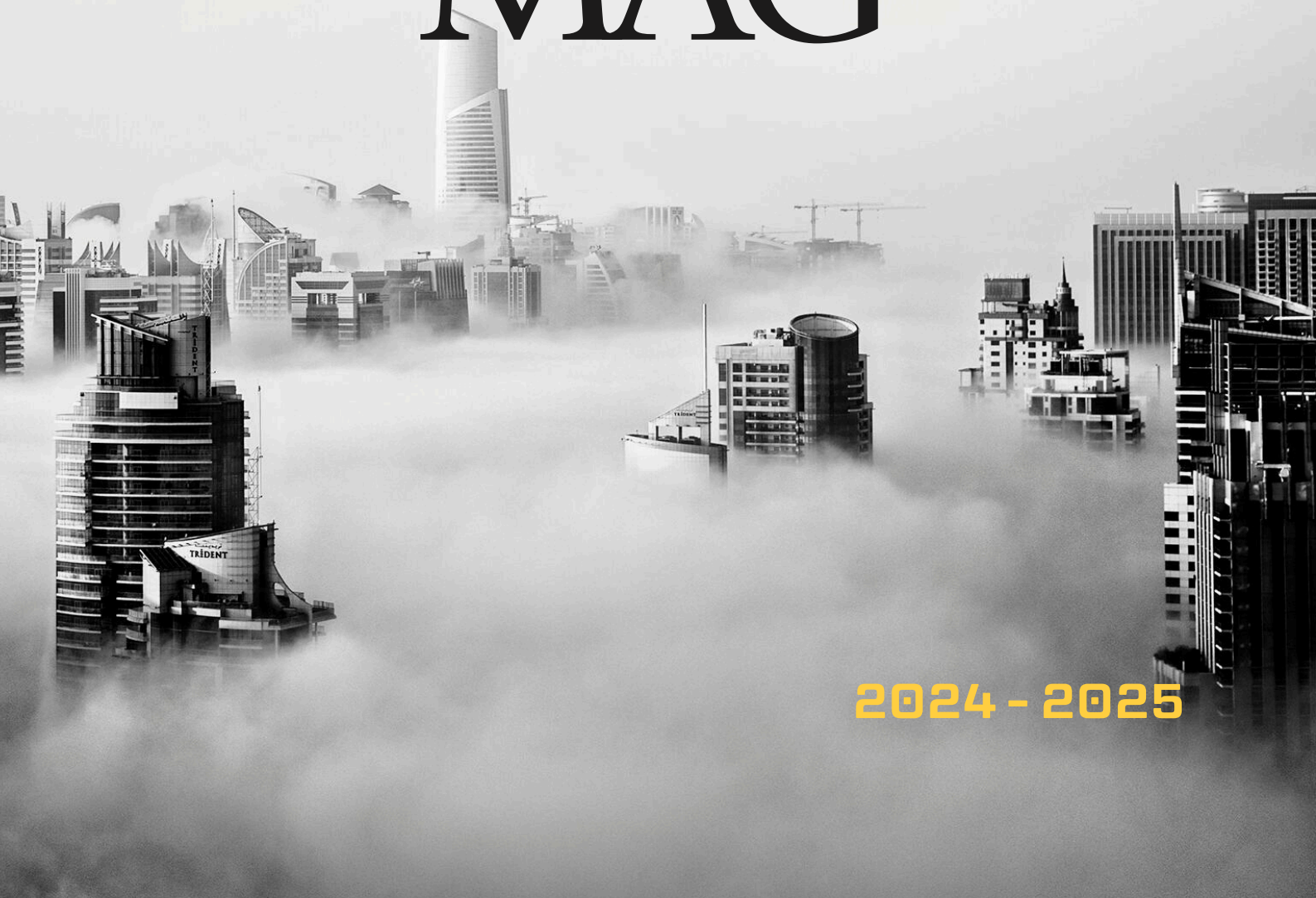
DEPARTMENT OF

MECHANICAL ENGINEERING

Presents

# MECH MAG




2024 - 2025

# EDITORIAL BOARD

## CHIEF PATRONS

Dr.M.Manickam
*Chairman, MCET*
Mr.M.Harihara Sudhan
*Correspondent, MCET*
Dr.C.Ramaswamy
*Secretary, NIA*
Dr.S.V.Subramanian
*Joint Secretary, NIA*

## PATRONS

Dr.P.Govindasamy
*Principal*
Dr.A.Senthil Kumar
*Vice Principal*

## ADVISORY COMMITTEE

Dr.Rama Thirumurugan
*Head of the Department*
Dr.D.Nathan
*Program Coordinator*

## FACULTY COORDINATORS

Mr.Vijayakkannan, AP(SS)/Mech,MCET
Mr.Sreejith S Nair, AP(SS)/Mech,MCET

## EDITORS

Prabin.P (22BME018)
Abdul Salam.S (23BME091)

# *Department of Mechanical Engineering*

## VISION AND MISSION OF THE DEPARTMENT

**Vision**

To transform students from rural background into professional leaders of tomorrow in the field of
Mechanical Engineering with a strong sense of social commitment.

**Mission**

- To impart quality – engineering education leading to specialization in he emerging areas of CAD/CAM/CAE, Energy Engineering and Materials Technology.
- To provide continually updated and intellectually stimulating environment to pursue research and consultancy activities.

**Programme Educational Objectives (PEOs)**

The graduates will:

**PEO1.**Technical Expertise: Actively apply technical and professional skills in engineering practices towards the progress of the organization or the entrepreneurial venture in competitive and dynamic environment.

**PEO2**.Lifelong Learning: Own their professional and personal development by continuous learning and apply the learning at work to create new knowledge.

**PEO3**.Ethical Knowledge: Conduct themselves in a responsible, professional and ethical manner supporting sustainable economic development which enhances the quality of life.

**Program Outcomes (POs)**

**PO1.** Apply knowledge of basic sciences and engineering concepts to solve complex mechanical engineering problems.

**PO2.** Identify, formulate, and analyze engineering problems using scientific principles and concepts.

**PO3.** Design products, manufacturing processes and facilities that deliver the requirements of the target customers and desired quality functions.

**PO4**. Conduct experiments, analyze and interpret data to provide solutions for engineering problems.

**PO5.** Use appropriate tools and techniques to solve engineering problems.

**PO6.** Apply contextual knowledge to make informed decisions in societal, health, safety, legal, entrepreneurial and cultural issues

**PO7**. Demonstrate the knowledge of need for sustainable development in providing engineering solutions in global, environmental and societal contexts .

**PO8**. Practice Ethical responsibility.

**PO9.** Work effectively in teams and build/manage interpersonal relationships.

**PO10**. Communicate effectively through oral, non-verbal and written means.

**PO11.** Apply management principles to manage individual and team work for executing projects in a multidisciplinary environment.

**PO12**. Articulate and engage in pursuit of career and life goals through continuous Learning.

**Program Specific Outcomes (PSOs) - Regulations 2019**

**PSO 1:** Demonstrate functional competencies for roles in design, manufacturing and service by learning through centers of excellence and industrial exposure.

**PSO 2**: Demonstrate behavioral competencies required for roles in design, manufacturing and service by learning through structured professional skills training.

# Inside


Office Bearers 06

Leading with purpose and passion

Event Courage 12

Bold events that made a mark

Feature Articles 27

Stories that inspire and inform

Student Achievements 45

Students reaching new heights

Faculty Achievements 63

Excellence beyond the classroom

Research Highlights 72

Innovation at its best

Community Engagement 78

Connecting with our community

Students Spotlight 80

Profiles of rising stars

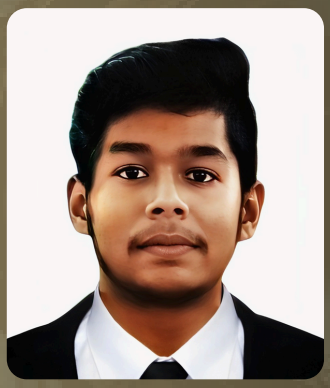
MECHANICA

# OFFICE BEARERS



## PRESIDENT

Vetrivel A
IV th Year



## VICE PRESIDENT

Abdul Wahid A
III rd Year



## SECRETARY

Selva Natheya R
IV th Year



## JOINT SECRETARY

Swetha K
III rd Year

MECHANICA

# OFFICE BEARERS



## MAGAZINE COORDINATOR

Ranjith P
IV th Year



## MAGAZINE COORDINATOR

Prabin P
III rd Year



## MAGAZINE COORDINATOR

Thiruvarangan M
II nd Year



## DESIGN EXECUTIVE

Praveen Kumar M
IV th Year

MECHANICA

# OFFICE BEARERS



## DESIGN EXECUTIVE

Abdul Salam S
III rd Year



## DESIGN EXECUTIVE

Ibrahim Dhanish J
II nd Year



## TREASURER

Nishanth M
IV th Year



## TREASURER

Manjarika N
III nd Year

MECHANICA

# OFFICE BEARERS



## TREASURER

Vishnu Prasanth V
II nd Year



## PROGRAM COORDINATOR

Gokul Prasath N
IV thYear



## PROGRAM COORDINATOR

Thirumalai P
III rd Year



## EXECUTIVE HEAD

Gokul Krishna P
IV rd Year

MECHANICA

# OFFICE BEARERS



## EXECUTIVE MEMBER

Praveen Kumar T
III rd Year



## EXECUTIVE MEMBER

Srisukanth B
III rd Year



## EXECUTIVE MEMBER

Prabhakar M
II nd Year

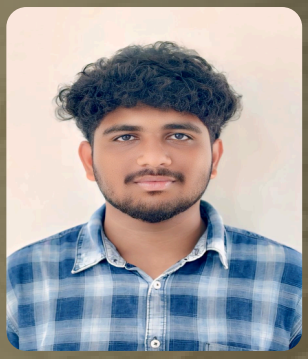


## EXECUTIVE MEMBER

Lakshana Sri D
II nd Year

MECHANICA

# OFFICE BEARERS



## EXECUTIVE MEMBER

Shiva Shailesh S
II nd Year



## REPORTING TEAM

Ajaykumar P
III rd Year



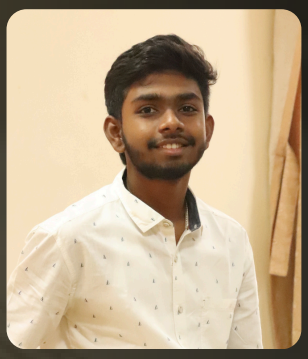
## REPORTING TEAM

Aravind V
II nd Year

## PHOTOGRAPHY TEAM



Aswin S
III rd Year



Haemanth M S
III rd Year

# EVENT COVERAGE

## MECHNITE-24

### Inauguration of Mechanica Association

On August 8,2023,Mechanica.
The department association of mechanical engineering called Mechnite was inaugurated.

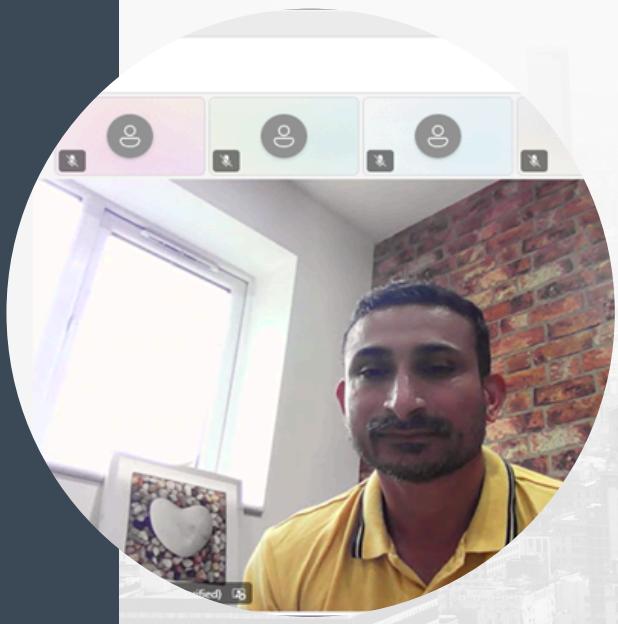


Dr.Karthick Shankar,
an alumnus, inaugurated the association and gave a technical presentation on Safety and stability ,Efficent use of materials, Problem solving, innovation,code compliances , longetivity and durability, risk management, support for architects. Overall quality and sustainability of built environment.

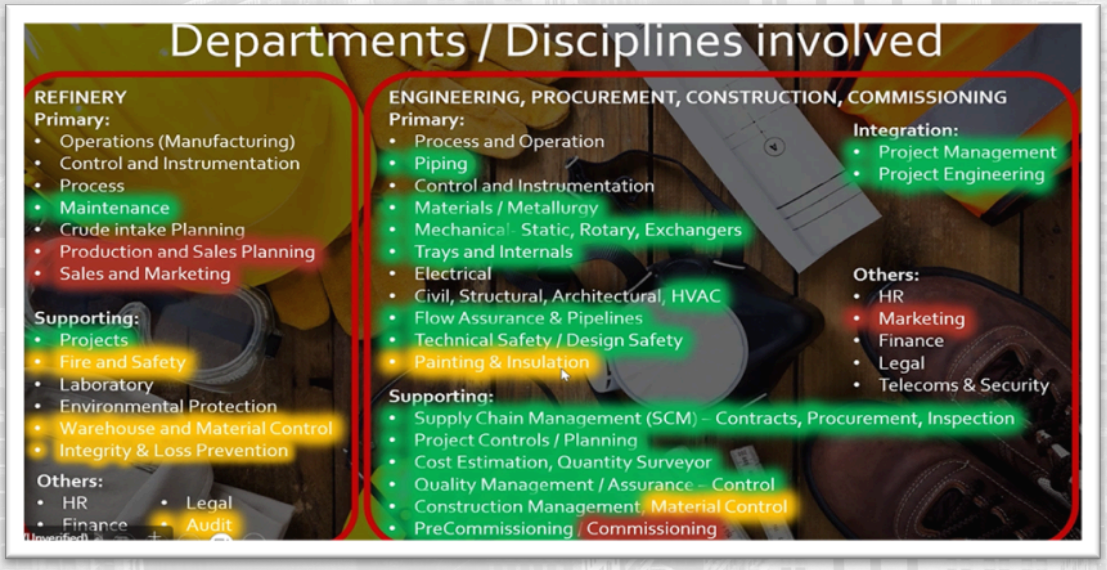


# EXPERT TALK

## THROUGH ONLINE



Expert speaker Mr. George Cheruvathoor, a seasoned professional in the oil and gas sector, discussed important facets of the business, such as prospects, problems, and current trends. Drawing on Mr. Cheruvathoor's vast experience, the workshop offered comprehensive insights into the operational, technological, and economic aspects of the oil and gas business.

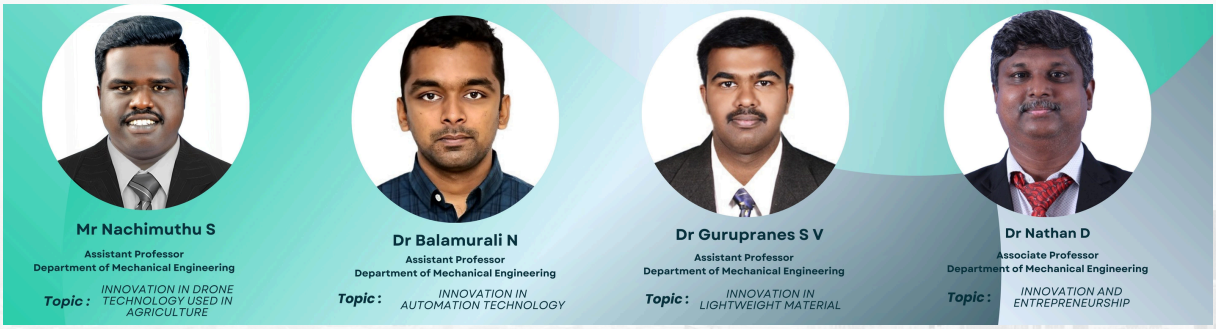



Mr. George Cheruvathoor's talk offered key insights into the evolving oil and gas industry, highlighting past events, technological advancements, and future trends. He emphasized the importance of innovation, safety, and sustainability in addressing the sector's challenges and opportunities.

