RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Quarterly E-Newsletter

FORGE AND FLOW

Department of Mechanical Engineering

VOLUME 1 ISSUE 2 JULY 2025

INSIDE THIS ISSUE.

- Articles
- Faculty Achievements
- Collaborative Research Activities
- Sponsored Research Activities
- Cultural Achievements
- Beyond the Books
- Janatics Laboratoty
- Editorial Team

Institution of MECHANICAL ENGINEERS

ASME SETTING THE STANDARD

M S RAMAIAH UNIVERSITY OF APPLIED SCIENCES STUDENT SECTION

ROBOTICS AND AUTOMATION CLUB

DEAR READERS,

WE ARE DELIGHTED TO PRESENT THE FIRST EDITION OF FORGE AND FLOW, THE QUARTERLY E-NEWSLETTER OF THE DEPARTMENTS OF MECHANICAL ENGINEERING.

THIS PLATFORM HIGHLIGHTS THE ACHIEVEMENTS OF OUR FACULTY AND STUDENTS, CELEBRATING THEIR ROLE IN DRIVING INNOVATION AND EXCELLENCE.

HEARTFELT THANKS TO ALL CONTRIBUTORS AND SUPPORTERS WHO MADE THIS EDITION POSSIBLE.

WARM REGARDS,
EDITORIAL TEAM

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Articles

ADVANCING FRONTIERS: ROBOTICS AND AUTOMATION SET TO TRANSFORM GLOBAL INDUSTRIES

INTRODUCTION:

The robotics and automation industry is growing faster than ever since technology is changing quickly and more businesses are using it. Automation is changing how the world works in many fields, from manufacturing to healthcare to logistics. It is also starting a new industrial revolution.

STATISTICS AND GROWTH IN THE MARKET:

The global robotics industry is predicted to develop at a rate of 19.6% per year, from $31.9 billion in 2025 to $190.8 billion by 2035. In 2022, more than 517,000 industrial robots were put to work around the world, a 31% increase from the year before. Robot density is also going up. South Korea has the most robots per 10,000 workers, with almost 1,000 robots per 10,000 people. The global average is 141 robots per 10,000 workers.

Robots for service and medicine are also growing. More than 10 million surgeries have been done with robotic devices like the da Vinci Surgical System. The agricultural robotics market, on the other hand, is expected to reach $11.6 billion by 2025, which shows that automation is being used in more and more ways.

GLOBAL USE AND MAIN FACTORS:

The US, China, South Korea, Germany, and India are all striving for large-scale automation projects. In India, the number of robot installations went up by 59% in 2023. This was due to government programs and the digitalization of businesses. The main reasons for this global change are rising labor costs, an aging workforce, and the need for more productivity.

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

IMPROVEMENTS IN TECHNOLOGY:

New technologies are changing what robots can do:

- Collaborative robots (cobots) that can work securely with people
- Autonomous Mobile Robots (AMRs) for delivery and warehouses
- AI and machine learning for seeing, making decisions, and planning maintenance ahead of time
- 5G and edge computing make robots move quicker and more responsively.
- Cloud and IoT working together for centralized control and analysis

Humanoid robots like Tesla Optimus and Boston Dynamics' Atlas are going beyond what is possible. The humanoid robot industry is expected to reach more than 2 million units by 2035, which may add more than $1.7 trillion to the global economy each year.

WHAT WILL HAPPEN IN THE FUTURE:

The future of robots involves;

- Hyperautomation: Making both mental and physical tasks automatic.
- Smart factories are manufacturing systems that use AI and can control themselves.
- Robots in the service sector: robots in retail, hotels, and personal care.
- Sustainable Automation: robots that are good for the environment and use less energy and make less trash.

JOBS IN ROBOTICS AND AUTOMATION:

The growth of automation is not only taking jobs away; it's also making new ones. Some important employment roles that are becoming available in this field include:

- Robotics engineers are people who design and build robots.
- Automation Technicians (fixing and maintaining things)
- Experts in AI and machine learning
- Engineers in Mechatronics
- Data analysts for optimizing systems and predicting maintenance
- Robot Programmers and Operators
- System Integrators and IoT Designers
- Robots that help with healthcare

CONCLUSION:

The worldwide industrial landscape is changing because of robotics and automation. The sector promises not only more efficiency and innovation, but also a lot of new job prospects as it continues to grow and be adopted. People that are willing to change and work with smart machines will have a bright future.

