



# ARMY INSTITUTE OF TECHNOLOGY

DIGHI HILLS PUNE, 411015



Affiliated to Savitribai Phule Pune University, Recognized by DTE & Govt of Maharashtra.

## MECHANICAL ENGINEERING DEPARTMENT

### NEWSLETTER – AY 2024-25 SEM-I



#### VISION

Emerge as globally recognized provider of Mechanical Engineering education and solutions.

#### MISSION

- Provide an environment for developing intellectual, emotional, physical, and spiritual quotients that are essential to produce total quality engineers.
- Establish a platform that fosters a culture of creativity, research, innovation and life-long learning
- Become a centre of excellence that creates technology leaders and entrepreneurs committed towards sustainable development of society

# MECHANICAL ENGINEERING DEPARTMENT: ACTIVITIES

NEWSLETTER AUGUST-2024

## Orientation session for SE Mechanical students: 07/08/2024

- Head of the Department (HoD) Dr U V Awasarmol and faculty members interacted with SE mechanical students.
- HoD provided a brief overview of the department and its various activities.
- The HoD encouraged students to actively participate in various clubs and student chapters, emphasizing the importance of regular class attendance. Additionally, the HoD urged students to showcase their talents through the student corner.
- Dr. Pritee Purohit provided information about the IEI Student Chapter, while Prof. P.V. Dorlikar shared details about the SAE AIT Collegiate Club.



**Day: - Tuesday**  
**Date: - 20/08/2024**

**Prof V R Kulkarni and Prof R S Godse, took part in Faculty Orientation Workshop on "Manufacturing Practice".**

**Prof M B Phatangare, took part in Faculty Orientation Workshop on "Design Thinking and Idea Lab".**

**Venue: - PVG's College of Engineering and Technology, Pune**

### **Objective of the Workshop: (Manufacturing Practice)**

- To enhance faculty understanding of current manufacturing techniques and practices.
- To bridge the gap between theoretical knowledge and practical application in the manufacturing sector.

### **Objective of the Workshop: (Design Thinking and Idea Lab)**

- To encourage thinking beyond traditional solutions to generate creative ideas.
- To bring together diverse perspectives and skills to address complex challenges.



# MECHANICAL ENGINEERING DEPARTMENT: ACTIVITIES

NEWSLETTER SEPTEMBER-2024

## Faculty Visit: JSPM'S Rajarshi Shahu College of Engineering, Pune

5<sup>th</sup> September, 2024

A team of faculty members from the Mechanical Engineering Department visited the Rajarshi Shahu College of Engineering, Pune, to explore its state-of-the-art Automation and Robotics Laboratory. The visit, held on September 5, 2024, aimed to study the upgraded facilities and advanced technologies integrated into the lab. During the visit, the team was given a comprehensive tour of the laboratory, which features advanced equipment, including advanced robotic arms, simulation tools, and industrial automation systems. The host faculty demonstrated the lab's capabilities in facilitating innovative research and hands-on learning for students.



## A team-building session for the Mechanical Engineering faculty

21<sup>st</sup> september,2024

The Mechanical Engineering Department organized a dynamic and engaging team-building session for their faculty members at the pleasing location of Panshet, Pune, on September 21, 2024. The event aimed to foster relation, enhance collaboration, and refresh the team in a serene and inspiring environment.



## Two-days FDP at MIT World Peace University, Pune

27<sup>th</sup> and 28<sup>th</sup> September, 2024

Dr J. D. Patil and Prof. P. V. Dorlikar participated in a two-day Faculty Development Program (FDP) at MIT World Peace University (WPU), Pune. The event, held on the 27th and 28th of September 2024, focused on advancing the skills and knowledge of faculty members through innovative teaching practices and technology integration.



# MECHANICAL ENGINEERING DEPARTMENT: ACTIVITIES

NEWSLETTER OCTOBER-2024

## SE Mechanical Students' Visit to VIT, Pune

**16th October 2024**

On 16th October 2024, a group of SE Mechanical students, accompanied by their faculty members Dr. R. B. Gurav and Mr. A. G. Jirgale, visited VIT Pune for a hands-on experience with the Boiler Trial. This visit provided the students with an invaluable opportunity to observe and understand the practical aspects of boiler operation, maintenance, and safety protocols in a real industrial setting.