# EVENT COVERAGE

## OUTREACH PROGRAM

### INNOVATION AND ENTREPRENEURSHIP




The interactive session on the " Innovation and Entrepreneurship " was held on 28.08.2024 at Government Girls Higher Secondary School, Kottur Road, Pollachi.





The session aimed to provide students and faculty with insights into the critical role of Entrepreneurship and Innovation in various fields such as Automation technology, Drone technology, Lightweight material and its significance in ensuring_the reliability and performance of engineering products.

# EXPERT TALK

## INNOVATION IN UNEXPLORED DOMAINS IN MECHANICAL ENGINEERING





Mechanical engineering professionals, students, and enthusiasts to discuss cutting-edge innovations in lesser-known areas of mechanical engineering. The speaker Dr.S.Senthilvelan ,shed light on emerging technologies, novel materials, and unexplored applications, offering fresh perspectives on how innovation can redefine the future of the discipline.

# EXPERT TALK

## INNOVATION IN UNEXPLORED DOMAINS IN MECHANICAL ENGINEERING

The expert talk on "3T's of Growth Talent, Technology, Transformation" was held on 20.09. 2024, featuring Mr.D.Raja Vineeth, an Ex senior Process Engineer at Bosch Automotive electronic India Pvt Ltd, Bengaluru.

The session attracted professionals and students alike,eager to understand the interplay of talent,technology, and transformation in driving modern business growth.Speaker shared practical insights on how these three pillars are essential for organizational success and personal development in a rapidly evolving world.





"Alumni never fade from our recollections because they leave indelible imprints on our minds."

# EXPERT TALK

## MEMS REVOLUTION

The guest lecture on “MEMS Revolution: Transforming Industries through Miniaturisation and
Precision” was organized by the Departments of Mechanical, Automobile, and Electrical and
Electronics Engineering in association with the ISTE Student Chapter. This session aimed to
enlighten students and faculty about the transformative potential of Micro-Electro-Mechanical
Systems (MEMS) in various industrial applications.




The event began with an inspiring prayer song, followed by a warm welcome address by the student coordinators. The Presidential Address was delivered by Dr. Rama Thirumurugan, Head of the Department of Mechanical Engineering, setting the stage for an enriching session.

# EXPERT TALK

## EMERGING TRENDS IN MILITARY AVIATION

The guest lecture on “Emerging Trends in Military Aviation” was organized by the Departments of Mechanical and Automobile Engineering in collaboration with Mechanica, Scuderia Aves, and the Institution’s Innovation Council. The session aimed to provide students and faculty insights into advancements in military aviation and its implications for engineering design and innovation.

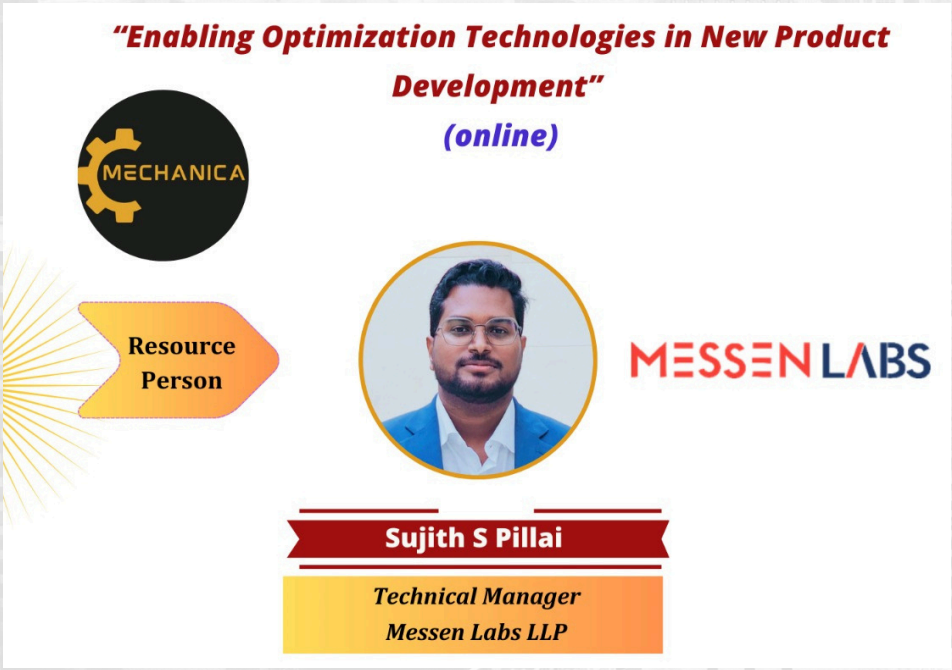


The event commenced with a prayer song, followed by a warm welcome address by the student coordinators. Dr. Rama Thirumurugan, Head of the Department of Mechanical Engineering, delivered the Presidential Address, setting the tone for the session.

# EXPERT TALK

## THROUGH ONLINE

The event titled "Enabling Optimization Technologies in New Product Development" was conducted online on 28.01.2025, organized by Mechanica, Department of Mechanical Engineering. Expert speaker Mr. Sujith S Pillai shared insights on using AI, ML, and computational tools to enhance product development.



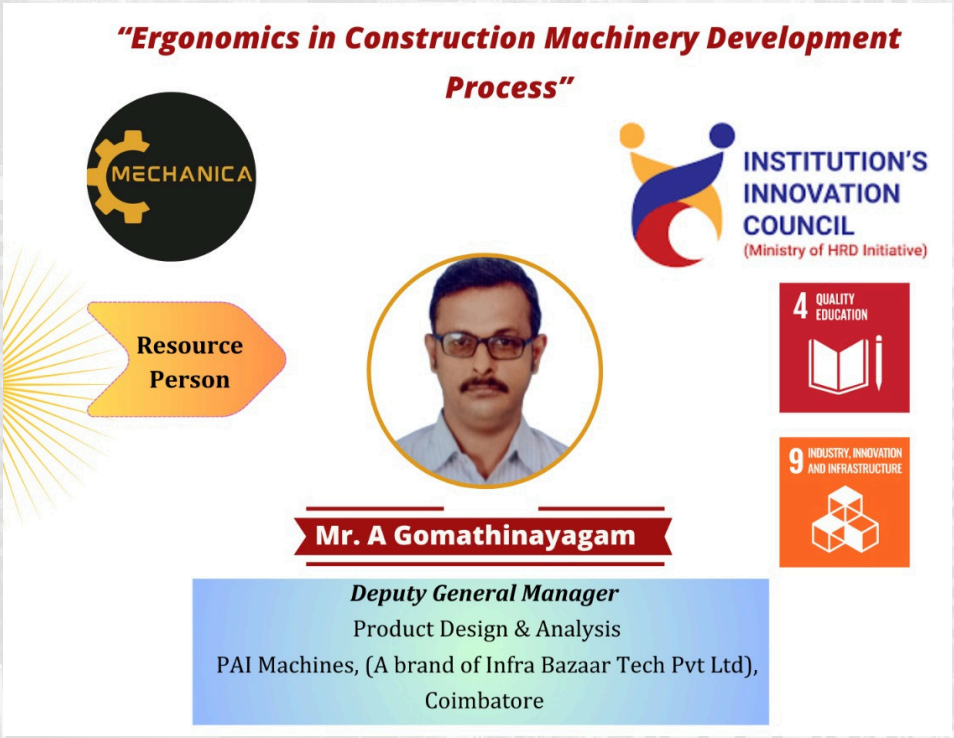

Key topics included design efficiency, material optimization, digital twins, and predictive simulations. The session featured real-world case studies and highlighted challenges and future trends in optimization technologies. A total of 191 students from II and III years attended, making the event a successful knowledge-sharing platform.

# EVENT COVERAGE

## GUEST LECTURE

### ERGONOMICS IN CONSTRUCTION MACHINERY DEVELOPMENT PROCESS

The guest lecture on "Ergonomics in Construction Machinery Development Process" was held on 21.02.2025 at Dr. MCET, organized by the Department of Mechanical Engineering in collaboration with the Institution's Innovation Council. The session featured Mr. A. Gomathinayagam from PAI Machines, who discussed the importance of ergonomic principles in enhancing machinery safety, usability, and operator comfort.




Key topics included human-centered design, industry case studies, and future trends involving AI and automation. An interactive Q&A session followed, enriching participant engagement. A total of 82 students (54 from Mechanical and 28 from Automobile) attended the session.

# Bot Smith

The event was held on 13.03.2025 at Dr. MCET, organized by the Departments of Mechanical and Automobile Engineering. It focused on testing students' prompt engineering skills through real-time AI-based tasks using ChatGPT. Participants were challenged to craft precise prompts to obtain accurate AI responses, judged on prompt clarity, answer quality, and time efficiency. The session included a live demonstration and a Q&A on AI applications and careers. With 37 participants and 3 winners, the event successfully highlighted the role of prompt engineering in modern AI use and sparked plans for future AI-focused events.





# Sculpt & Shape

The SCULPT & SHAPE event, held on March 13, 2025 as part of TECHNOBYTE'25 at Dr. MCET, was organized by the Mechanical Engineering Department in collaboration with the Student Research Council and MECHANICA.





It featured a two-round competition combining puzzle-solving and clay modeling, where students applied analytical thinking and creativity. Round 1 involved a mechanical jigsaw puzzle challenge, while Round 2 tasked finalists with sculpting models based on Sustainable Development Goals (SDGs). The event successfully blended engineering and art, with 24 teams participating and 6 advancing to the final round. Plans are in place to conduct more such innovative events in the future.

# Mechanica's Squid Game

**Held on 14th March 2025 as part of Technofete'25 at Dr. MCET, Mechanica's Squid Game was a dynamic event blending technical tasks with physical challenges inspired by the popular web series.**





**Organized by the Department of Mechanical Engineering, the event tested students' teamwork, engineering skills, problem-solving, and agility through multiple elimination rounds. Activities included design-based puzzles and coordination tasks with an engineering twist. With strong student participation and engagement, the event concluded successfully, awarding the top 3 teams and receiving positive feedback for its innovative and interactive learning approach.**

# EVENT COVERAGE

## Batch 21-25 Farewell

The farewell for the 2021–2025 batch was held on 21st April 2025 at Dr. MCET, celebrating the students' growth, achievements, and cherished memories over the past four years. The event featured emotional speeches, faculty appreciations—especially for Dr. S. Ayyappan and Dr. Ramathirumurugan—and heartfelt student performances.







# Batch 21-25 Farewell

Nostalgia, gratitude, and joy filled the air as students reflected on their journey. Each student was honored with a memento, and faculty shared words of encouragement for their future. The farewell was a beautiful blend of reflection and celebration, marking both an ending and a hopeful new beginning.








# Industry Conclave

The Department of Automobile Engineering and Mechanical Engineering conducted Industry Conclave-2025 on April 26, 2025. With the theme "Revolutionizing Engineering in the Digital Age," the event focused on the integration of AI, IoT, Data Analytics, Electric Vehicles, and Hydrogen Technology in driving innovation across the mechanical and automotive industries.

Prominent industry experts, including Mr. Kiran Sheelavant, Mr. S. B. Mallikarjun, Mr. Gurunath Hanche from Autoliv, Dr. Narayanan Ramanujam from Hexagon Manufacturing Intelligence, and Mr. S. Srinath from TAFE, shared their insights and experiences. The conclave witnessed active engagement from students and faculty, encouraging meaningful discussions on emerging technological trends and their impact on engineering practices.



# A Comprehensive Overview of the CFD Simulation Workflow

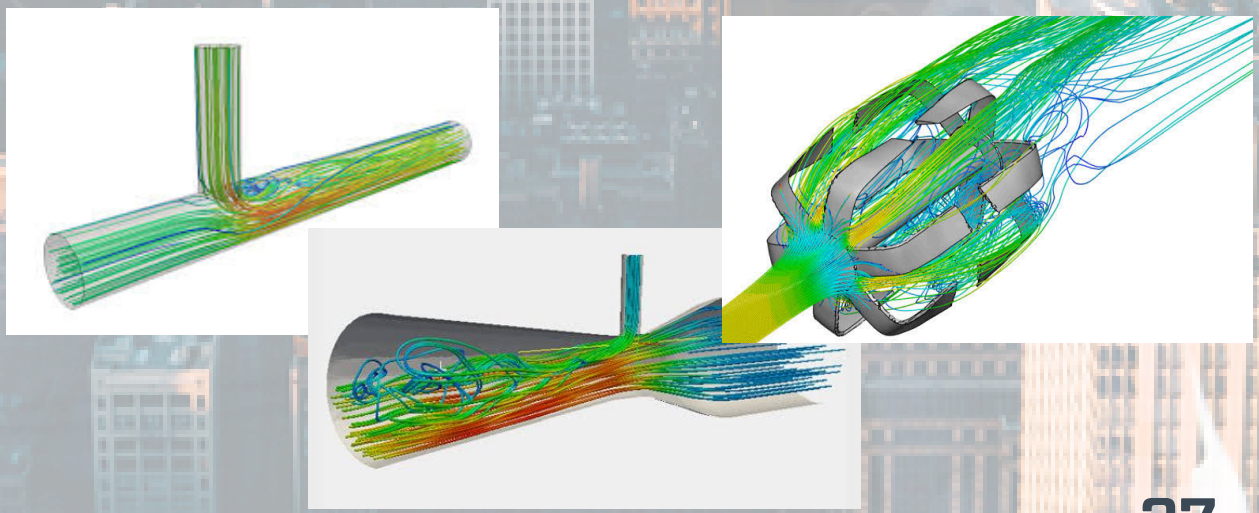
Computational Fluid Dynamics (CFD) has emerged as a powerful and indispensable tool in modern engineering and scientific analysis. It enables the simulation and prediction of fluid flow, heat transfer, and other related phenomena through numerical methods. By replicating real-world fluid behavior in a virtual environment, CFD provides valuable insights for design optimization, performance improvement, and innovation across industries such as aerospace, automotive, biomedical, and energy systems.

## Problem Definition :

The process begins by identifying the goal of the simulation—such as analyzing airflow over a vehicle or cooling in electronics. Understanding the fluid type, flow characteristics (laminar or turbulent), and whether heat or multiphase flow is involved is essential.

## Geometry Creation :

Next, a 2D or 3D model of the flow domain is created using CAD software like SolidWorks or ANSYS DesignModeler. This model represents the physical system being studied, and simplifications are made where needed to reduce complexity.



