MECH VISTA

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Department of Mechanical Engineering

Gandhi Institute of Advanced Computer and Research
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It is a privilege to present the current issue of the Bi-Annual Newsletter of the Department of Mechanical Engineering. This publication highlights the key academic, technical, and co-curricular activities undertaken during the past six months.

The newsletter captures departmental events such as workshops, seminars, expert lectures, industrial visits, student projects, faculty achievements, and outreach activities. These initiatives reflect our commitment to providing quality technical education and practical exposure to our students.Such contributions not only enhance communication skills but also foster confidence, creativity, and professional growth.

I sincerely thank all students, faculty members, and the editorial team for their valuable contributions and continuous support in bringing out this issue successfully. Their dedication and teamwork strengthen the academic culture of the department.

Let this newsletter inspire us to pursue excellence, innovation, and responsibility in shaping the built environment for a better tomorrow.

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Message from the Principal

It is truly heartening to witness the Mechanical Engineering Department of our college publish its annual newsletter “GIACR MechVista” a compelling testament to its vibrant academic culture, technological foresight, and unwavering commitment to excellence. This publication encapsulates the department’s dynamic engagement with both foundational engineering principles and cutting-edge innovations.

Mechanical Engineering, long regarded as the backbone of industrial progress, continues to evolve and expand its influence across emerging domains such as autonomous mechanical systems, renewable energy technologies, smart manufacturing, and sustainable infrastructure development. These areas not only redefine traditional engineering paradigms but also position mechanical engineers at the forefront of global problem-solving.

In response to the rapidly shifting landscape of science and technology, the department has proactively introduced a suite of initiatives—ranging from interdisciplinary curriculum enhancements and industry-aligned training modules to research-driven student projects and innovation labs. These efforts are strategically designed to cultivate technical proficiency, systems thinking, and a future-ready mindset among students.

This annual newsletter serves as a reflection of the department’s holistic approach to education and innovation. It showcases key academic activities, research achievements, collaborative ventures, and outreach initiatives that collectively foster intellectual growth, technological advancement, and meaningful societal impact.

Message from the Head

Greetings!

I am truly delighted to witness the launch of the Department of Mechanical Engineering's annual newsletter "GIACR MechVista" —a vibrant and insightful platform that fosters meaningful connection among students, faculty, alumni, and stakeholders. This publication serves not only as a chronicle of the department's dynamic activities but also as a celebration of its enduring commitment to engineering excellence.

This edition proudly showcases hallmark initiatives such as the *Project Expo*, where student ingenuity meets real-world application, and the department's ongoing *Research and Development* efforts that push the boundaries of innovation in areas like thermal systems, robotics, materials science, and sustainable design. These features reflect the academic rigor, technical depth, and forward-thinking spirit that define our department.

Equally commendable are the contributions of our dedicated faculty members, whose mentorship and scholarly pursuits continue to elevate the standards of Mechanical Engineering education. The newsletter also highlights best practices in pedagogy, industry collaboration, and experiential learning—reinforcing our mission to produce engineers who are not only technically proficient but also socially responsible.

I extend my heartfelt congratulations to all the students and faculty of the Mechanical Engineering Department for their collaborative effort and unwavering dedication in bringing out this publication. May it continue to inspire innovation, foster excellence, and strengthen the bonds within our academic community.

Vision and Mission of the Institution

Vision

To become a globally recognized, value-driven educational institution committed to excellence in delivering quality education, nurturing students' inherent talents, and developing innovative professionals in technical and managerial fields, thereby equipping them to meet the future challenges of the global economy.

Mission

M_1: To deliver quality education through effective teaching–learning processes that foster academic excellence in technical and managerial disciplines.

M_2: To nurture students' inherent talents by encouraging creativity, critical thinking, innovation, and lifelong learning.

M_3: To develop competent and ethical professionals with strong values, leadership skills, and social responsibility.

M_4: To promote industry-oriented learning and research through collaboration, practical exposure, and adoption of emerging technologies.

M_5: To prepare globally competitive graduates capable of adapting to evolving challenges and contributing effectively to the global economy.

Vision & Mission of Department of Mechanical Engineering

VISION

To be a premier knowledge hub in mechanical engineering education, entrepreneurship, and industry engagement, producing skilled engineers ready to address industrial challenges.