## Visit to 2nd Edition of "NEXGEN MOBILITY SHOW"

**18th October 2024**

On 18th October 2024, Prof. R. S. Godse and Mr. B. D. Sonawane, attended the 2nd Edition of the "NEXGEN MOBILITY SHOW" held at Moshi, Pune. The event, which showcased the latest innovations in the field of mobility, electric vehicles (EVs), and smart transportation technologies, provided an excellent platform for professionals and enthusiasts to explore advance solutions that are shaping the future of the automotive industry.



## Visits Ashok Leyland Training Centre at G. H. Raisoni College, Pune

**22nd October 2024**

On 22nd October 2024, Dr. U. V. Awasarmol, visited the Ashok Leyland Training Centre at G. H. Raisoni College, Pune. During the visit, Dr. Awasarmol engaged in discussions with the training center's instructors and industry experts, gaining insights into the latest trends in automotive technology, including electric vehicles, hybrid systems, and the role of advanced diagnostics in vehicle maintenance. The visit underscored the growing need for collaboration between educational institutions and industry leaders like Ashok Leyland to foster skill development and innovation in the automotive sector.



# MECHANICAL ENGINEERING DEPARTMENT: ACTIVITIES

NEWSLETTER OCTOBER-2024

## Participation in Innovation Day Featuring "SOLIDWORKS 2025"

22nd October 2024

On 22nd October 2024, Prof. P. V. Dorlikar and Prof. A. A. Ramgude, participated in the *Innovation Day* event at Sheraton Grand Bund Garden, Pune. The event, which showcased the launch of *SOLIDWORKS 2025*, provided a platform for engineers, designers, and academics to explore the latest advancements in computer-aided design (CAD) and product development software.



## BE Mechanical Students Visit Katraj Dairy, Pune

23rd October 2024

On 23rd October 2024, BE Mechanical students, accompanied by faculty members Dr. P. M. Purohit and Mr. A. G. Jirgale, visited the renowned Katraj Dairy in Pune. The visit provided the students with an opportunity to gain valuable insights into the operational processes of a large-scale dairy facility and understand the role of mechanical systems in dairy production. During the visit, students were given a comprehensive tour of the dairy, where they observed various stages of milk processing, including pasteurization, packaging, and quality control.



## One-Day Webinar on "Introduction to Computational Fluid Dynamics (CFD) and Its Applications"

24th October 2024

Dr. S. M. Gaikwad, an expert in the field of fluid dynamics and computational simulations, delivered a one-day webinar on "*Introduction to Computational Fluid Dynamics (CFD) and its applications*" at the GLOBAL Institute of Engineering and Technology, Telangana, on 24th October 2024. In his webinar, Dr. Gaikwad introduced the basic concepts of CFD, including governing equations, numerical methods, and meshing techniques. He also explored how CFD can be applied in real-world engineering as optimizing aerodynamic designs, improving energy efficiency in thermal systems, and enhancing fluid systems for medical devices.

A promotional poster for a webinar. At the top, it features the logo of GLOBAL Institute of Engineering &amp; Technology, Hyderabad. Below the logo, it states 'DEPARTMENT OF MECHANICAL ENGINEERING PRESENTS A One Day Webinar ON "INTRODUCTION TO COMPUTATIONAL FLUID DYNAMICS (CFD) SOFTWARE AND ITS APPLICATIONS" 24th October, 2024 @ 10.00 A.M on Google Meet'. The poster lists the 'Eminent Resource Person' as Dr. Sanjay M Gaikwad, Assistant Professor, Department of Mechanical Engineering, Army Institute of Technology, Pune. It also lists several patrons, including Mr. S. M. Fakhreddin, Director-GPC, Dr. Mrs. Ratna/Tina, Dean-GPC, Dr. P. Bijaran, Principal - GEC, Mr. G. Anand Zeehan, Vice Principal, ZDAC Co-ordinator - GEC, and Mr. Anwar Sobah, Assistant Professor and Head, Dept. of Mech. Engg. - GEC. The poster includes a small image of a person and a colorful 3D visualization of a fluid flow simulation.