## A Comprehensive Overview of the CFD Simulation Workflow

### Meshing :

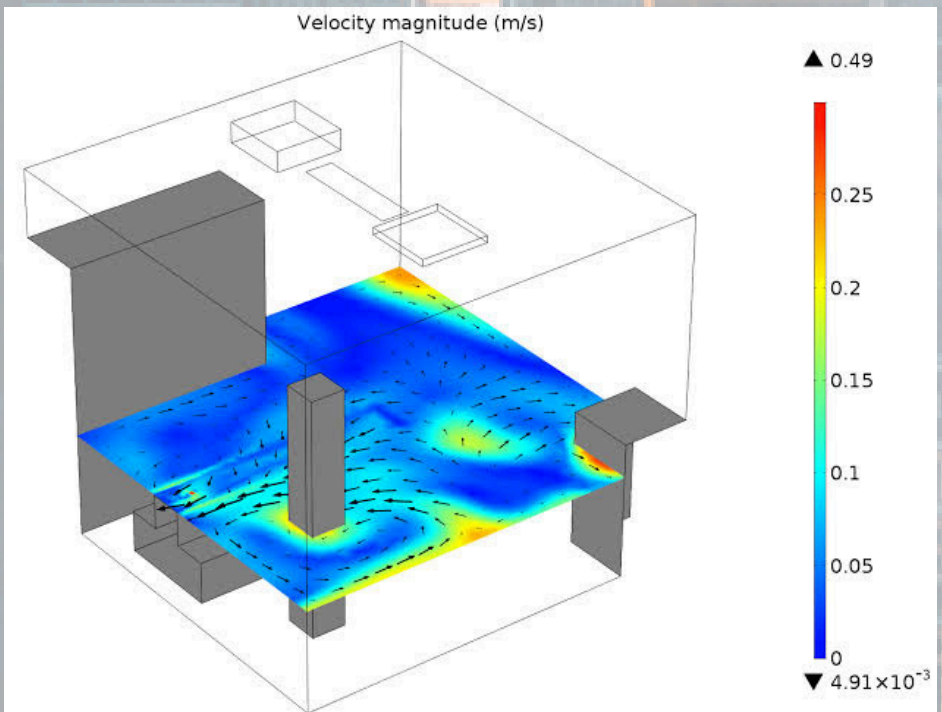
The geometry is then divided into small elements through meshing. A finer mesh gives more accurate results but increases computation time. Software like ANSYS Meshing or ICEM CFD is used here to prepare the model for simulation.

### Setting Up Physics :

In the solver, physical properties and boundary conditions are defined. This includes setting inlet velocity, outlet pressure, wall conditions, and selecting models for turbulence or heat transfer. Accurate setup is crucial for realistic results.

### Solving :

Using solvers like ANSYS Fluent or OpenFOAM, the software runs iterative calculations to solve the governing equations. This step simulates how the fluid moves and interacts with surfaces, continuing until the results converge.



# A Comprehensive Overview of the CFD Simulation Workflow

## Post-Processing :

After solving, results like velocity, pressure, and temperature are visualized using tools like CFD-Post or ParaView. Engineers use these visuals to understand the fluid behavior and verify results by comparing them with real-world data.

## Optimization and Reporting :

Based on the findings, the design may be adjusted to improve performance. Engineers may run multiple simulations to optimize parameters. Finally, a detailed report is prepared documenting the process, findings, and conclusions.

## Conclusion :

CFD provides a detailed and efficient way to study complex fluid systems. With proper setup and analysis, it helps improve designs, reduce costs, and enhance performance across many engineering fields.



**BAVITHRAN K**
**727623BME318**

# Vortex Tube: A Cool Innovation for Refrigeration

IAs the world focuses on energy efficiency and sustainability, the vortex tube stands out as a simple, low-tech cooling device that works without electricity, refrigerants, or moving parts—an old invention with new potential. It offers a clean alternative that's both innovative and eco-friendly. With growing interest in green technology, its relevance is only increasing.

## What is a Vortex Tube?

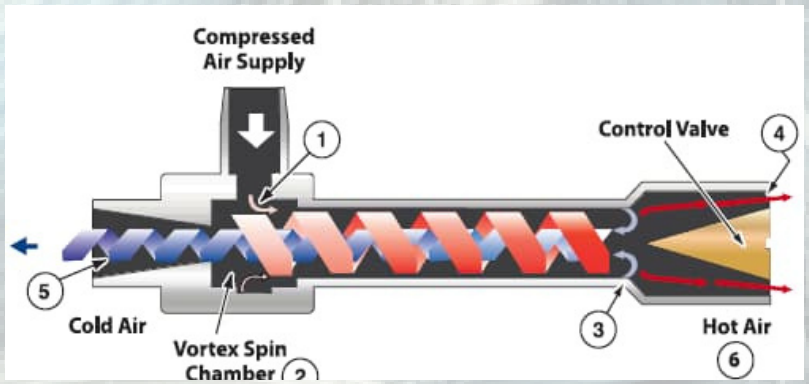
A vortex tube, or Ranque-Hilsch tube, is a simple device that splits compressed air into two streams—one hot and one cold. Invented in 1933 by French physicist Georges Ranque and later improved by Rudolf Hilsch, it works without any moving parts or electricity.

## How It Works:

The vortex tube looks simple, but it creates a powerful effect. Compressed air spins inside, forming a high-speed vortex that heats the outer air and cools the inner core—splitting one stream into hot and cold.

## How Can It Be Used in Refrigeration?

The cold air stream produced by a vortex tube can be used for localized cooling. While it doesn't replace large-scale refrigeration systems (yet), it has many practical applications, especially where conventional systems are impractical or unavailable.



## Vortex Tube: A Cool Innovation for Refrigeration

Why It's Exciting for Students

For engineering students—or anyone studying physics or thermodynamics—the vortex tube provides a hands-on way to observe important scientific principles in action. It demonstrates the power of energy transfer, angular momentum, and the behavior of gases under pressure, all in a tangible and intuitive way.

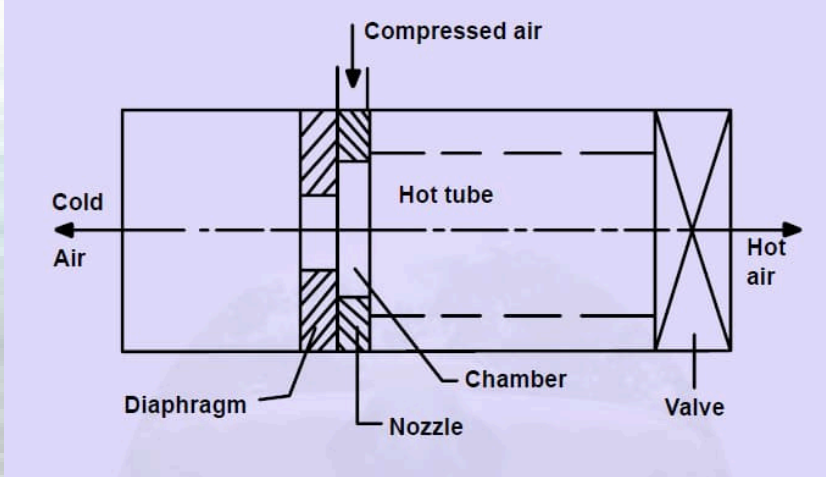
### Educational Benefits:

Simple Design: Easy to build and experiment with in a lab or workshop.

Thermodynamic Principles: Teaches about energy conservation, heat transfer, and entropy.

### The Future of Cooling?

Vortex tubes are not yet a direct replacement for modern refrigeration, largely because they are less energy-efficient and require compressed air, which in itself consumes energy. However, research continues into how they can be improved or integrated into hybrid systems.



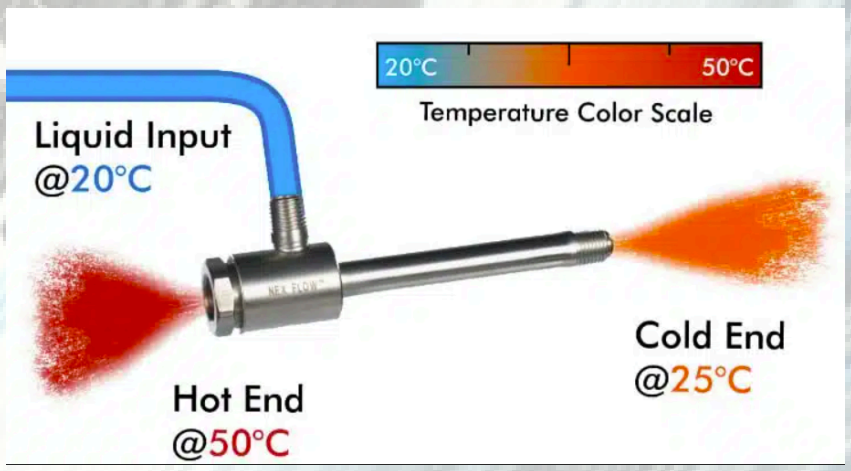
## Vortex Tube: A Cool Innovation for Refrigeration

With further development, vortex tubes could:

- Be adapted for use in off-grid refrigeration in rural areas.
- Provide low-maintenance cooling for small devices or sensitive electronics.
- Become part of sustainable cooling systems in industries that already use compressed air.

### Conclusion

The vortex tube isn't just a scientific curiosity—it shows how simple physics can tackle complex problems. While not a complete solution for cooling, it's a promising step toward sustainable, low-tech innovations.






KARTHICK KUMAR S
727623BME306

## Sustainability in Today's Engineering World

### Sustainability in Today's Engineering World,

In the 21st century, the world faces multifaceted challenges including climate change, resource depletion, and environmental degradation. As industries evolve, the engineering community stands at a crucial intersection where innovation must align with environmental responsibility. Sustainability is no longer an optional consideration—it is an imperative. Engineering today is not just about building systems and structures, but about doing so in ways that are environmentally sound, economically viable, and socially responsible.

Sustainable engineering involves designing and operating systems that use energy and resources at a rate that does not compromise the natural environment or the ability of future generations to meet their own needs. With rising concerns over global warming, waste management, and pollution, engineers are expected to develop solutions that address these concerns while maintaining efficiency and productivity.

### The Role of Engineers in Promoting Sustainability

Engineers are uniquely positioned to implement sustainable practices at every stage of a product or process lifecycle—from concept and design to implementation and disposal. Through innovations in materials, renewable energy, and smart technologies, engineers can dramatically reduce the carbon footprint of manufacturing and construction activities.



# Sustainability in Today's Engineering World

## Technologies Driving Sustainable Engineering

Several breakthrough technologies are reshaping the sustainability landscape in engineering:

1. Renewable Energy Systems: Solar panels, wind turbines, and hydroelectric power systems are becoming more affordable and efficient, reducing dependence on fossil fuels.
2. Green Materials: Innovations in biodegradable plastics, recycled composites, and low-impact construction materials are minimizing environmental impact.
3. 3D Printing: Additive manufacturing reduces waste by precisely using only the material required for a component or product.
4. Smart Grids and IoT: These technologies improve the efficiency of energy distribution and consumption, contributing to smarter cities and reduced energy usage.
5. Sustainable Transportation: Electric and hydrogen-powered vehicles, along with improvements in public transportation systems, are transforming mobility with lower emissions.



# Sustainability in Today's Engineering World

## The Future of Sustainable Engineering

The future of engineering is inherently tied to sustainability. Educational institutions are now embedding sustainability into their curricula, preparing a generation of engineers who prioritize long-term ecological and social impacts. Corporate and government initiatives around the globe are increasingly supporting green projects and innovations.

The shift towards circular economies—where products are designed to be reused, repaired, or recycled—highlights the growing importance of sustainable thinking. As industries evolve, sustainability will no longer be a niche concern but a mainstream expectation.

## In conclusion,

The integration of sustainability in engineering is not just a trend—it's a transformation. It requires a shift in mindset, from short-term gains to long-term impact. As stewards of technology and innovation, engineers have a profound responsibility—and opportunity—to lead the way toward a more sustainable and resilient world.



ABDUL WAHID A
727622BME048

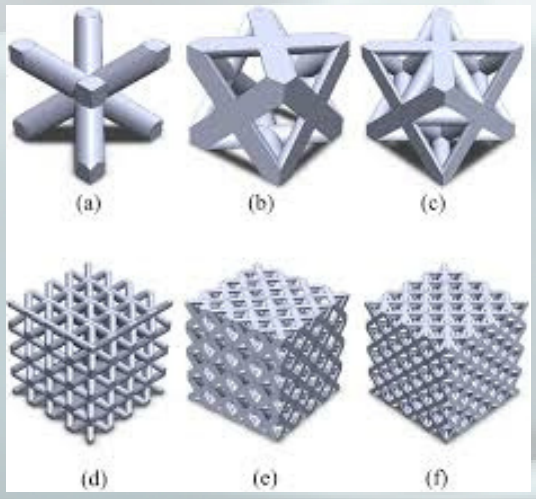
# Revolutionizing Engineering with Lattice Structures: A Path to Lightweight and Efficient Future Technologies

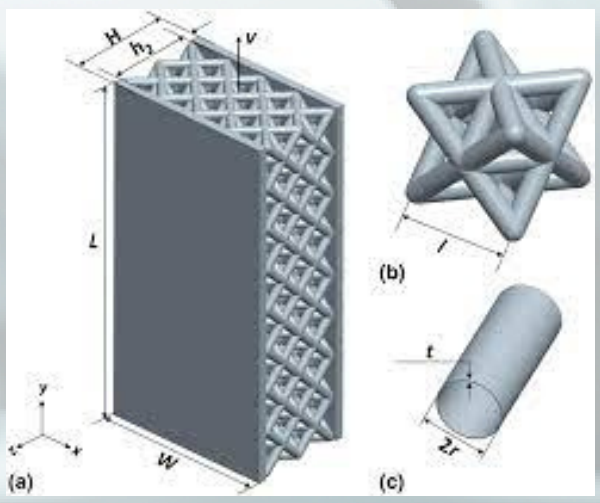
## Introduction: The Need for Lattice Structures in Modern Engineering

As technology advances, the need for high-performance, efficient materials becomes more crucial. Lattice structures—geometric frameworks of interconnected beams—offer an innovative solution for balancing weight reduction with strength. These structures are reshaping industries like aerospace, automotive, and biomedicine by providing lightweight, cost-effective alternatives to traditional designs.

## The Science Behind Lattice Structures

Lattice structures focus on material efficiency, with advanced computational tools used to ensure that loads are evenly distributed, making them resistant to forces like compression, tension, and torsion. This structural optimization makes lattice designs not only lightweight but also capable of withstanding high-stress environments.



# Revolutionizing Engineering with Lattice Structures: A Path to Lightweight and Efficient Future Technologies

## Applications in Aerospace:

Reducing Weight, Enhancing Efficiency Lattice structures reduce the weight of aerospace components like wings and fuselages. This leads to better fuel efficiency and lower emissions, making aircraft more eco-friendly and cost-effective.

## Automotive Industry:

Enhancing Performance and Fuel Efficiency In electric vehicles, lattice structures lower overall weight, improving battery life and range. They also enhance safety by absorbing impact energy through controlled deformation.

## Biomedical Applications:

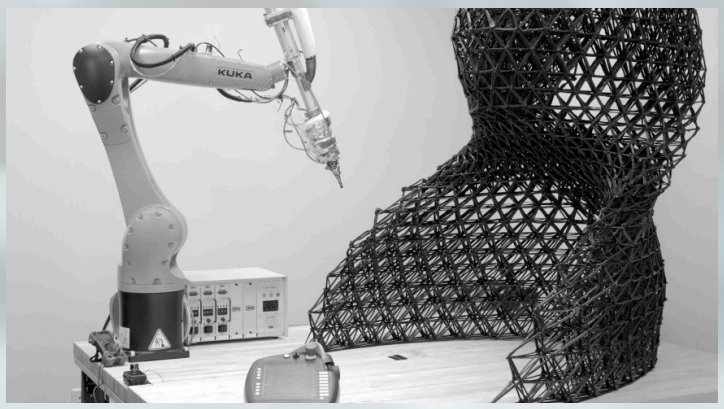
Customizing for Strength and Biocompatibility Lattice-designed implants, 3D-printed to match patient anatomy, integrate better with bone. They are lightweight, reduce strain, and improve overall comfort and function.

## Reducing Environmental Impact:

Sustainable Design with Lattice Structures By minimizing material use and waste, lattice structures promote eco-friendly manufacturing. Using recyclable materials further supports a circular and sustainable economy.

