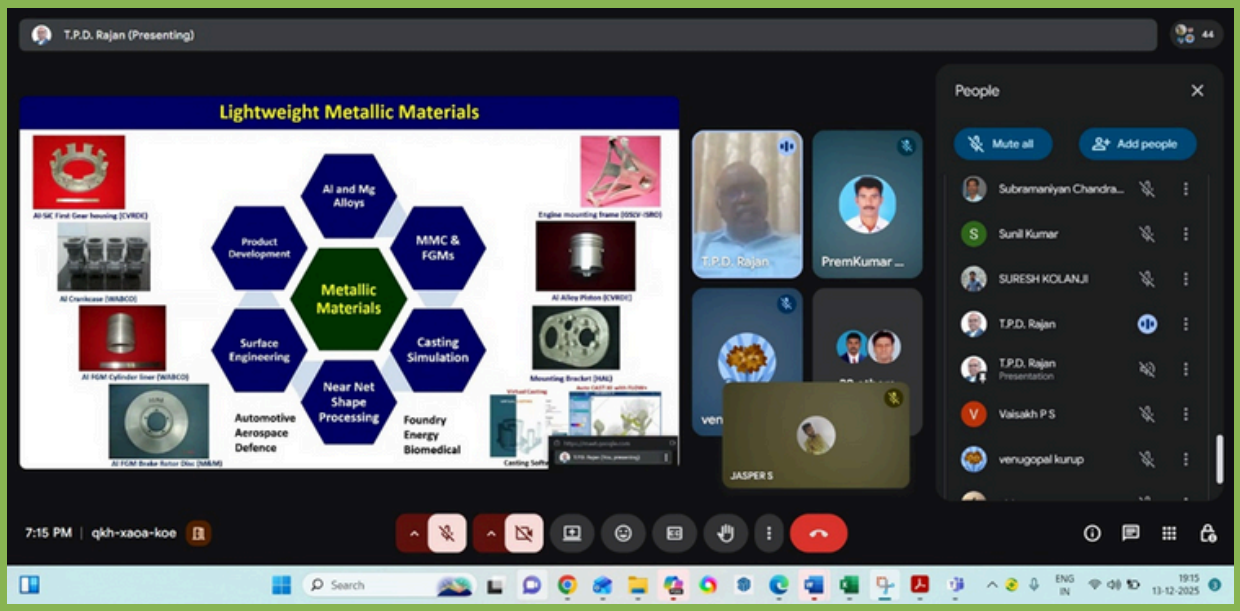
DAY 1 - Dr. K. Jeyakumar, Senior Principal Scientist / CSIR - Trivandrum • DAY – 2 Dr. R. Ganapathy Srinivasan, Asso. Prof / Veltech MultiTech Dr. Rangarajan Dr. Sakunthala Engineering college
DAY – 3 Dr. G. Navaneetha Krishnan, Asso. Prof / QIS college of Engineering and Technology
DAY – 4 Dr. N. Muthuselvakumar. Asst.Prof/ Kongunadu College of Engineering and Technology
DAY -5 Dr. T.P.D Rajan, Senior Principal Scientist/ CSIR – Trivandrum