# MECHANICAL ENGINEERING DEPARTMENT: ACTIVITIES

NEWSLETTER NOVEMBER-2024

## Training on CFD Software "CRADLE"

**11th to 14th November 2024**

From 11th to 14th November 2024, faculty members of the Mechanical Engineering Department participated in an intensive training program on Computational Fluid Dynamics (CFD) software "CRADLE". The four-day session, conducted by experts from CRADLE, provided a comprehensive overview of the software's features, including fluid flow simulation, heat transfer analysis, and the optimization of mechanical systems.



## FE Students Visit Auto Cluster Development and Research Institute

**12th November 2024**

On 12th November 2024, first-year engineering students, accompanied by faculty members Prof. V. R. Kulkarni, Prof. A. A. Ramgude, and Prof. R. S. Godse, visited the *Auto Cluster Development and Research Institute* in Pune as part of their *Manufacturing Practice Workshop*. The visit was organized to provide students with a real-world understanding of manufacturing processes and to enhance their practical knowledge of the subject.



## Foundation Day Celebration of Institution of Engineers

**29th November 2024**

On 29th November 2024, Dr. P. M. Purohit, Dr. S. M. Gaikwad, and Prof. Anand Ramgude, faculty members of the Mechanical Engineering Department, attended the 66th Foundation Day Celebration of the Institution of Engineers (IEI). The event, held to commemorate the establishment of the Institution, was an opportunity for professionals, academics, and industry leaders to come together and celebrate the growth and contributions of the engineering community. The event focused on the latest advancements in engineering technologies, industry trends, and the role of educational institutions in shaping future engineers.



# MECHANICAL ENGINEERING DEPARTMENT: ACTIVITIES

NEWSLETTER DECEMBER-2024

## Visit Live Demos of CopperCloud Industry 4.0 Solutions

**13th December 2024**

On 13th December 2024, Dr. L. D. Jathar and Prof. G. D. Bhasale, visited the *Auto Cluster* in Pune to witness live demonstrations of *CopperCloud Industry 4.0 Solutions*. The visit provided an invaluable opportunity to explore the latest innovations in industrial automation and smart manufacturing technologies that are reshaping the future of the automotive and engineering sectors. The live demos showcased CopperCloud's cutting-edge solutions in the realm of Industry 4.0, emphasizing real-time data analytics, machine learning applications, and the integration of IoT with manufacturing processes.



## Academic Advisory Committee (AAC) Meet of Mechanical Department

**23rd December 2024**

The Academic Advisory Committee (AAC) meeting for the Mechanical Engineering Department was held on 23rd December 2024. The meeting brought together key faculty members, department heads, and academic advisors to review the current academic framework, discuss potential improvements, and strategize for the upcoming academic sessions. The primary focus of the meeting was to evaluate the effectiveness of the current curriculum, ensuring that it aligns with industry requirements and prepares students to face emerging technological challenges. Discussions centered on the integration of new technologies such as Industry 4.0, Artificial Intelligence (AI), and Robotics into the existing syllabus, along with the development of hands-on learning opportunities such as workshops, internships, and industry collaborations.



At the conclusion of the meeting, the AAC members agreed on a series of recommendations and action points to enhance the quality of education, research, and industry linkage for the Mechanical Engineering Department in the coming year.

# MECHANICAL ENGINEERING DEPARTMENT: FACULTY ACHIEVEMENT



## Dr. J D Patil Invited to Advisory Board of A & R at MIT WPU

Dr. J D Patil, has been honoured with an invitation to join the Advisory Board of Automation and Robotics (A & R) at MIT World Peace University (MIT WPU). This prestigious appointment reflects Dr. Patil's vast experience and his significant contributions to the academic and research community.