## Future Technologies:

Lattice Structures in the Digital Age With 3D printing and AI, lattice structures can be created in complex forms. They're ideal for future tech like space missions and agile robots, where strength and lightness are key.



# Revolutionizing Engineering with Lattice Structures: A Path to Lightweight and Efficient Future Technologies

## How nTop is Used in Lattice Structure Design

nTop, a powerful engineering design software, is revolutionizing the creation and optimization of lattice structures. With generative design, nTop automatically generates optimized lattice patterns based on parameters such as load requirements and material properties. Engineers can customize lattice configurations, adjusting elements like lattice orientation and cell size to achieve the most efficient design.

nTop integrates performance simulations to test lattice structures virtually, ensuring they meet strength and load-bearing requirements before physical production. This integration is particularly valuable for reducing prototyping costs and production time.

## Conclusion: The Promise of Lattice Structures for Future Technologies

Lattice structures are a game-changer in engineering, offering lightweight designs with superior strength. As industries continue to innovate, these structures will play a key role in creating sustainable, high-performance technologies. With tools like nTop driving optimization and customization, lattice structures are set to unlock a new generation of advanced, efficient solutions that push the boundaries of what's possible in modern engineering.



**PRABIN P**
**727622BME018**

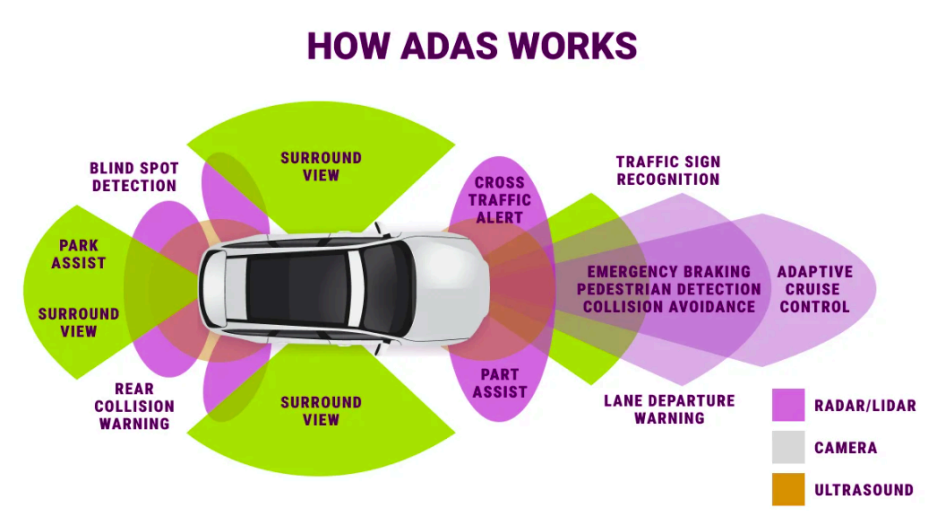
# AUTOMOTIVE INDUSTRY
## The Shift Towards ADAS, Electrification, and Connected Cars

The global automotive landscape is rapidly evolving, fueled by technological innovation, regulatory pressure, and the demand for safer, cleaner, and more intelligent mobility. Three major forces are leading this transformation: Advanced Driver-Assistance Systems (ADAS), electrification, and vehicle connectivity. These pillars are not isolated developments—they are interwoven, collectively steering the industry into a new era.

### 1. ADAS – The Bridge to Autonomy

ADAS technologies are reshaping the driving experience by increasing safety, enhancing comfort, and reducing driver workload. Systems such as automatic emergency braking (AEB), lane departure warning (LDW), blind spot detection, adaptive cruise control, and traffic sign recognition are already mainstream in many vehicles.

These features rely on a fusion of sensors (cameras, LiDAR, radar), machine learning, and real-time data processing. As these systems mature, they lay the groundwork for autonomous driving, gradually shifting control from humans to machines, with SAE Levels 3 to 5 marking this transition.



# AUTOMOTIVE INDUSTRY
## The Shift Towards ADAS, Electrification, and Connected Cars

### 2. Electrification – Toward a Sustainable Future

Electrification marks a decisive step toward sustainable mobility. With concerns over climate change, oil dependency, and urban pollution, governments and industries are heavily investing in electric vehicles (EVs).

Key drivers of this shift include:

- Battery advancements: Higher energy density, faster charging, and reduced costs.
- Policy support: Incentives, stricter emission norms, and zero-emission mandates.
- OEM commitments: Major automakers pledging all-electric lineups in the near future.

Beyond just EVs, electrification spans hybrid technologies, solid-state batteries, and even hydrogen fuel cells, all of which redefine powertrain design and vehicle architecture

### 3. Connected Cars – Vehicles as Digital Ecosystems

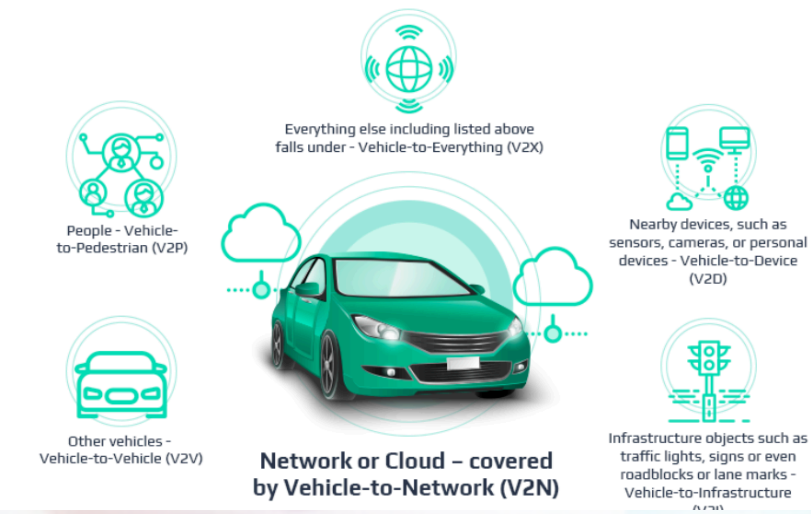
Connectivity is transforming vehicles from isolated machines into smart, data-driven platforms. Through Vehicle-to-Everything (V2X) communication, cars can now interact with other vehicles, infrastructure, cloud services, and even pedestrians.

This connectivity enables:

- Telematics: Remote diagnostics, vehicle tracking, fleet management.
- OTA (Over-the-Air) updates: Enhancing performance and security without dealer visits.

# AUTOMOTIVE INDUSTRY

## The Shift Towards ADAS, Electrification, and Connected Cars




- Infotainment and personalization: Seamless integration with smartphones, apps, and cloud profiles.
- Predictive analytics: Using AI to foresee failures, optimize performance, and improve safety.

### Conclusion

The automotive industry stands at a historic crossroads. The integration of ADAS, electrification, and connectivity is not merely a trend but a strategic imperative for future-ready mobility. As innovation accelerates, these technologies will continue to evolve, leading us toward a safer, cleaner, and more intelligent transportation ecosystem



AJAYKUMAR P
727622BME058

# Digital Twin Technology: Shaping the Future of Mechanical Engineering

## Introduction

In today's fast-paced industrial world, technology continues to bridge the gap between the physical and digital realms. One of the most groundbreaking innovations leading this transformation is Digital Twin Technology—a real-time virtual replica of physical systems that is revolutionizing mechanical engineering.

### What is a Digital Twin?

A Digital Twin is a dynamic, digital counterpart of a physical object or system. Continuously updated through real-time data from sensors and enriched with artificial intelligence and simulations, it mirrors the real-world counterpart's performance and condition.

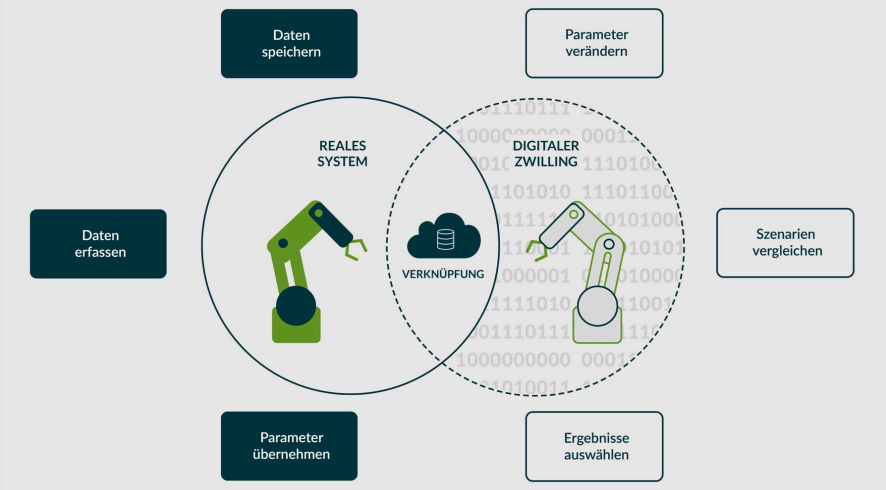
### How Does It Work?

The core working principle of a digital twin involves a feedback loop between the physical and digital systems:

- Sensors on the physical machine collect operational data.
- This data is transmitted to the digital twin model.
- The digital model analyzes, simulates, and predicts system behavior.
- Engineers use this analysis to make informed decisions.

A simple flowchart would look like this:

[Physical Machine] → (Sensors) → [Data Collection] → [Digital Twin Model] → [Simulation & Prediction] → [Maintenance | Optimization | Design]



# Digital Twin Technology: Shaping the Future of Mechanical Engineering

## Applications in Mechanical Engineering

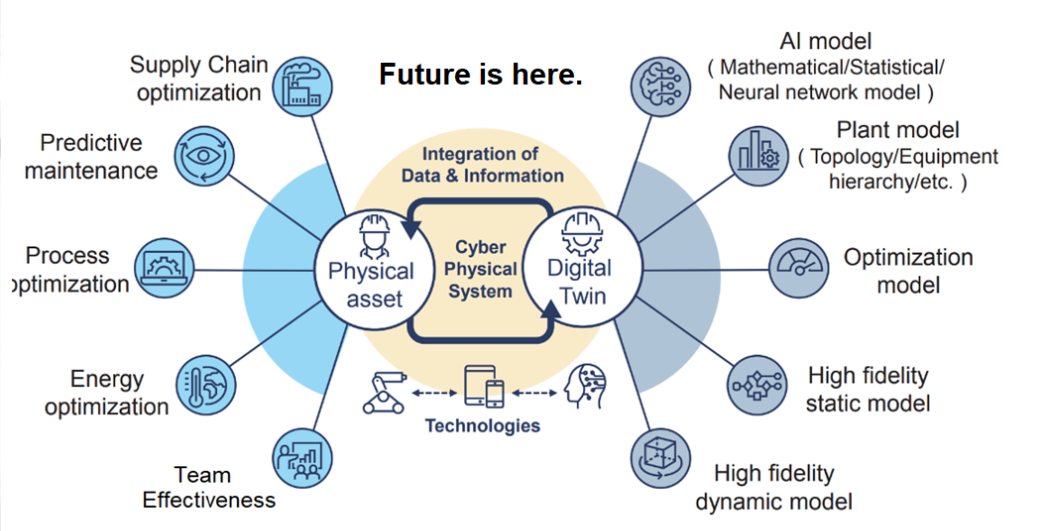
Digital Twin Technology is transforming various aspects of mechanical engineering, including:

- Predictive Maintenance: Detect and address faults before system breakdown.
- Design Testing: Simulate real-world stress, thermal, and load conditions during the design phase.
- Process Optimization: Fine-tune performance for greater efficiency and lower energy consumption.
- Training & Education: Provide immersive virtual environments for students and new engineers to learn complex systems safely.

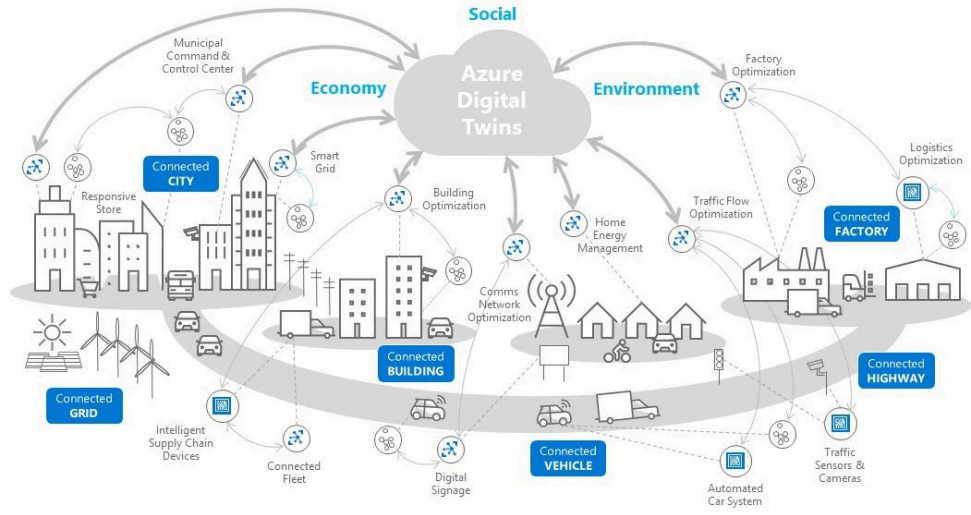
## Advantages of Using Digital Twins

Digital Twin Technology offers several strategic benefits:

- Cost and Time Efficiency: Reduces the need for repeated physical prototypes.
- Improved Reliability: Helps maintain consistent system performance and minimizes downtime.
- Enhanced Decision-Making: Provides actionable insights through predictive analytics.
- Extended Equipment Lifespan: Promotes proactive maintenance strategies.



# Digital Twin Technology: Shaping the Future of Mechanical Engineering




## Challenges in Implementation

Despite its advantages, adopting digital twin technology comes with hurdles:

- High Initial Investment: Significant cost in setup and integration.
- Data Security: Continuous data flow demands robust cybersecurity measures.
- Data Management: Requires handling and analyzing massive volumes of sensor data.

## The Road Ahead

The future of digital twin technology is promising, especially with integration into emerging domains like Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR). Industries such as smart manufacturing, automotive, aerospace, and healthcare are already exploring its full potential.



**MOHAMED FAZIL K**
**727622BME072**

# STUDENT ACHIEVEMENTS

## MECHANICAL MAYHEM







Congratulations

**PRABIN P**
**AJAYKUMAR P**
**GIFTSON SUSHIL KUMAR R**
**ABDUL WAHID A**
**VIGNESH RAJAN G**
**SANTHOSH S**
**MANICKA PRABU S R**

## DESIGN-CON




*Congratulations*

**Kavin E**
**Karthik Kumar S**
**Bavithran K**
**Kavinath R**
**Suvan Surya M**
**Koushik Raghav S**

# STUDENT ACHIEVEMENTS

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Established in 1998 | Approved by AICTE | Affiliated to Anna University
An Autonomous Institution Since 2011
NAAC A++ GRADE Cycle 3 (2023-2030) The Highest Grade

**Department of Mechanical Engineering**

Congrats!

**Event Name:** MECHANICAL MAYHEM

**TEAM Name :** Gambling Boys




1

**College Name**
Dr. Mahalingam College of Engineering and Technology

**Prabin P, III Year, Mechanical**
727622BME018
**Ajay Kumar P, III Year, Mechanical**
727622BME058
**Giftson Sushil KumarR,III Year, Mechanical**
727622BME078

**Organised by**
Student Reseach Council (SRC)

**Held on**
**August 19 - 20, 2024**

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Established in 1998 | Approved by AICTE | Affiliated to Anna University
An Autonomous Institution Since 2011
NAAC A++ GRADE Cycle 3 (2023-2030) The Highest Grade

**Department of Mechanical Engineering**

Congrats!