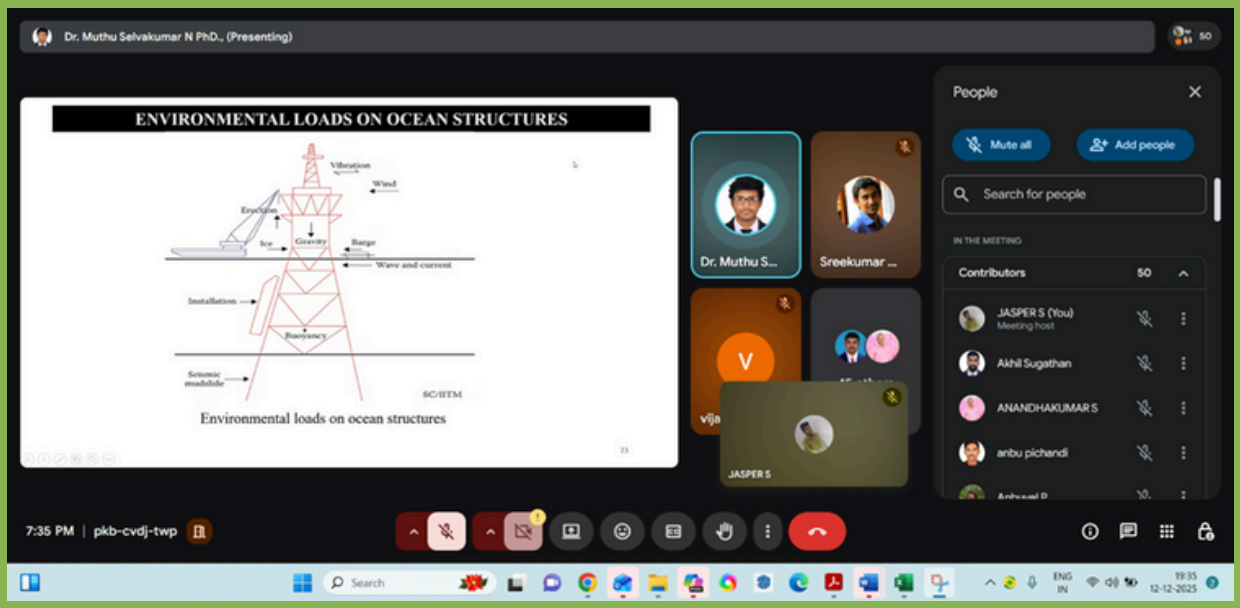
BROCHURE:


Speakers
Dr.K.Jayasankar, Ph.D.
Senior Principal Scientist,
CSIR - National Institute for Interdisciplinary Science and Technology- Trivandrum
Dr.R.Ganapathy Srinivasan, M.E, Ph.D.
Associate Professor,
Vel Tech Multi Tech Dr.Rangarajan Dr.Sakunthala Engineering College - Chennai
Dr.G.Navaneethakrishnan, M.E, Ph.D.
Associate Professor,
QIS College of Engineering and Technology - Andhra Pradesh
Dr.N.Muthu Selvakumar, M.E, Ph.D.
Assistant Professor,
Kongunadu College of Engineering and Technology - Tiruchirappalli
Dr.T.P.D.Rajan, M.Sc, M.Tech, Ph.D.
Chief Scientist,
CSIR - National Institute for Interdisciplinary Science and Technology- Trivandrum
FDP Course Content
This FDP provides a comprehensive overview of the latest developments across core and advanced domains, including :
Smart manufacturing
Advanced materials
Additive manufacturing
Robotics
Sustainable energy technologies.
The speakers of this FDP made pioneering contributions to these fields. The program is aimed at bringing the researchers, faculty from academia, and industry professionals under one roof and paving a platform for knowledge transfer.
Registration Link:
https://forms.gle/wFWiSajDivxJ9meA8
DATE : 09.12.2025 - 13.12.2025
Timing : 7.00 PM - 8.00 PM
Mode : Online
Faculty Members From AICTE Approved Engineering colleges are Eligible
NO REGISTRATION FEE !!
E- Certificates will be provided to all the participants !!
FDP Co-ordinator:
Mr.S.Jasper, M.E.(Ph.D.)
Assistant Professor,
Mechanical Engineering,
Jeppiaar Institute of Technology,
Mob No : 7708556585
JEPPIAAR INSTITUTE OF TECHNOLOGY
(An Autonomous Institution)
"Self-Belief | Self-Discipline | Self-Respect"
Department of Mechanical Engineering Organises
FACULTY DEVELOPMENT PROGRAM
ON
RECENT ADVANCEMENTS IN MECHANICAL ENGINEERING
SAE INTERNATIONAL
ASME


Vision
Jeppiaar Institute of Technology aspires to provide technical education in futuristic technologies with the perspective of innovative, industrial, and social applications for the betterment of humanity.
Mission
To produce competent and disciplined high-quality professionals with the practical skills necessary to excel as innovative professionals and entrepreneurs for the benefit of society.
To improve the quality of education through excellence in teaching and learning, research, leadership, and by promoting the principles of scientific analysis, and creative thinking.
To provide excellent infrastructure, serene, and stimulating environment that is most conducive to learning.
Chief Patron
Dr.N.Marie Wilson
Chairman
Patrons
Dr.J.Venu Gopala Krishnan
Principal
Dr.S.Shenbaga Ezhil
IQAC Director
JEPPIAAR INSTITUTE OF TECHNOLOGY
ஜேப்பியார் இன்ஸ்டிட்யூட் ஆப் டெக்னாலஜி