MISSION

M1. To impart strong fundamental and advanced knowledge in mechanical engineering through effective teaching–learning practices and modern pedagogical methods.

M2. To promote innovation and entrepreneurship by encouraging creative thinking, problem-solving, and startup-oriented initiatives among students.

M3. To strengthen industry engagement through internships, industrial training, consultancy, and collaborative projects to enhance practical skills.

M4. To develop technically competent and ethical engineers with leadership qualities, professional integrity, and social responsibility.

M5. To equip graduates with industry-relevant skillsand adaptability to effectively address real-world engineering challenges.

Program Outcomes (POs)

1. Basic and Discipline specific knowledge: Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.

2. Problem analysis: Identify and analyses well-defined engineering problems using codified standard methods.

3. Design/ development of solutions: Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.

4. Engineering Tools, Experimentation and Testing: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.

5. Engineering practices for society, sustainability and environment: Apply appropriate technology in context of society, sustainability, environment and ethical practices.

6. Project Management: Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.

7. Life-long learning: Ability to analyse individual needs and engage in updating in the context of technological changes.

Program Educational Objectives

PEO_1: To impart science-based engineering education to develop professional skills that will prepare the students for immediate employment in relevant branch of mechanical engineering in industry.

PEO_2: To develop human potential to its fullest extent so that intellectually capable and creatively gifted leaders can emerge in range of professions.

PEO_3: To develops among students the awareness of and the competence to be savvy users of information technology.

PEO_4: To Develop among students the ability to work with others, in professional and social settings.

PEO_5: To develop a global view among students so that they can appreciate diversity in the world and in intellectual pursuits and the desire and ability to keep learning throughout life.

Programme Specific Outcome

PSO 1: Apply the acquired knowledge in design, thermal, manufacturing and interdisciplinary areas for solving industry and socially relevant problems.

PSO 2: To enhance the abilities of students by imparting knowledge in emerging technologies to make them confident mechanical Engineers.

PSO 3: Provide socially responsible, eco –friendly broad base solution to mechanical Engineering related problems adopting professional ethics.

Celebration of Engineers' Day by the Mechanical Engineering Department

The Department of Mechanical Engineering at GIACR celebrated Engineers' Day with profound enthusiasm and reverence, paying homage to the visionary Bharat Ratna Sir Mokshagundam Visvesvaraya—an icon of engineering brilliance and national development on 15th September 2024. The event served as a vibrant confluence of tradition, innovation, and academic rigor, reflecting the spirit of mechanical engineering in shaping a sustainable and technologically advanced future.The inaugural program commenced with a formal inauguration ceremony, graced by distinguished dignitaries:

Chief Guest: Er. Jhuna Panda, a seasoned industry expert

Guest of Honour: Sri Govind Prasad Rath, Director, GIACR

Presiding Officer: Dr. Pratap Chandra Mishra, Principal, GIACR

The ceremonial lighting of the lamp, invoking the blessings of Goddess Saraswati, symbolized the ignition of knowledge and innovation—core tenets of mechanical engineering.Each guest delivered compelling insights on the transformative role of engineers, particularly mechanical engineers, in driving industrial progress, sustainable design, and technological resilience.o commemorate the occasion, the department organized a Paper Presentation Competition, spotlighting student research on themes such as:

- Sustainable Manufacturing Practices
- Advanced Materials and Smart Structures
- Automation and Robotics in Mechanical Systems
- Thermal Management in Renewable Energy Applications

This was followed by a Technical Quiz Competition, designed to challenge students' grasp of core mechanical concepts including thermodynamics, fluid mechanics, machine design, and CAD/CAM technologies. The event fostered analytical thinking and collaborative learning among participants.

The celebration not only honoured the contributions of engineers but also ignited a spirit of innovation and excellence among students. It reinforced the department's commitment to nurturing future-ready mechanical engineers equipped with technical acumen

and ethical grounding.The event concluded with a heartfelt vote of thanks, acknowledging the invaluable contributions of the guests, faculty, student coordinators, and participants. Their collective efforts made the Engineers' Day celebration a memorable and meaningful tribute to the engineering profession.

Photo of Engineer's Day Celebration

Industrial Tour to J K Paper Mill, Rayagada by 4th Semester Mechanical Engineering Students

As part of its unwavering commitment to experiential learning, the Department of Mechanical Engineering at GIACR organized an industrial study visit for 4th semester diploma students to **JK Paper Mill, Rayagada** on 21st September 2024. It is a leading facility in paper manufacturing and process engineering. The initiative aimed to bridge the gap between theoretical instruction and practical application by immersing students in real-world mechanical operations.