**Event Name:** MECHANICAL MAYHEM

**TEAM Name :** Team Wakandas




2

**College Name**
Dr. Mahalingam College of Engineering and Technology

**Abdul Wahid A,III Year, Mechanical**
727622BME048
**Vignesh Rajan G, III Year, Mechanical**
727622BME079
**Santhosh S, III Year, Mechanical**
727623BME314

**Organised by**
Student Reseach Council (SRC)

**Held on**
**August 19 - 20, 2024**

# Congratulations

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Established in 1998 | Approved by AICTE | Affiliated to Anna University
An Autonomous Institution Since 2011
NAAC A++ GRADE Cycle 3 (2023-2030) The Highest Grade

**Department of Mechanical Engineering**

Congrats!

**Event Name:** MECHANICAL MAYHEM

**TEAM Name :** Craftman




3

**College Name**
Dr. Mahalingam College of Engineering and Technology

**Manicka Prabu S R, IV Year, Mechanical**
727621BME010

**Organised by**
Student Reseach Council (SRC)

**Held on**
**August 19 - 20, 2024**

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Established in 1998 | Approved by AICTE | Affiliated to Anna University
An Autonomous Institution Since 2011
NAAC A++ GRADE Cycle 3 (2023-2030) The Highest Grade

**Department of Mechanical Engineering**

Congrats!

**Event Name:** DESIGN-CON

**TEAM Name :** Team Bavitharan




1

**College Name**
Dr. Mahalingam College of Engineering and Technology

**Kavin E, III Year, Mechanical**
727622BME020
**Karthik Kumar S,III Year, Mechanical**
727623BME306
**Bavithran K, III Year, Mechanical**
727623BME318

**Organised by**
Student Reseach Council (SRC)

**Held on**
**August 19 - 20, 2024**

# SYMPOSIUM
# (NATIONAL LEVEL)






*Congratulations*

**LOHIT M**
**LAKSHANASRI D**

# STUDENT ACHIEVEMENTS

## SYMPOSIUM



*Congratulations*

## WORKSHOP





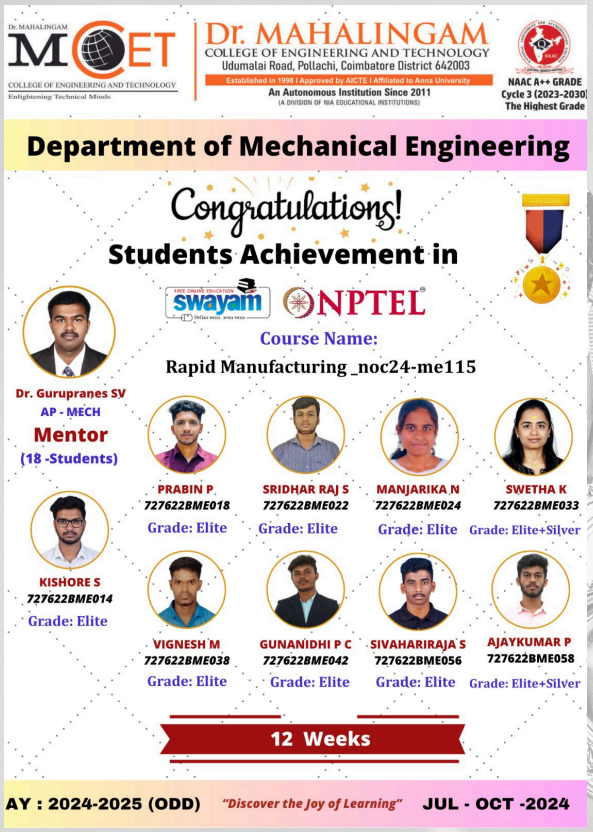
## PROJECT CONTEST

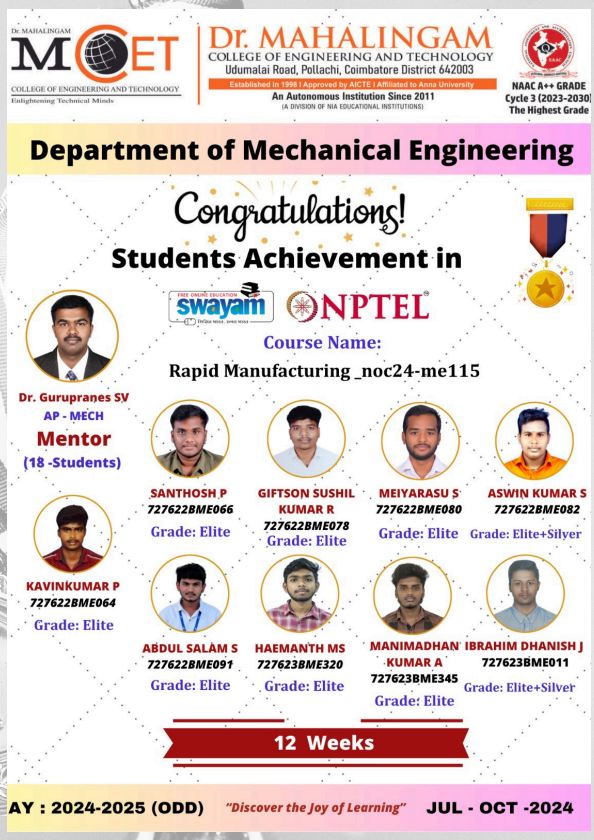
**SYMPOSIUM:**
**BARATH S**
**VISHWA J**

**WORKSHOP:**
**HARSHITH K**
**LOHIT M**
**SHARVESHWARAN R S**

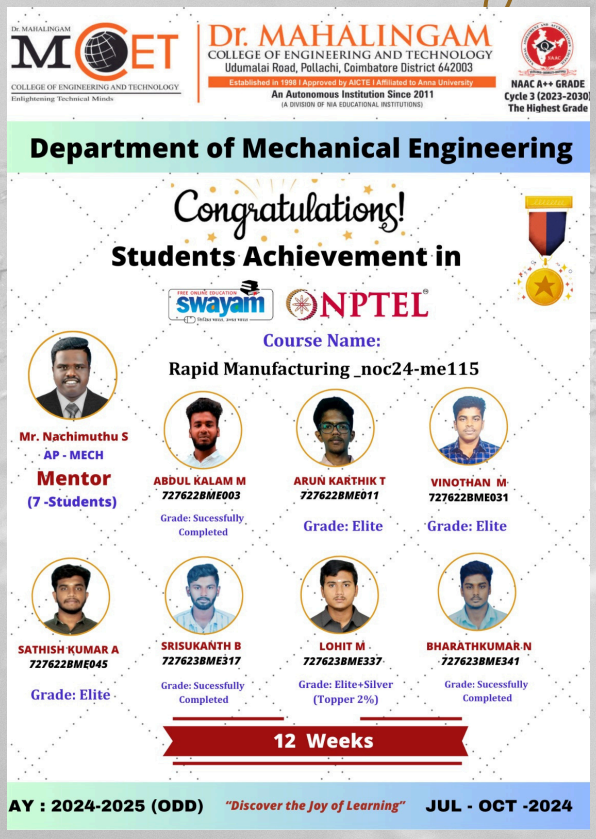
**PROJECT CONTEST:**
**AJEET K S**

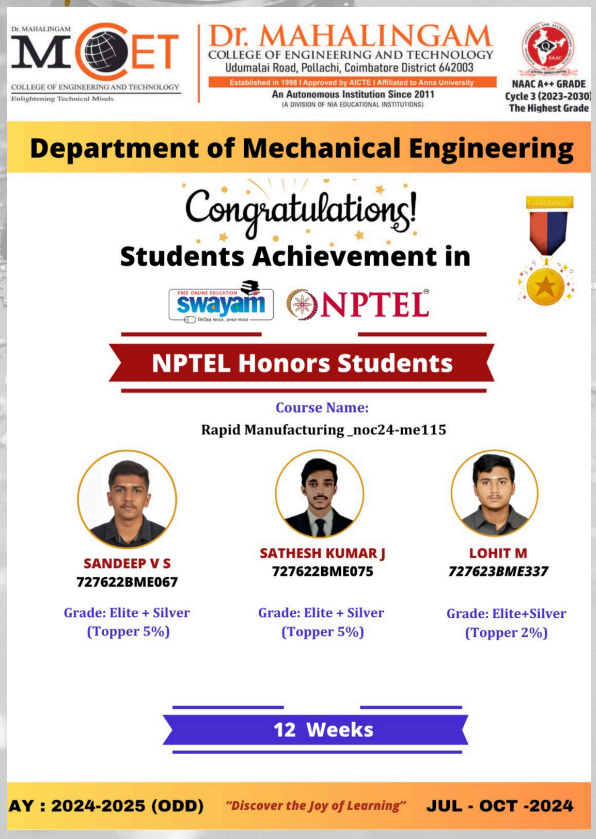
# STUDENT ACHIEVEMENTS




Congratulations



# STUDENT ACHIEVEMENTS

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Established in 1998 | Approved by AICTE | Affiliated to Anna University
An Autonomous Institution Since 2011
NAAC A++ GRADE
Cycle 3 (2023-2030)
The Highest Grade

**Department of Mechanical Engineering**

Congrats!

**MEDICNIK**

National Level Technical Fest

**Event Name: Technical Quiz**

2



**IBRAHIM DHANISH J**

727623BME011

II Year

Mechanical

**Organised by**

Department of Biomedical Engineering

Karpagam Academy of Higher Education, Coimbatore

**Held on**

**February 14 - 2025**

**A- CE - 2** | **AY - 2024 -2025 (EVEN)**

Congratulations

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Established in 1998 | Approved by AICTE | Affiliated to Anna University
An Autonomous Institution Since 2011
NAAC A++ GRADE
Cycle 3 (2023-2030)
The Highest Grade

**Department of Mechanical Engineering**

Congrats!

WINNER



**Handball Tournament**

***Anna University - Zone 10***

***Men - 2024 -2025***

***Organized by***

Karpagam College of Engineering

held on 18.10.2024 to 19.10.2024

727622BME066 – SANTHOSH P – 3rd Year

727622BME085 – SANJAY MAREES M –– 3rd Year

727623BME310 – NAVEEN R S – 3rd Year

727623BME317 – SRISUKANTH B – 3rd Year

727623BME041 – SRI VIGNESHWARAN K S –2nd Year

HANDBALL

**EE - 1** | **AY - 2024 -2025 (ODD)**

# STUDENT ACHIEVEMENTS

## EVENT : VARNAM -25 CAD MODELING INTER COLLEGE TECHNICAL SYMPOSIUM

Date : 06-02-2025



| S.No | Roll No | Name of the Students | Yr | Sec | Title of the Program | Nature of the Program | Event Venue | Date | P/A |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 727623BME305 | KABILESH M | III | A | *Varnam -25* **CAD Modeling** | Inter college Technical Symposium | Karpagam Institute of Technology, Coimbatore | 6 - 7.02.2025 | P |

*Congratulations*

# EVENT NAME:
# MEDICNIK-25 KARPAGAM ACADEMY OF HIGHER EDUCATION

Date : 14-02-2025




| S.No | Roll No | Name of the Students | Yr | Sec | Title of the Program | Nature of the Program | Event Venue | Date | P/A |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 727623BME011 | IBRAHIM DHANISH J | II | A | *Medicnik -25* **CAD Modeling** | National Level Inter college Technical Symposium | Karpagam Academy of Higher Education, Coimbatore | 14.02.2025 | |
| 2 | 727623BME024 | NIKHIL PRASANNA P | II | A | | | | | |
| 3 | 727623BME030 | ARAVIND V | II | A | | | | | |
| 4 | 727623BME054 | BALANAVEEN S | II | A | | | | | |
| 5 | 727623BME059 | HARITH KUMAR A | II | A | | | | | |
| 6 | 727624BME304 | ASWATH KRISHNA A | II | A | | | | | |

Congratulations

## EVENT NAME : DESIGN EVENT DJ ACADEMY OF DESIGN,COIMBATORE

Date : 17-02-2025




| S.No | Roll No | Name of the Students | Yr | Sec | Title of the Program | Nature of the Program | Event Venue | Date | P/A |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 727622BME014 | KISHORE S | III | B | *Design Event* | International workshop on design | DJ Academy of Design, Coimbatore | 17..02.2025 - 17.02.2025 | P |
| 2 | 727622BME022 | SRIDHAR RAJ S | III | B | | | | | P |
| 3 | 727622BME024 | MANJARIKA N | III | B | | | | | P |
| 4 | 727622BME033 | SWETHA K | III | B | | | | | P |
| 5 | 727622BME038 | VIGNESH M | III | B | | | | | P |
| 6 | 727622BME042 | GUNANIDHI P C | III | B | | | | | P |
| 7 | 727622BME072 | MOHAMED FAZIL K | III | B | | | | | P |
| 8 | 727623BME313 | PRANESHKUMAR R | III | B | | | | | P |
| 9 | 727623BME336 | VISHNU C | III | B | | | | | P |
| 10 | 727623BME345 | MANIMADHAN KUMAR A | III | B | | | | | P |

*Congratulations*

# BAJA SAEINDIA

Date : 20.02.25-23.02.25




| S. No. | Roll No. | Name of the Students | Yr | Sec | Title of the Program | Nature of the Program | Event Venue | Date | P/A |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 727621BME003 | RAHUL JOY D | IV | A | *E - BAJA* | Physical Round (Phase 3) | BV Raju Institute of Technology, Narsapur. | 20.02.2025 - 23.02.2025 | P |
| 2 | 727622BME020 | KAVIN E | III | B | | | | | P |
| 3 | 727623BME306 | KARTHICK KUMAR S | III | B | | | | | P |
| 4 | 727623BME318 | BAVITHRAN K | III | B | | | | | P |
| 5 | 727623BME021 | LAKSHNASRI D | II | A | | | | | P |
| 6 | 727623BME023 | PRABHAKAR M | II | A | | | | | P |

Congratulations

## EVENT NAME : YUGAM-25 KUMARAGURU COLLEGE OF ENGINERRING,COIMBATORE

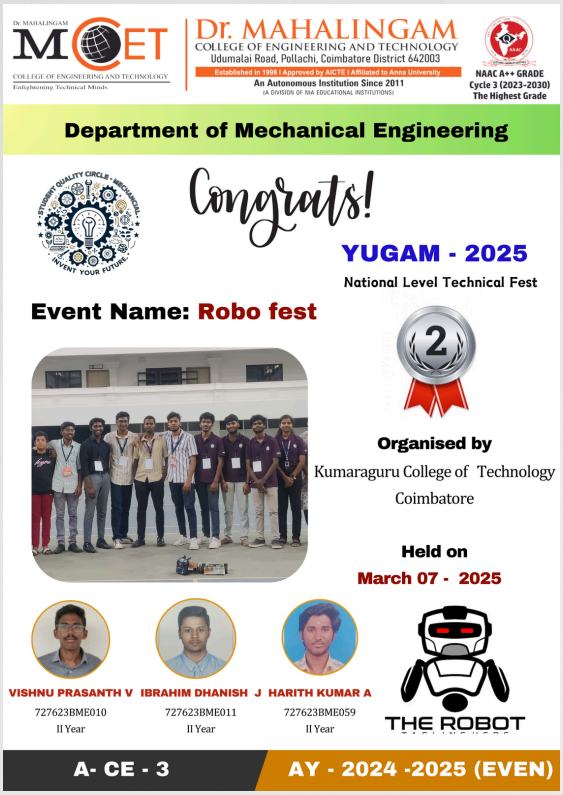
Date : 07-03-2025



Congratulations

| S.No | Roll No | Name of the Students | Yr | Sec | Title of the Program | Nature of the Program | Event Venue | Date | P/A |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 727623BME010 | VISHNU PRASANTH V | II | A | *YUGAM 2K25* | Robo Fest Speed Trail | Kumaraguru College of Technology, Coimbatore | 07.03.2025 | A – 2nd |
| 2 | 727623BME011 | IBRAHIM DHANISH J | II | A | | | | | A – 2nd |
| 3 | 727623BME059 | HARITH KUMAR A | II | A | | | | | A – 2nd |