EVENT PHOTO'S:





Recent Innovations in Mechanical Engineering

R.TAMILINIYA
II Year Mechanical Engineering

Smart Thermal Management Systems in Advanced Engineering Applications

Thermal management has become a critical area of innovation due to the rise of electric vehicles (EVs), high-power electronics, aerospace systems, and renewable energy technologies. Smart thermal management systems use advanced materials, sensors, control algorithms, and artificial intelligence to actively regulate heat transfer in mechanical systems. Unlike traditional passive cooling methods, these systems dynamically adapt to operating conditions to maintain optimal temperatures.

In electric vehicles, smart thermal systems improve battery safety, enhance driving range, and extend battery life by controlling heat generation during charging and discharging. Technologies such as phase change materials (PCMs), micro-channel heat exchangers, heat pipes, and liquid cooling loops are widely adopted. Integration with real-time sensors and predictive control algorithms allows early detection of thermal runaway risks. These advancements improve system reliability, reduce energy losses, and contribute to safer and more efficient mechanical designs

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With the rapid advancement of high-power and high-density engineering systems, effective thermal management has become a critical design requirement. Smart Thermal Management Systems (STMS) represent a major innovation in mechanical engineering, combining advanced heat transfer techniques with sensors, control systems, and intelligent algorithms to actively regulate temperature and ensure safe, efficient operation.

Concept and Need

Traditional thermal management methods such as natural convection, forced air cooling, and conventional liquid cooling are often insufficient for modern applications like electric vehicles, aerospace electronics, data centers, and renewable energy systems. These applications generate high heat fluxes and operate under varying load conditions. Smart thermal management systems overcome these limitations by continuously monitoring temperature and dynamically adjusting cooling strategies in real time.

Key Technologies Involved

Smart thermal systems integrate multiple advanced technologies, including micro-channel heat exchangers, heat pipes, vapor chambers, phase change materials (PCMs), and advanced thermal interface materials. Sensors such as thermocouples, infrared sensors, and MEMS-based temperature sensors provide real-time thermal data. This data is processed using control algorithms, artificial intelligence, or machine learning techniques to optimize heat dissipation and minimize energy consumption.

Applications in Electric Vehicles (EVs)

In electric vehicles, battery thermal management is crucial for safety, performance, and lifespan. Smart thermal systems regulate battery temperature during charging, discharging, and fast-charging operations. Liquid cooling systems combined with PCMs help prevent thermal runaway and improve battery efficiency. These systems also manage heat in power electronics and electric motors, contributing to improved vehicle range and reliability.

Aerospace and High-Performance Electronics

Aerospace systems and avionics require precise thermal control due to extreme operating conditions. Smart thermal management ensures stable performance of electronic components under high altitude, vibration, and temperature variations. Similarly, in data centers and high-performance computing systems, intelligent cooling reduces energy consumption while maintaining optimal operating temperatures.

KRITHIKA
II Year Mechanical Engineering

Hydrogen Energy Systems and Fuel Cell Technology

Hydrogen energy is emerging as a clean and sustainable alternative to fossil fuels, making it a major innovation area in mechanical engineering. Fuel cell technology converts hydrogen into electricity through electrochemical reactions, producing only water as a by-product. Mechanical engineers play a vital role in the design of fuel cell stacks, thermal control systems, hydrogen storage tanks, and power transmission components.

Recent advancements include lightweight high-pressure hydrogen storage systems, improved fuel cell efficiency, and hybrid integration with electric powertrains in vehicles. Hydrogen-powered buses, trains, and industrial power units are gaining global attention as part of carbon-neutral initiatives. Mechanical engineering innovations in this field contribute to reduced greenhouse gas emissions, energy security, and sustainable transportation. Challenges such as storage safety, infrastructure development, and cost reduction continue to drive research and innovation.

Hydrogen energy systems represent one of the most promising pathways toward clean, sustainable, and low-carbon energy solutions. As global efforts intensify to reduce greenhouse gas emissions and dependence on fossil fuels, hydrogen has emerged as a key energy carrier due to its high energy density and environmentally friendly characteristics. Mechanical engineering plays a vital role in the development, optimization, and deployment of hydrogen energy systems and fuel cell technologies.