During the visit, students gained firsthand exposure to a wide array of mechanical systems integral to the mill's functioning. Key areas of observation included:

- **Steam generation and boiler operations** for process heating
- **Pulp processing machinery** involving fluid mechanics and material handling
- **Rotary and reciprocating pumps**, compressors, and gear-driven systems

- **Preventive maintenance protocols** and condition monitoring techniques
- **Automation and control systems** used in continuous production lines

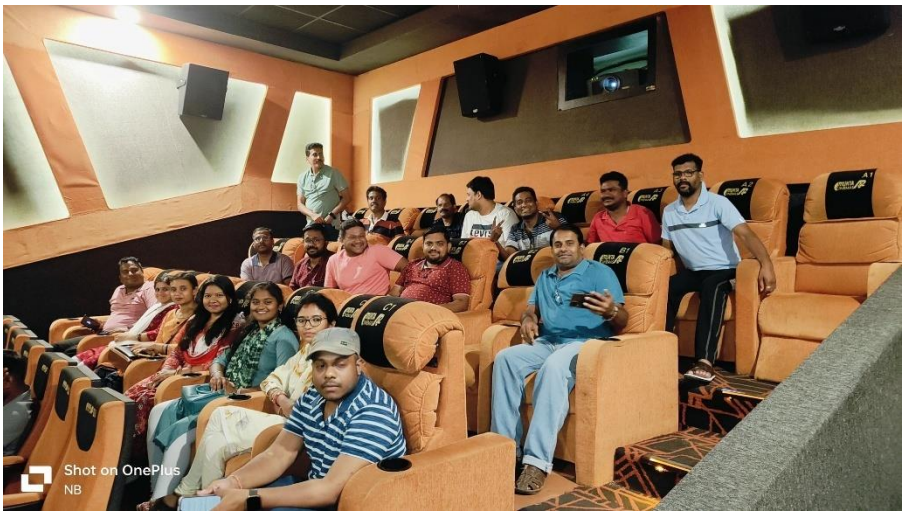
Faculty members guided students through technical discussions on thermodynamic cycles, mechanical power transmission, and the role of mechanical engineers in optimizing industrial efficiency and sustainability.

The visit not only reinforced classroom concepts such as heat transfer, machine design, and industrial safety but also highlighted the importance of interdisciplinary collaboration in large-scale manufacturing environments. Students interacted with plant engineers, gaining insights into career pathways, operational challenges, and the evolving role of mechanical engineering in process industries.

This enriching experience deepened students' understanding of applied engineering and strengthened their readiness for future industrial engagements.

Watching of Documentary Movie Sindura

All the faculty members of GIACR Rayagada visited the VK Central Hall to watch the documentary film *Sindura*, on 12th November 2024 an inspiring production that carries a powerful message on the importance of organic farming and its transformative potential for society. The screening provided an enriching learning experience, encouraging faculty members to reflect on sustainable agricultural practices and the broader implications for environmental preservation and rural livelihoods.



The documentary beautifully portrays the need to shift from chemical-intensive farming to more natural, eco-friendly methods that ensure soil health, food safety, and long-term sustainability. Through compelling visuals, real-life examples, and community experiences, *Sindura* highlights how organic farming can empower farmers, improve productivity, and protect the ecosystem. The film serves as a reminder that true development must be rooted in harmony with nature.

A matter of pride for the institute was that the documentary was directed and produced by one of our esteemed Directors, Dr. Biranchi Panda, whose creative vision and commitment to social welfare are clearly reflected in the film. His work has not only raised awareness about

organic farming but has also inspired educational institutions and the general public to rethink their approach to agriculture and environmental responsibility.

The faculty members appreciated the depth, clarity, and emotional impact of the documentary. The visit also fostered meaningful discussion on integrating sustainability concepts into academic activities, research, and social outreach programmes of the institute.

Overall, the screening of *Sindura* was an insightful and motivational experience, reinforcing the importance of environmentally conscious practices and celebrating the remarkable contribution of Dr. Biranchi Narayana Panda to society.