# STUDENT ACHIEVEMENTS




Congratulations

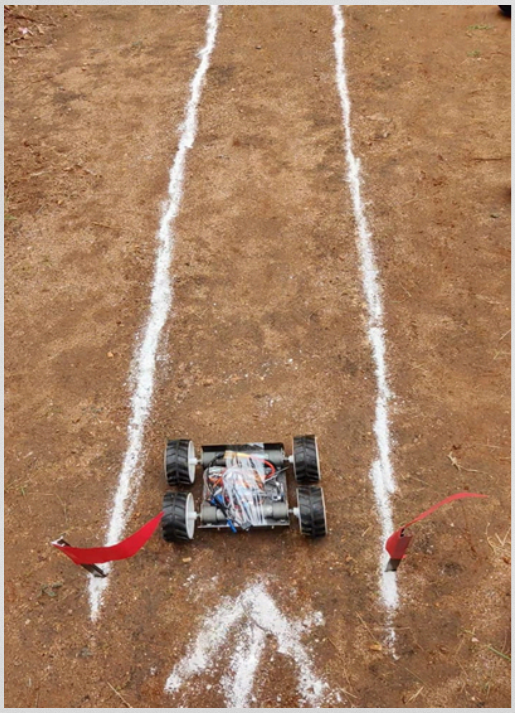
ON YOUR ACHIEVEMENT




"AFTER ALL THE HARDWORK YOU PUT IN,YOU SURE DESERVE WHAT YOU HAVE "

# EVENT NAME : ROBAFIESTA-25
# SRI RAMAKRISHNA ENGINERRING COLLEGE

Date : 12-03-2025





Congratulations

| S.No | Roll No | Name of the Students | Yr | Sec | Title of the Program | Nature of the Program | Event Venue | Date | P/A |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 727623BME011 | IBRAHIM DHANISH J | II | A | *Robafiesta - 2K25* **Robo race Robo soccer** | National Level Technical Symposium | Sri Ramakrishna Engineering College, Coimbatore | 12..03.2025 | P |
| 2 | 727623BME059 | HARITH KUMAR A | II | A | | | | | P |
| 3 | 727623BME062 | ROWHITH R | II | A | | | | | P |

# STUDENT ACHIEVEMENTS

## EVENT NAME : RGF-25
## RATHINAM GROUP OF INSTITUTION

Date : 26-03-2025




Congratulations

| S.No | Roll No | Name of the Students | Yr | Sec | Title of the Program | Nature of the Program | Event Venue | Date | P/A |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 727623BME021 | LAKSHNASRI D | II | A | *RGF -2K25*<br>**Workshop** | National Level<br>Technical Symposium | Rathinam Group of Institution,<br>Coimbatore | 26..03.2025 | P |

# EVENT NAME : CMTI-DESIGN AND INNOVATION CLINIC-25, BANGALORE

Date : 07-04-2025 - 09-04-2025

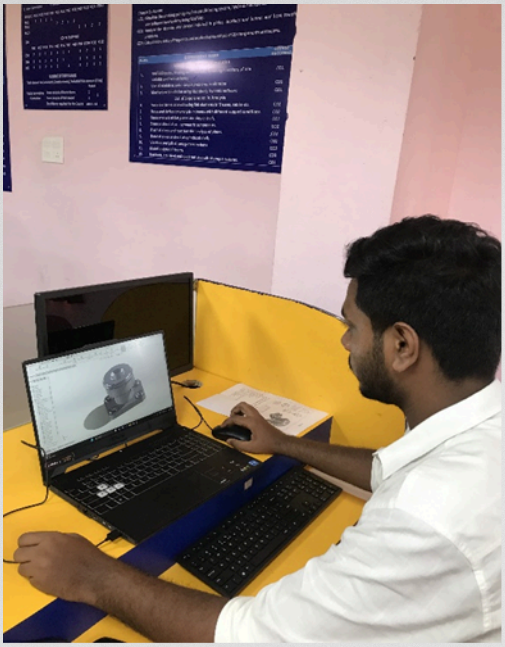



Congratulations

| S.No | Roll No | Name of the Students | Yr | Sec | Title of the Program | Nature of the Program | Event Venue | Date | P/A |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 727623BME010 | VISHNU PRASANTH V | II | A | **CMTI - Design and Innovation Clinic -2025** | Hackathon | Bangalore | 07.04.2025 to 09.04.2025 | P |
| 2 | 727623BME011 | IBRAHIM DHANISH J | II | A | | | | | P |
| 3 | 727623BME059 | HARITH KUMAR A | II | A | | | | | P |

# EVENT NAME : VIHAAN-2025 NEHRU INSTITUTION OF ENGINEERING AND TECHNOLOGY

Date : 17-04-2025






## "YOU'VE ACHIVED SOMETHING REMARKABLE KEEP UP THE GREAT WORK!"

*Congratulations*

| S.No. | Roll No | Name of theStudents | Yr | Sec | Title of the Program | Nature of the Program | Event Venue | Date | P/A |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 727623BME305 | KABILESH M | III | A | *Vihaan - 2K25*<br>**CAD Modelling** | National Level<br>Technical Symposium | Nehru Institute of Engineering and Technology,<br>Coimbatore | 17..04.2025 | **1st Prize** |

# FACULTY ACHIEVEMENTS

# FACULTY ACHIEVEMENTS

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Estd. 1998 | AICTE Approved | Affiliated to Anna University
An Autonomous Institution Since 2011
(A DIVISION OF NIA EDUCATIONAL INSTITUTIONS)

Congratulations!

Faculty Achievements in swayam NPTEL

**8 Weeks**
**AUG- OCT - 2024**



**Dr. Nathan D**
**ASP _ MECH**
**Google Cloud Computing Foundations**
Grade: Elite



**Mr.Gunasekaran R**
**AP _ MECH**
**Advanced Machining Processes**
Grade: Elite



**Mr. Dinesh Kumar J**
**AP _ MECH**
**Advanced Machining Processes**
Grade: Successfully Completed

**8 Weeks**
**JUL- SEP - 2024**



**Mr. Sasikumar K**
**AP _ MECH**
**Tissue Engineering**
Grade: Elite



**Dr. Ayyappan S**
**ASP _ MECH**
**Steam Power Engineering**
Grade: Elite

Congratulations

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Estd. 1998 | AICTE Approved | Affiliated to Anna University
An Autonomous Institution Since 2011
(A DIVISION OF NIA EDUCATIONAL INSTITUTIONS)

Congratulations!

Faculty Achievements in swayam NPTEL

**12 Weeks**
**JUL- OCT -2024**



**Dr. Gurupranes S V**
**AP - MECH**
**Rapid Manufacturing**
Grade: Elite + Silver
Topper: 5%



**Mr. Nachimuthu S**
**AP - MECH**
**Rapid Manufacturing**
Grade: Elite + Silver



**Dr. Madhusudhanan S**
**AP (SG) - MECH**
**Rapid Manufacturing**
Grade: Elite



**Mr. Sreejith S Nair**
**AP (SS) - MECH**
**Advanced Materials and Processes**
Grade: Elite



**Mr. Venkatesh J**
**AP - MECH**
**Solar Energy Engineering and Technology**
Grade: Elite

# FACULTY ACHIEVEMENTS

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Estd. 1998 | AICTE Approved | Affiliated to Anna University
An Autonomous Institution Since 2011
(A DIVISION OF NIA EDUCATIONAL INSTITUTIONS)

**Department of Mechanical Engineering**

Cordially invites you for the

**Knowledge Sharing Session on**

***"Introduction to Deep Learning"***

Pandas NumPy





**Dr. Nathan D**

*Associate Professor*
Mechanical Engineering
Dr. Mahalingam College of Engineering and Technology

**Dr. Uma Maheswari K**

*Assistant Professor (SG)*
Mechanical Engineering
Dr. Mahalingam College of Engineering and Technology

**Date:** 31.08.2024 **Time :** 9.30 A.M. to 4.30 P.M. **Venue:** (C-216)

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Estd. 1998 | AICTE Approved | Affiliated to Anna University
An Autonomous Institution Since 2011
(A DIVISION OF NIA EDUCATIONAL INSTITUTIONS)

**Department of Mechanical Engineering**

Cordially invites you for the

**Knowledge Sharing Session on**

***" Application of NumPy, Pandas and Matplotlib in Datascience and Artificial Intelligence"***

NumPy Pandas Matplotlib



**Mr. Sreejith S Nair**

*Assistant Professor (SS)*
Mechanical Engineering
Dr. Mahalingam College of Engineering and Technology

**Date:** 10.08.2024 **Time :** 2.00 P.M. to 4.30 P.M. **Venue:** Mechanical CAD/CAM Lab

Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Established in 1998 | Approved by AICTE | Affiliated to Anna University
An Autonomous Institution Since 2011
(A DIVISION OF NIA EDUCATIONAL INSTITUTIONS)
NAAC A++ GRADE
Cycle 3 (2023-2030)
The Highest Grade

**Department of Mechanical Engineering**

Congratulations!

**Faculty Achievement in**

FREE ONLINE EDUCATION swayam शिक्षित भारत, उन्नत भारत NPTEL



**Dr. Ayyappan S**
**ASP_Mech**

**Course Name:**
Community Engagement and Social Responsibility




**12 Weeks**

**Total Mark Obtained : 96/100**

***"Discover the Joy of Learning"***

**AY : 2024-2025 (ODD)** **JUL - OCT -2024**

*Congratulations*

# FACULTY ACHIEVEMENTS

## GRANTED UTILITY PATENT

| S.No | Application No. | Name of the Inventors | Designation & Dept | Title of the Patent | Month & Year of Granted |
|---|---|---|---|---|---|
| 2024 - 2025 | | | | | |
| 1 | 201841040121 | Dr. Rama Thirumurugan | Prof.& HoD /Mech | Induction Water Heater | Jun-24 |
| | | Dr. R. Gnanaguru | ASP-Mech | | |
| | | Mr. S. Gnanakumar | AP/Mech | | |
| | | Mr. T. Vigneshkumar | AP/Mech | | |
| 2 | 201841040122 | Dr.I.Rajendran | Prof.& HoD /Mech | Fail-safe mechanical latching system for three-way tippers | Aug-24 |
| | | Dr. Rama Thirumurugan | Prof.&Mech | | |
| | | Mr. N. Santhosh | AP/Mech | | |
| | | Mr. K. Prabu | AP/Mech | | |
| | | Mr. C. Selvasenthil Prabhu | AP/Mech | | |

## GRANTED DESIGN PATENT

| S.No | Application No. | Name of the Inventors | Designation & Dept | Title of the Patent | Month & Year of Granted |
|---|---|---|---|---|---|
| 2024 - 2025 | | | | | |
| 1 | 434986-001 | Mr.J.Dinesh Kumar | AP - MECH | A Novel Split Casing high performance Pump | 27/12/2024 |
| 2 | 429908-001 | Mr. S.Nachimuthu | AP -MECH | Integrated tea maker and Bread toaster device | 13/12/2024 |
| | | Dr. Balamurali | AP -MECH | | |
| | | Dr. S.V. Gurupranes | AP -MECH | | |
| | | Mr. J. Nagarajan | AP - EEE | | |
| | | Mr. M. Lohit | Student of Mech | | |
| | | Mr. R.S. Sharveshwaran | Student of Mech | | |
| 3 | 422509-001 | Dr. M.Jayaraj | AP(SG) - MECH | Double Vacuum Blower for Cleaning Coir Pit Blocks | Dec-24 |
| | | D r.N.Shanmuga Sundaram | AP(SG) - MECH | | |
| | | Mr.K.Vijayakkannan | AP(SS) - MECH | | |
| 4 | 423775-001 | Mr. Sreejith S Nair | AP(SS) - MECH | Compact heat exchanger with Enhanced thermal efficiency | Aug-24 |
| 5 | 413565-001 | Mr K Sasikumar | AP - MECH | Versatile Combination Spanner | Jun-24 |
| | | | | | |

## REGISTERED COPYRIGHT PATENT

| S.No | Application No. | Name of the Inventors | Designation & Dept | Title of the Patent | Month & Year of Registered |
|---|---|---|---|---|---|
| 1 | 1222072 | Mr.J.Dinesh Kumar | AP - MECH | Mechanism for segmented valve and fuel injection for IC engines | Sep-24 |

# FACULTY ACHIEVEMENTS




Congratulations

"Behind every milestone is a mentor who dared to go beyond the ordinary."



# FACULTY ACHIEVEMENTS

Elite

## NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत



This certificate is awarded to

GURUPRANES SV

for successfully completing the course

**Rapid Manufacturing**

with a consolidated score of 82 %

| Online Assignments | 25/25 | Proctored Exam | 57/75 |
|---|---|---|---|

TOP TOPPER 5%

Total number of candidates certified in this course: 2026

Prof. B. V. Ratish Kumar
Chairman, Centre for Continuing Education
IIT Kanpur

Jul-Oct 2024
(12 week course)

Prof. Satyaki Roy
NPTEL Coordinator
IIT Kanpur

Indian Institute of Technology Kanpur

FREE ONLINE EDUCATION swayam

# Congratulations

NM 100

MCET Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Udumalai Road, Pollachi, Coimbatore District 642003
Estd. 1998 | AICTE Approved | Affiliated to Anna University
An Autonomous Institution

NAAC A++ GRADE
Cycle 3 (2023-2030)
The Highest Grade

**Office of Dean**

**Research & Innovation**

## Congratulations

**Published a Paper in Q1 Journal**



**Dr. Gurupranes SV**
**Assistant Professor**
**Mechanical Engineering**





**Polymer Composites**

**WILEY Publication**

**Impact Factor - 4.80**

# FACULTY ACHIEVEMENTS



ORIGINAL

INTELLECTUAL PROPERTY INDIA

पेटेंट कार्यालय, भारत सरकार The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 423439-001

तारीख / Date : 17/07/2024

पारस्परिकता तारीख / Reciprocity Date* :

देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *FABRIC PLEAT IRONING DEVICE* से संबंधित है, का पंजीकरण, श्रेणी 15-05 में 1.Ms. K S. Sudhishna 2. Ms. A G. Priya Varshini 3.Dr. S. Ramakrishnan 4.Dr. M. Jayaraj 5.Ms. P. Kalaivani 6.Mr. R. Govindaraj 7.Ms. G. Keerthika के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 15-05 in respect of the application of such design to *FABRIC PLEAT IRONING DEVICE* in the name of 1.Ms. K S. Sudhishna 2. Ms. A G. Priya Varshini 3.Dr. S. Ramakrishnan 4.Dr. M. Jayaraj 5.Ms. P. Kalaivani 6.Mr. R. Govindaraj 7.Ms. G. Keerthika.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।
In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि / Date of Issue 02/07/2024

महानियंत्रक पेटेंट, डिजाइन और व्यापार चिह्न
Controller General of Patents, Designs and Trade Marks

*पारस्परिकता तारीख (यदि कोई हो) जिसकी अनुमति दी गई है तथा देश का नाम। डिजाइन का अनन्यधिकार पंजीकरण की तारीख से इस वर्ष के लिए होगा जिसका विस्तार, अधिनियम एवं नियम के निबंधनों के अधीन, पाँच वर्षों की अतिरिक्त अवधि के लिए किया जा सकेगा। इस प्रमाण पत्र का उपयोग विधिक कार्यवाहियों अथवा विदेश में पंजीकरण प्राप्त करने के लिए नहीं हो सकता है।
The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.