## Dr. L D Jathar Co-Authors Critical Review on Machine Learning and Nanoparticles in Biodiesel Engine Performance

Dr. L D Jathar, has co-authored a critical review titled "Machine Learning-Based Assessment of the Influence of Nanoparticles on Biodiesel Engine Performance and Emissions" published in the *Archives of Computational Methods in Engineering*, a renowned journal by Springer (SCIE).

U.P.B. Sci. Bull., Series D, Vol. 86, Iss. 1, 2024 ISSN 1454-2158

### DIGITAL INVESTIGATION OF FRICTION COMPOSITES FOR AUTOMOTIVE BRAKE PADS

Sandip S.SHIRSATH<sup>1\*</sup>, Pritee PUROHIT<sup>2</sup>

*This work attempts to explore the coupled behavior of automotive disk brake while braking considering the Structural loading and steady state thermal loading approach using finite elemental analysis method. An automobile braking system is generally used to carry out the basic functions like to reduce and maintain speed of a vehicle at various operating conditions and to hold the vehicle at rest position. During braking operation, the brake system suffers from structural and wear issues under combined loading generated due to braking action. Hence, this work aims to determine temp distribution, to critically examine stress concentration over brake pad and rotor, contact pressure and structural deformation of brake discs/pads during single braking action using ANSYS simulation tool. It is found that the proposed NAO material performed well in comparison with conventional materials in terms of stress generation, temperature distribution, contact stresses. Furthermore, the investigation carried out to check the competency of friction composites.*

Keywords: FEA, brake pad, friction material

**MIT-WPU** **ARTPARK**

Two days  
**FACULTY DEVELOPMENT PROGRAMME**  
on  
**ROBOTICS AND AUTONOMOUS SYSTEMS**

ADVISORY BOARD

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**Machine Learning-Based Assessment of the Influence of Nanoparticles on Biodiesel Engine Performance and Emissions: A critical review**

Archives of Computational Methods in Engineering

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## Dr. P.M. Purohit Publishes Paper on Digital Investigation of Friction Composites for Automotive Brake Pads

Dr. P.M. Purohit, has recently published a significant paper in the *U.P.B. Scientific Bulletin, Series D* journal. The paper, entitled "**Digital Investigation of Friction Composites for Automotive Brake Pads,**" explores innovative approaches to enhance the performance and durability of brake pads used in automotive applications.



# MECHANICAL ENGINEERING DEPARTMENT: FACULTY ACHIEVEMENT

## Prof. Y.V. Patel Publishes Paper at 22nd International Conference on Recent Advances in Mechanical Engineering (ISME-2024)

Prof. Y.V. Patel, has recently presented his research paper at the prestigious *22nd ISME International Conference on Recent Advances in Mechanical Engineering (ISME-2024)*. The paper, titled "Linear Static Analysis of Single-Stage Telescoping Pipe for Different Pipe Thicknesses and Working Angles," explores critical aspects of the mechanical behavior of telescoping pipes, a key component in various engineering applications.

## Prof. A.A. Ramgude and Dr. P.M. Purohit Publish Copyright on Finite Element Analysis (FEA) Software Enhanced with AI Algorithms

Prof. A.A. Ramgude and Dr. P.M. Purohit have recently secured a copyright for their work on *Finite Element Analysis (FEA) Software*, a significant advancement in computational engineering. The copyright, which covers their innovative approach to meshing selected complex components, integrates the use of an artificial intelligence (AI) algorithm for smoothing, ensuring more accurate and efficient simulations.



## Prof. R.S. Godse and Dr. P.M. Purohit Publish Copyright on Investigations of Hybrid Solar Air Heating System for Industrial Applications

Prof. R.S. Godse and Dr. P.M. Purohit have recently secured a copyright for their work on the *Hybrid Solar Air Heating System*, aimed at optimizing energy efficiency for selected industrial applications. Their work, which explores innovative ways to integrate solar energy with conventional heating methods, offers promising solutions for industries seeking to reduce their carbon footprint and energy consumption.