Participation in Annual Sports

The Department of Mechanical Engineering conducted its Annual Sports on 24th November 2024 with great enthusiasm and active participation from students and faculty members. The event aimed to promote physical fitness, team spirit, and sportsmanship among students alongside their academic pursuits.

The programme included various outdoor and indoor games such as cricket, volleyball, kabaddi, badminton, and track events. Students participated energetically and displayed

remarkable coordination, discipline, and competitive spirit throughout the competitions. Faculty members also encouraged the participants and supported the smooth conduct of all events.

The sports activities provided a refreshing break from regular academic schedules and helped in strengthening unity and camaraderie among students. Winners and runners-up were appreciated and awarded for their outstanding performances. The Annual Sports event was a grand success, fostering teamwork, leadership qualities, and a spirit of healthy competition within the department.

Plantation Drive at GIACR

In alignment with its commitment to environmental stewardship and sustainable engineering practices, the **Department of Mechanical Engineering**, in collaboration with the **Eco Club of GIACR**, organized a **Plantation Drive**on 25th November 2024 within the college campus. This initiative aimed to foster ecological awareness among students while contributing to climate resilience and campus beautification.

The drive was inaugurated by **Prof. Dr. Pratap Chandra Mishra**, Principal of GIACR, and **Er. Manoranjan Behera**, Head of the Mechanical Engineering Department. Their presence underscored the institutional emphasis on integrating sustainability into academic and co-curricular activities.

The selected plantation site within the campus was chosen for its potential to enhance green cover and promote biodiversity. A total of **100 saplings**were planted strategically across the premises. These trees will be nurtured and maintained by the Eco Club, ensuring long-term care and monitoring.

Mechanical engineering students actively participated in the drive, reflecting their growing awareness of the intersection between engineering and environmental responsibility. The event also served as a platform to discuss sustainable technologies, green manufacturing, and the role of engineers in mitigating climate change.

By combining technical education with ecological action, the Plantation Drive reinforced the department's vision of producing socially responsible engineers equipped to address global sustainability challenges. The initiative was a meaningful step toward creating a greener, healthier, and more conscious campus environment.

Expert Talk on Advancements in Thermal Engineering Practices

The Department of Mechanical Engineering at GIACR organized an expert talk on *Advancements in Thermal Engineering Practices*, featuring Dr. Baidyanath Tiwari, Postdoctoral Scholar from the Department of Mechanical Engineering, IIT Madras. Held in online mode on 5th December 2024, the session was specifically curated for diploma engineering students to enhance their exposure to emerging developments in the field of thermal engineering.

Dr. Tiwari shared his expertise on advanced thermal systems, highlighting recent innovations in heat transfer mechanisms, energy-efficient thermal design, and sustainable engineering solutions. He elaborated on the integration of computational tools and simulation techniques in optimizing thermal performance across various industrial applications. The session also touched upon the relevance of thermal engineering in renewable energy systems, automotive technologies, and process industries.

Students gained valuable insights into the practical applications of theoretical concepts, fostering a deeper appreciation for the role of thermal engineering in solving real-world

challenges. The interactive nature of the session encouraged active participation, with students posing thoughtful questions and engaging in meaningful discussions.

Overall, the expert talk was highly informative and intellectually enriching, inspiring students to pursue advanced studies and research in thermal engineering with renewed enthusiasm.

Study Visit to Om Sai Ram Industries, Rayagada

As part of its commitment to experiential learning, the Department of Mechanical Engineering at GIACR organized a study visit for 4th semester diploma students to Om Sai Ram Industries, Rayagada on 7th December 2024—a reputed facility engaged in the production of mineral water and aerated beverages. The visit was designed to provide students with firsthand exposure to industrial practices, bridging the gap between classroom instruction and real-world mechanical applications.

During the visit, students observed various stages of beverage manufacturing, including bottling, carbonation, packaging, and quality control. They gained insights into the mechanical systems involved in fluid handling, automation, and process optimization. The tour also highlighted the role of mechanical components such as pumps, compressors, conveyors, and heat exchangers in ensuring efficient and hygienic production.

Faculty coordinators facilitated discussions on the integration of mechanical engineering principles in food-grade manufacturing environments, emphasizing safety standards and

sustainability practices. The visit sparked curiosity among students and encouraged them to relate theoretical concepts to practical scenarios.

Overall, the study visit proved to be an enriching experience, reinforcing the importance of industrial exposure in shaping competent and industry-ready mechanical engineers.