ORIGINAL

INTELLECTUAL PROPERTY INDIA

पेटेंट कार्यालय, भारत सरकार The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 429123-001

तारीख / Date : 03/09/2024

पारस्परिकता तारीख / Reciprocity Date* :

देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *ECOBIN FOR WATER TANK* से संबंधित है, का पंजीकरण, श्रेणी 23-01 में 1.Narayanan Natarajan 2. Jayaraj Mahalingam 3.John Irudaya Raj James 4.Ganesh Kumar Anandaraj 5.Surya Kumar Ramkumar 6.Senthil Kumar Dineshkumar 7.Syed Masoodhu Syed Meeran 8.Sharmila Sivalingam के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 23-01 in respect of the application of such design to *ECOBIN FOR WATER TANK* in the name of 1.Narayanan Natarajan 2. Jayaraj Mahalingam 3.John Irudaya Raj James 4.Ganesh Kumar Anandaraj 5.Surya Kumar Ramkumar 6.Senthil Kumar Dineshkumar 7.Syed Masoodhu Syed Meeran 8.Sharmila Sivalingam.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।
In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि / Date of Issue 04/11/2024

महानियंत्रक पेटेंट, डिजाइन और व्यापार चिह्न
Controller General of Patents, Designs and Trade Marks

*पारस्परिकता तारीख (यदि कोई हो) जिसकी अनुमति दी गई है तथा देश का नाम। डिजाइन का अनन्यधिकार पंजीकरण की तारीख से इस वर्ष के लिए होगा जिसका विस्तार, अधिनियम एवं नियम के निबंधनों के अधीन, पाँच वर्षों की अतिरिक्त अवधि के लिए किया जा सकेगा। इस प्रमाण पत्र का उपयोग विधिक कार्यवाहियों अथवा विदेश में पंजीकरण प्राप्त करने के लिए नहीं हो सकता है।
The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.



ORIGINAL

INTELLECTUAL PROPERTY INDIA

पेटेंट कार्यालय, भारत सरकार The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 422509-001

तारीख / Date : 08/07/2024

पारस्परिकता तारीख / Reciprocity Date* :

देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *DOUBLE VACUUM BLOWER FOR CLEANING COIR PIT BLOCKS* से संबंधित है, का पंजीकरण, श्रेणी 15-05 में 1.Dr. M.Jayaraj 2. Mr. V. Manoj Mohan Prasath 3.Mr. R.Venkatraman 4.Dr.N.Shanmuga Sundaram 5.Mr.K.Vijayakkannan 6.Mr. K.Gokulnath 7.Mr. T. Vignesh के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 15-05 in respect of the application of such design to *DOUBLE VACUUM BLOWER FOR CLEANING COIR PIT BLOCKS* in the name of 1.Dr. M.Jayaraj 2. Mr. V. Manoj Mohan Prasath 3.Mr. R.Venkatraman 4.Dr.N.Shanmuga Sundaram 5.Mr.K.Vijayakkannan 6.Mr. K.Gokulnath 7.Mr. T. Vignesh.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।
In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि / Date of Issue 27/12/2024

महानियंत्रक पेटेंट, डिजाइन और व्यापार चिह्न
Controller General of Patents, Designs and Trade Marks

*पारस्परिकता तारीख (यदि कोई हो) जिसकी अनुमति दी गई है तथा देश का नाम। डिजाइन का अनन्यधिकार पंजीकरण की तारीख से इस वर्ष के लिए होगा जिसका विस्तार, अधिनियम एवं नियम के निबंधनों के अधीन, पाँच वर्षों की अतिरिक्त अवधि के लिए किया जा सकेगा। इस प्रमाण पत्र का उपयोग विधिक कार्यवाहियों अथवा विदेश में पंजीकरण प्राप्त करने के लिए नहीं हो सकता है।
The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.



**DR.JAYARAJ.M**

**AP(SG), MECH**

# FACULTY ACHIEVEMENTS



अखिल भारतीय तकनीकी शिक्षा परिषद
All India Council for Technical Education

भारतीय सूचना प्रौद्योगिकी संस्थान, नागपुर
Indian Institute of Information Technology, Nagpur

CERTIFICATE

Certificate No. 24PGIIITN0060

OF COMPLETION

आर्टिफिशियल इंटेलिजेंस और मशीन लर्निंग में एआईसीटीई-क्यूआईपी-पीजी सर्टिफिकेट प्रोग्राम
AICTE-QIP-PG Certificate Programme in Artificial Intelligence and Machine Learning

यह प्रमाणित किया जाता है कि/ This is to certify that

श्री./श्रीमती. श्रीजीत एस नायर / Shri./ Smt. Sreejith S Nair

एआईसीटीई आईडी/AICTE ID: 1-1433400411

पद: सहायक प्राध्यापक (सीनियर स्केल)/ Designation: Assistant Professor (Senior Scale)

डॉ. महालिंगम कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी, पोलाची में कार्यरत/
working with Dr. Mahalingam College of Engineering and Technology, Pollachi

ने उपरिलिखित कार्यक्रम सफलतापूर्वक पूरा किया/ has successfully completed the above mentioned programme

जुलै - दिसंबर २०२४ : छह माह / July - December 2024 : Six Months

डॉ. अमोल भोपले
DR. AMOL BHOPALE
कार्यक्रम समन्वयक / Programme Coordinator
भा.सू.प्रौ.सं. नागपुर/ IIIT, Nagpur

PGCP IN AI & ML

प्रो. (डॉ.) प्रेमलाल पटेल
PROF. (DR.) PREM LAL PATEL
निदेशक/ Director
भा.सू.प्रौ.सं. नागपुर / IIIT, Nagpur

Congratulations



अखिल भारतीय तकनीकी शिक्षा परिषद
All India Council for Technical Education

भारतीय प्रौद्योगिकी संस्थान पटना
Indian Institute of Technology Patna

Certificate No. 24PGIITP0006

CERTIFICATE

OF COMPLETION

This is to certify that

Dr. D. Nathan

AICTE Faculty ID : 1-7330379908

has successfully completed six months AICTE-QIP-PG Certificate Programme

in Blockchain and Data Science during July 2024 – December 2024

Assistant Registrar (Resource)
Indian Institute of Technology Patna

Programme Co-ordinator
Indian Institute of Technology Patna

Associate Dean (Resource)
Indian Institute of Technology Patna

# FACULTY ACHIEVEMENTS

## Sponsored projects submitted and sanctioned

Total no of project submitted: 12
Sanctioned:1
Amount:90,00,000

✓ AICTE Selected our college to establish an IDEA LAB for the amount of 90 Lakhs



Chief Mentor
Dr. P. Govindasamy
Head of the Institution



Faculty coordinator
Dr.Rama.Thirumurugan
Professor and Head
Mechanical Engineering Department



Faculty Co-Coordinator
Dr.M.Jayaraj
Assistant Professor(SG)
Mechanical Engineering Department

Congratulations

**Dr.Rama Thirumurugan, Professor and HoD(I/C)** participated in **AICTE IDEA LAB TECH FEST -2025** at **AICTE HQ, NEW Delhi** on 7.3.2025.






MCET | Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
Established in 1998 • An Autonomous Institution Since 2011
Pollachi, Coimbatore
NAAC A++ GRADE Cycle 3 (2023-2030) The Highest Grade

**Office of Dean Research & Innovation**

Congratulations

**MCET Has Been Selected to Establish AICTE - IDEA LAB**



Chief Mentor
Dr. P. Govindasamy
Principal



Coordinator
Dr. Rama Thirumurugan
HOD - Mechanical Engg.



Co-coordinator
Dr. M. Jayaraj
AP (SG) - Mechanical Engg.

*Our Sincere Thanks to*
**AICTE & MCET Management**

Waste and Biomass Valorization
https://doi.org/10.1007/s12649-024-02704-z

ORIGINAL PAPER

# Investigations on the Mechanical, Morphological, and Thermal Degradation Properties of Alkali-Treated Polymer Composites Reinforced with an Areca Palm Leaf Stalk Fibers

N. Shanmuga Sundaram[1] · Jayaraj Mahalingam[1] · K. Vijayakkannan[1] · S. V. Gurupranes[1] · Rajendran Prabakaran[2] · Sung Chul Kim[2] · Saravanan Pandiaraj[3] · Mostafizur Rahaman[4]

Received: 1 February 2024 / Accepted: 20 August 2024
©The Author(s), under exclusive licence to Springer Nature B.V. 2024

**Abstract**
The current research reported the mechanical characteristics of polyester composites that were strengthened with untreated and three distinct levels of alkali-treated continuous areca palm leaf stalk fibers (AF). The fabrication of the composites involved the utilization of a compression molding method, wherein both untreated AF (UTAF) and alkali-treated AF (ATAF) at varying concentrations of 5%, 10%, and 15% were incorporated into an epoxy resin matrix. The results revealed that the tensile, flexural, and impact properties of the composite material, which was strengthened with with a 10% alkali solution treated AF composite (ATAFC), exhibited a significant improvement in comparison to the UTAF-reinforced composite (UTAFC), as well as the ATAFC with 5% and 15% alkali treatment. Furthermore, a decline in the water absorption characteristic was observed in the 10% ATAFC with a reduction of 15%. The scanning electron microscopy technique also revealed the fractured surface morphology of the composite samples. Moreover, the results obtained from dynamic mechanical analysis revealed that the 10% ATAFC exhibited improved loss and storage modulus when compared to the UTAFC, as well as the 5% and 15% ATAF composites.

**Keywords** Biomass · Areca palm leaf stalk fibers · Alkali treatment · Mechanical properties · Epoxy resin matrix

## Introduction

The growing recognition of environmental concerns and the enforcement of environmental regulations have spurred a shift toward the use of eco-friendly materials in both industrial and domestic settings. This shift has led to increased interest in utilizing natural cellulose fibers as reinforcement materials in polymer matrix-based composites [1–4]. These cellulose fibers, primarily sourced from animals and plants, present unique challenges and advantages. The animal-derived fibers are scarce and difficult to extract, while plant-based fibers offer abundant availability and numerous benefits, including higher specific strength, biodegradability, renewability, affordability, lower energy consumption during processing, favorable mechanical properties, and carbon dioxide absorption capabilities [5, 6]. Additionally, plant-based fibers require significantly less energy—about 60% less—to produce compared to synthetic fibers such as glass fibers [7, 8].

✉ Jayaraj Mahalingam
jayaraj.m21@gmail.com

✉ Rajendran Prabakaran
praba.auto@gmail.com; prabakaran@yu.ac.kr

✉ Sung Chul Kim
sungkim@ynu.ac.kr

[1] Department of Mechanical Engineering, Dr. Mahlaingam College of Engineering and Technology, Pollachi 642003, India

[2] School of Mechanical Engineering, Yeungnam University, 280 Daehak-Ro, Gyeongsan 712-749, Republic of Korea

[3] Biological and Environmental Sensing Research Unit, King Abdullah Institute for Nanotechnology, King Saud University, P.O. Box 2455, Riyadh 11451, Saudi Arabia

[4] Department of Chemistry, College of Science, King Saud University, Riyadh 11451, Saudi Arabia

Published online: 02 September 2024



Congratulations

Dr.N.Shanmuga Sundaram
Dr.M.Jayaraj
Mr.K.Vijayakkannan
Dr.S.V.Gurupranes

*Environmental Quality Management*

WILEY

RESEARCH ARTICLE

# Exploring the Potential of *Tamarindus indica* and *Caryota mitis* Leaf Stalk Fibers for Sustainable Biodegradable Composites

Gurupranes Sivaraj Vijaya | Bala Murali Nagarajan | Jayaraj Mahalingam | Nachimuthu Somasundaram | Ayyappan Subrananian | Shanmugasundram Natarajan | Vijayakkannan Kaliyappan

Department of Mechanical Engineering, Dr. Mahalingam College of Engineering and Technology, Pollachi, Tamilnadu, India

**Correspondence:** Gurupranes Sivaraj Vijaya (gurusivaraj94@gmail.com)

**Received:** 3 June 2024 | **Revised:** 19 November 2024 | **Accepted:** 13 December 2024

**Keywords:** *Caryota mitis* leaf stalk fiber | composites | natural fibers | *Tamarindus indica* seed powder | TGA/DTA | XRD

**ABSTRACT**

As a substitute for synthetic materials, it is difficult for researchers studying natural fiber materials to develop biodegradable composite materials. These natural fiber-infused polymer composites are environmentally friendly and exhibit excellent mechanical properties. The main objectives of this work were to create and analyze epoxy polymer composites reinforced with *Tamarindus indica* and *Caryota mitis* leaf stalk fiber. Five distinct compositions were used in the hand lay-up procedure to create composite specimens. An evaluation was conducted on the mechanical qualities, including hardness, tensile strength, and impact resistance. To evaluate the physical and chemical properties of the composites, their metallurgical features were investigated using wear, microstructure, and thermogravimetric analysis (TGA). Specimen C, composed of 20% *C. mitis*, 20% *T. indica* powder, and 60% epoxy, showed the best tensile strength (69.12 MPa) and the highest hardness (76.37 VHN) of all the compositions examined. The composite exhibited favorable bonding and temperature adaptability, as demonstrated by the microstructure and TGA studies. All things considered, research indicates that these hybrid composites have better particular qualities, which makes them suitable materials for use in automotive and aerospace applications.

## 1 | Introduction

The development of natural composites has been the focus of aircraft industry research in recent years, owing to the rise in environmental pollutants. Indian researchers are searching for novel applications of residual plant fibers to create eco-friendly products (Neto et al. 2022). Over the past few decades, many researchers have worked to increase awareness of natural fiber-reinforced composites. Accordingly, tests were conducted to determine the qualities of green composites reinforced with *Caryota mitis* leaf sheath fibers and tamarind seed powder mixed with an epoxy resin matrix (Karimah et al. 2021). *C. mitis* leaf sheaths are easily accessible and have high tensile strength, which is crucial for preserving the structural integrity of composite materials. Tamarind seed powder is also reasonably priced and is considered a waste product in the tamarind industry. Together with epoxy resins, these fillers can be used to prepare sustainable biodegradable composites (Ashok, Srinivasa, and Basavaraju 2018). Most places underutilize tamarind seeds, but there are plenty that can be improved. Bio fillers are utilized because of their exceptional mechanical and thermal properties, as well as their low density, according to numerous authors. A comprehensive analysis of the current developments in this sector is required to evaluate the effectiveness of renewable sources in composite materials, as several authors have documented. The mechanisms that lead to the degradation of polymeric components, from

© 2025 Wiley Periodicals LLC.