22<sup>nd</sup> ISME International Conference on Recent Advances in Mechanical Engineering (ISME-2024)  
Delhi Technological University, Delhi, 11-13 July, 2024

### Linear Static Analysis of Single-Stage Telescoping Pipe for Different Pipe Thicknesses and Working Angles

Yash M. JUNAGADE<sup>1,a</sup>, Dr. Sanjiv M. SANSGIRI<sup>2,b</sup> and Y. V. PATEL<sup>3,c</sup>

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**Keywords:** Telescoping Mechanism, Telescoping pipe, FEA, Linear Static Analysis.

**Abstract.** This study uses a linear static analysis of a single-stage telescoping pipe to investigate the impacts of different pipe thicknesses and provides a comprehensive understanding of the behavior and usefulness of the setup. In this study, FEA analysis performed using HyperWorks is used to assess the telescoping pipe arrangement, which is modeled using PTC Creo. The results show how changing the thickness and working angle affects the stress and deformation of the setup and the Design of Telescoping Pipes is dependent on it. This research will help optimize the design of telescoping pipes.

#### Introduction

The investigation of many mechanical designs and structures has resulted from the search for fruit-picking methods that are both efficient and effective. One such design is the telescoping pipe, an ostensibly straightforward but intricate configuration with a great deal of promise for



# MECHANICAL ENGINEERING DEPARTMENT: FACULTY ACHIEVEMENT

## Dr. J.D. Patil Honoured as Passionate Player of the Tournament at Staff Sports Aakrti 2024-25

Dr. J.D. Patil has been awarded the *Passionate Player of the Tournament* title at the *Staff Sports Aakrti 2024-25* event. The recognition highlights his exceptional dedication, enthusiasm, and outstanding performance in the tournament, showcasing his sportsmanship and commitment to promoting physical well-being among colleagues.



## Prof. G.D. Bhasale Awarded Rising Star Female in Staff Sports Aakrti 2024-25

Prof. G.D. Bhasale has been honored with the *Rising Star Female* award at the *Staff Sports Aakrti 2024-25* event. This recognition highlights her exceptional talent, dedication, and inspiring performance in the tournament, making her a standout athlete among her colleagues.



# MECHANICAL ENGINEERING DEPARTMENT: STUDENTS ACHIEVEMENT

## Aman Kumar from SE Mechanical Shines in Sports and NCC Competitions

September 2024 – Aman kumar, a second-year Mechanical Engineering student, has made the institution proud with his remarkable achievements in both sports and NCC activities. Aman secured the 3rd rank in the Firing Competition held at the NCC Group Headquarters, Pune, showcasing exceptional precision and discipline. In addition to his NCC success, Aman also clinched the 1st rank in the Volleyball Competition, demonstrating outstanding teamwork and athleticism.



## Rahul Khichar from SE Mechanical Excels in Sports at AKRITI 2024

September 2024 – Rahul Khichar, a second-year Mechanical Engineering student, has brought glory to the institution with his outstanding performance at akriti 2024. Rahul showcased his exceptional athletic talent by securing the 2nd rank in the overall sports category, excelling in three major events: Long Jump, Basketball, and Kabaddi. Faculty members and students, has congratulated Rahul on his success, recognizing his dedication and hard work.



## Rayan Mathew from SE Mechanical Dominates Sports at AKRITI 2024 and Zonal

September 2024 – Rayan Mathew, a second-year mechanical engineering student, has achieved remarkable success at akriti 2024, AIT sports event, by excelling in multiple categories. Rayan secured the **1st rank in Lawn Tennis at AIT and 2nd in Zonal Lawn Tennis**), showcasing extraordinary skill, focus, and determination on the court. Adding to his achievements, he also earned the **2nd rank in Squash** and the **2nd rank in the Relay Race**, demonstrating his versatility and athletic excellence across diverse sports. The faculty members and students extended their heartfelt congratulations to Rayan for his exceptional performance.



# MECHANICAL ENGINEERING DEPARTMENT: STUDENTS ACHIEVEMENT

## Rajat Singh from SE Mechanical Wins Smart India Hackathon 2024

October 2024 – Rajat Singh, a third-year Mechanical Engineering student, has achieved a significant milestone by emerging as the winner of the Smart India Hackathon 2024. The event, organized by All India Council for Technical Education (AICTE), and the Government of India (GOI),