Dr.N.Shanmuga Sundaram
Dr.M.Jayaraj
Mr.K.Vijayakkannan

Dr.S.V.Gurupranes
Dr.Balamurali .N
Dr.S.Ayyappan

Congratulations

JOURNAL OF ENGINEERING SCIENCES

Volume 11, Issue 2 (2024)

*Jayaraj M., Ashok S. K., Thirumurugan R, Shanmugam D., Mahendran M. (2024). Mechanical properties and stress analysis of natural fiber reinforced polymer composite spur gear. Journal of Engineering Sciences (Ukraine), Vol. 11(2), pp. D1–D8. https://doi.org/10.21272/jes.2024.11(2).d1*




# Mechanical Properties and Stress Analysis of Natural Fiber Reinforced Polymer Composite Spur Gear

Jayaraj M.[0000-0003-2397-5014], Ashok S. K.*[0000-0002-7690-0094], Thirumurugan R.[0000-0003-1222-3845], Shanmugam D. [0000-0003-2331-0864], Mahendran M. [0000-0002-9894-6114]

Dr. Mahalingam College of Engineering and Technology, Udumalai Rd., Annamalai Nagar, Pollachi, 642003, Coimbatore, Tamilnadu, India

**Article info:**
Submitted: April 17, 2024
Received in revised form: July 30, 2024
Accepted for publication: August 9, 2024
Available online: August 15, 2024

***Corresponding email:**
ashokksamy@gmail.com

**Abstract.** This research study investigates the mechanical properties of polymer composites reinforced with natural fibers, specifically Palmyra palm leaf stalk fiber (PPLSF) and Palmyra palm primary leaf stalk fiber (PPFLSF). Tensile, flexural, and impact strength were among the composites' mechanical parameters generated by integrating these fibers into a polymer matrix and assessing them experimentally. Additionally, stress analysis of a spur gear was conducted using the finite element analysis software ABAQUS. The composite material properties obtained from the experimental investigation were used in the analysis to evaluate the gear's stress distribution and deformation behavior. The bending stress at the pitch point of the natural composite gears for PPLSF, PPFLSF, and nylon synthetic material is analyzed using analytical and experimental methods by ABAQUS software. Finally, the results are compared with each other. The results show that stress induced by nylon is comparatively higher than that of PPLSF and PPFLSF fiber. By analyzing these composites' strength, durability, and stress distribution under operating environments, the study aims to determine whether they are suitable substitutes for conventional materials.

**Keywords:** composite material, natural fiber, nylon, finite element analysis, von Mises equivalent stress.

## 1 Introduction

According to several studies, natural fibers, including banana, elephant grass, sisal, jute, vakka, bamboo, Roystonea regia, and coconut, are reinforced in composite materials. Various sectors, including the automotive, marine, sports goods, and structural ones, use other natural fibers such as kenaf, hemp, flax, ramie, bamboo, coir, bagasse, and sugarcane [1, 2].

Despite the growing interest in natural fiber composites, there is limited knowledge and research specifically addressing their use in spur gears. Critical areas for further exploration include material selection and characterization, development of manufacturing techniques, structural integrity and performance evaluation under varying conditions, understanding tribological properties, comparative studies with conventional metal gears, and application-specific research. Addressing these research gaps will contribute to a deeper understanding of the potential of natural fiber composites in spur gear applications, guiding their design and optimization for improved performance and reliability [3, 4].

## 2 Literature Review

Maurya et al. [5] examined the influence of alkali treatment on surface modification that enhanced adhesion between the fiber and polymeric resin, making Palmyra palm primary leaf stalk fiber (PPFLSF) a better natural fiber composite.

Mahalingam et al. [6] studied the properties of raw and alkali-treated Palmyra palm leaf stalk fiber (PPLSF) and concluded that alkali treatment removes impurities that help better bonding and improve physical and chemical strength.

Qu et al. [7] reviewed natural fiber-reinforced polymer composites and concluded that they exhibit beneficial



Congratulations

Dr.Jayaraj.M



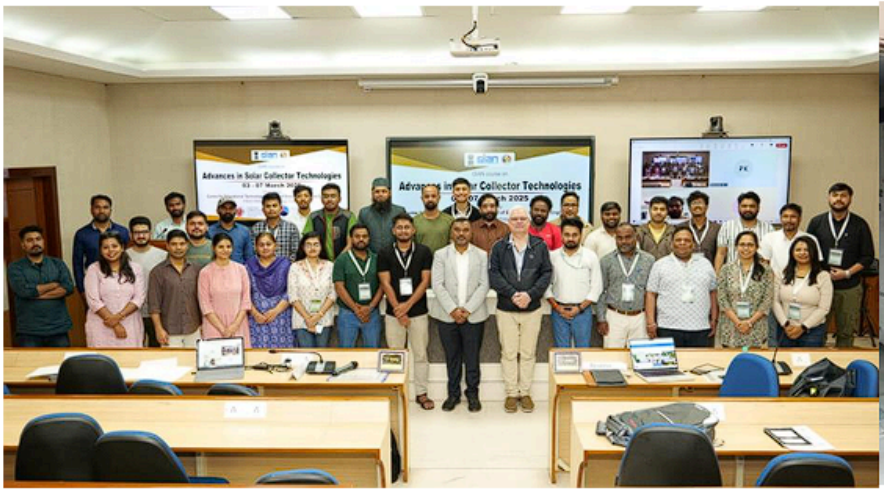
# FACULTY DEVELOPMENT PROGRAM

# FACULTY DEVELOPMENT PROGRAM

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 | 2024-25 |
|---|---|---|---|---|---|---|
| Program attended 5days and above | 43 | 116 | 104 | 23 | 42 | 15 |
| Program attended (3 or 4 Days) | 8 | 20 | 2 | 5 | 0 | 1 |
| Days Program attended (1 or 2Days) | 6 | 4 | 5 | 9 | 10 | 6 |
| Online Course | 7 | 2 | 23 | 25 | 16 | 9 |

Congratulations

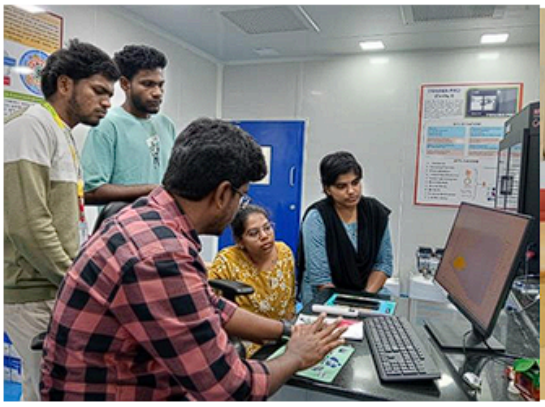
**Mr.J.Venkatesh, Assistant Professor/Mechanical** attended the FDP titled **"Advanced in Solar Collector Technologies"** on 03-03-2025 to 07-03-2025 at **Indian Institute of Technology, Guwahati.**





# FACULTY DEVELOPMENT PROGRAM

**Mr.K.Sasikumar,Assistant Professor/Mechanical** attended the National Workshop on the **Development of Nano biomaterials for Advancing 3D Bioprinting Technology** on 27th February – 01st March 2025 at **Sathyabama Institute of Science and Technology, Chennai.**





Congratulations

**Mr.R.Gunasekaran, Assistant Professor/Mechanical** presented a paper in **9th International and 30th All India Manufacturing Technology, Design, and Research Conference (AIMTDR)** 2023 is being organized by the **Department of Mechanical Engineering, IIT (BHU) Varanasi, from 8th - 10th December 2023.**






# COMMUNITY ENGAGEMENT

THE INTERACTIVE SESSION ON THE " INNOVATION AND ENTREPRENEURSHIP " WAS HELD ON 28.08.2024 AT GOVERNMENT GIRLS HIGHER SECONDARY SCHOOL, KOTTUR ROAD, POLLACHI.



## Outreach Program

**28 AUG 24**




THE SESSION AIMED TO PROVIDE STUDENTS AND FACULTY WITH INSIGHTS INTO THE CRITICAL ROLE OF ENTREPRENEURSHIP AND INNOVATION IN VARIOUS FIELDS SUCH AS AUTOMATION TECHNOLOGY, DRONE TECHNOLOGY, LIGHTWEIGHT MATERIAL AND ITS SIGNIFICANCE IN ENSURING_THE RELIABILITY AND PERFORMANCE OF ENGINEERING PRODUCTS.

# COMMUNITY ENGAGEMENT

**ATTENDED THE GRAMA SABHA MEETINGS AT MAKKINAICKENPATTI, THENCHITTUR AND CHINNAMPALAYAM VILLAGES ON 26.1.2025.**



Name of the Coordinator: **Dr.S.Ayyappan**

Name of the villages adopted:

1. **Kanjampatti**
2. **ThenChittur**
3. **Chinnampalayam**
4. **Unjavelampatti**
5. **Makkinaickenpatti**











# STUDENTS SPOTLIGHT



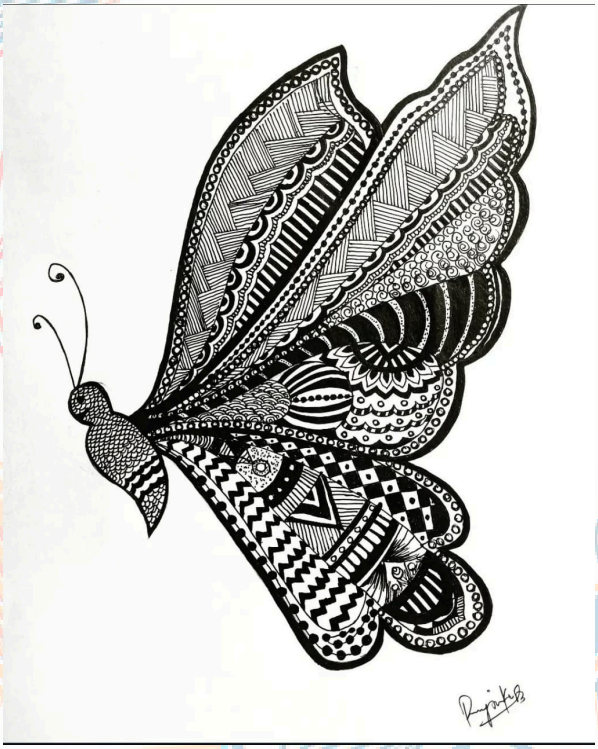



SWETHA K
727622BME033

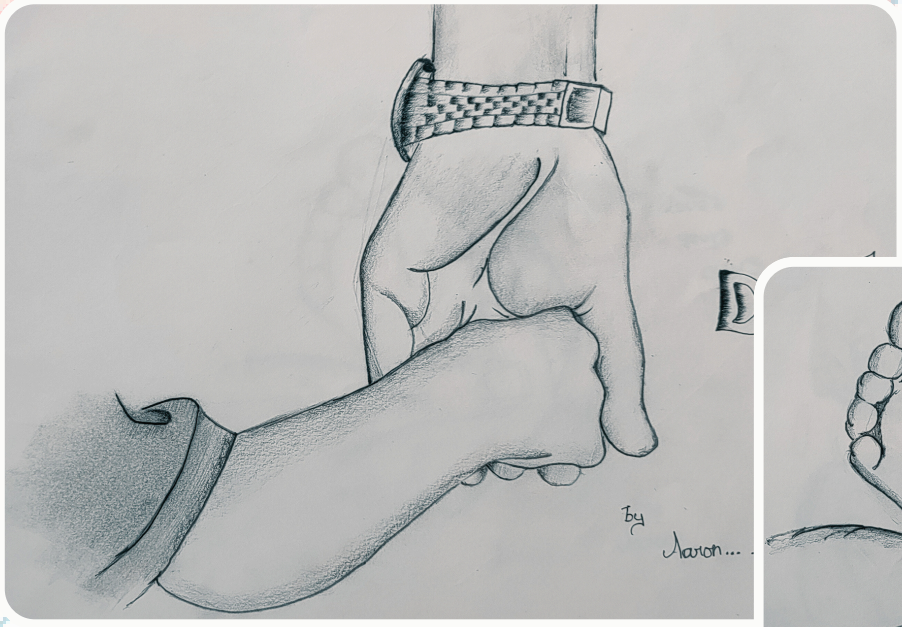


PRIYANKA B
727623BME009





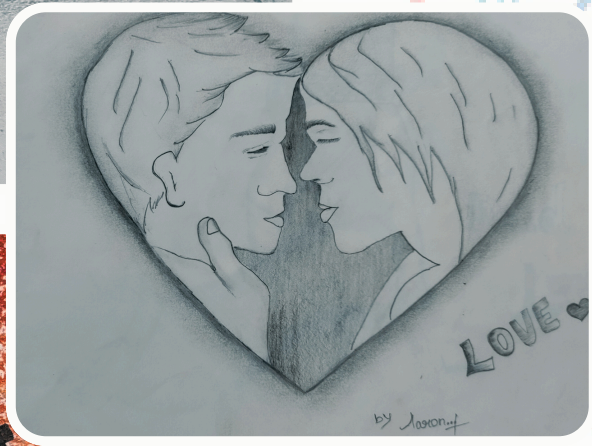












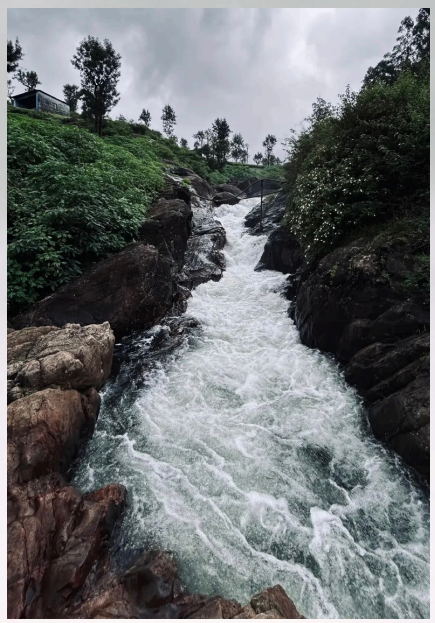





**PRABIN P**

**727622BME018**







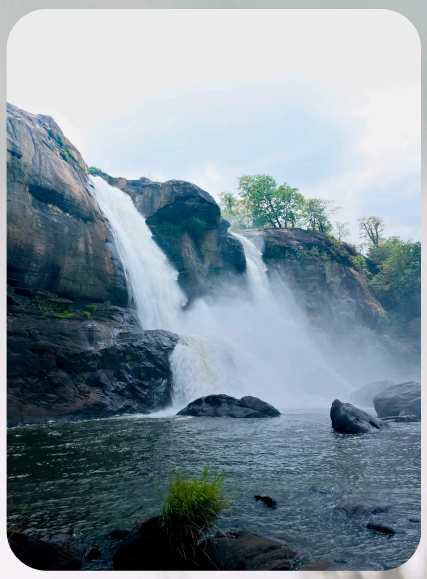







**ABDUL SALAM S**
**727622BME091**



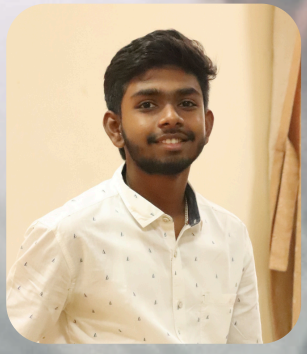












**HAEMANTH M S**
**727623BME320**



**GIFTSON SUSHIL KUMAR**
**727622BME078**

பசி உள்ள வியிருக்கு ருசி காண பணமில்லை
பணம் உள்ள போது வாங்க வயதில்லை
எண்ணங்கள் ஏக்கமானது
ஏக்கம் ஏமாற்றியது..!

- வருமையின் மருமுகம்.

அவளின் பேச்சு

ஏன் இப்படி
கொஞ்சிக் கொஞ்சிப் பேசி
தமிழைக் கன்னம் சிவக்க வைக்கிறாய்?
போதும், தமிழ் ஏற்கனவே
செம்மொழி தான்!

மனதின் சுவடு

மரணிப்பவர் மறைந்தாலும் மரணத்தின் சுவடுகள்
மறைவதில்லை. மரணத்தை விட கொடூரமானது
மரணம் மண்ணிலும் மனத்திலும்
விட்டு செல்லும் சுவடுகளே!

மாலை நேரம்

மாலை மயங்கி இரவு விழும் நேரத்தில்
அலுவலகம் முடிந்து வீடு திரும்புகையில்
எதிர்கொள்ள நேர்கிறது அவளது
புன்னகையை தினமும்!



**ABDUL WAHID A**
**727622BME048**

மழையின் பாடம்

கொட்டிச் சென்ற மழை சொல்லி தந்தது
சாதி, மத பேதமின்றி அன்பினால்
அனைவரையும் அணைத்துக் கொள்ள!

# BATCH 2021-2025







MECH MAG