~DR. SACHIT TS

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

The Role of Mechanical Engineering in Advancing Renewable Energy Systems

ENGINEERING THE GREEN SHIFT

Renewable energy systems are at the forefront of combating climate change and reducing our dependence on fossil fuels. These systems harness natural sources like sunlight, wind, water, and biomass to produce clean and sustainable energy.
Mechanical engineering plays a vital role in designing, optimizing, and implementing these systems to ensure they are efficient, reliable, and affordable

KEY TYPES OF RENEWABLE ENERGY SYSTEMS

- Solar Energy: Engineers enhance photovoltaic panels and solar thermal systems, improve heat management, and design solar trackers and energy storage.
- Wind Energy: Mechanical engineers design turbine blades, improve structural strength, and choose durable materials for longer-lasting systems.
- Hydropower: Efficient turbines and pumps designed by engineers boost the energy output of hydroelectric plants.
- Biomass & Biogas: Mechanical innovations help convert organic waste into energy more effectively

CORE ENGINEERING PRINCIPLES

- Energy Conversion: Turning mechanical, thermal, or chemical energy into electricity.
- Thermodynamics: Optimizing heat and energy use for maximum efficiency.
- Materials Science: Using durable, high-performance materials.
- Structural Analysis: Ensuring components like blades and panels are strong and long-lasting

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

INNOVATION & FUTURE OUTLOOK

Mechanical engineers are driving advances in:

- Making current technologies more efficient and cost-effective.
- Integrating multiple renewable sources for better reliability.
- Developing better energy storage and new materials.
- Supporting policy and infrastructure planning for sustainable growth

CONCLUSION

Mechanical engineering stands at the heart of the renewable energy revolution. From designing advanced solar panels and wind turbines to developing efficient hydro systems and waste-to-energy technologies, mechanical engineers are making sustainable energy more accessible and reliable than ever before.

By applying principles of thermodynamics, energy conversion, structural analysis, and materials science, they ensure that renewable energy systems are not only efficient but also durable and cost-effective. Their contributions extend beyond technical work they are also involved in innovation, research, and guiding policy decisions that shape our energy future.

As the world transitions away from fossil fuels, the expertise and innovation of mechanical engineers will be critical in scaling up clean energy solutions. Their role is not just to support this transition — they are actively leading it, creating technologies that can power a sustainable and resilient world for generations to come

~AKUL ABHILASH NAIR
2ND SEM, 1ST YEAR
MECHANICAL ENGINEER

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

FACULTY ACHIEVEMENTS

Mr. Shrikrishna M B actively participated in:

- A pre-conference workshop organized by IRIDM on 19th June 2025
- The subsequent two-day conference on Community-Based Disaster Management held at J N Tata Auditorium, IISc Bangalore during 20-21 June 2025

Key Outcomes:

- - Gained comprehensive understanding of disaster preparedness protocols
- - Enhanced knowledge of systematic approaches for disaster management
- - Valuable insights into community-oriented disaster mitigation strategies

CBDM INDIA 2025

International Conference on Disaster Resilience
Community Based Systems to Save Lives and Preserve Health
at J N Tata Auditorium, IISc, Bengaluru on 20th & 21st June 2025

CERTIFICATE
OF PARTICIPATION
This is to certify that

Shri Krishna Badiger

has participated as **Faculty/Delegate** in **CBDM INDIA 2025** at J N Tata Auditorium, IISc, Bengaluru on 20th & 21st June 2025

KMC has awarded 4 Credit Points for this Conference
KNC has awarded 16 Credit Points for this Conference

Dr Chandrika R Rao, Chairperson, Scientific Committee
Dr. Ram K Nair, Organising Secretary
Dr. (Flt Lt). M.A. Balasubramanya, Chairman, Organising Committee

CBDM INDIA 2025

International Conference on Disaster Resilience
Community based Systems to Save Lives and Preserve Health
19th June, Indian Railways Institute of Disaster Management, Bengaluru

CERTIFICATE
OF PARTICIPATION
This is to certify that

DR. SRIKRISHNA BADIGER

Has participated as ~~Faculty~~/Delegate in **CBDM INDIA 2025** at Indian Railways Institute of Disaster Management, Bengaluru on 19th June 2025

KMC has awarded 2 Credit Points for this Conference
KNC has awarded 8 Credit Points for this Conference

Dr Chandrika R Rao, Scientific Committee
Dr. Ram K Nair, Organising Secretary
Dr. (Flt Lt). M.A. Balasubramanya, Organising Chairman

Mr. Arun Karthik S & Dr. Murugesh M C

Attended a Faculty Development Program on Mental Wellness Awareness Training from NIMHANS (in-house trained certified faculty) on 19th and 20th June 2025

Dr. Sachit TS

- Publication: Machine learning and Taguchi optimization for wear rate analysis of hybrid composites (Q3 Scopus journal).
- Seed Grant: ₹2.00 lakhs for ”Humanoid Robot for Patient Companionship” (Co-PI: Dr. R. Suresh).
- Reviewer: Journal of Bio- and Tribo-Corrosion (Springer, IF: 6.8).

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Beyond the Books

Abhishek:

The man behind the lens

He is a first year Mechanical Engineering student, who has a talent for turning ordinary moments into visual masterpieces. As one of the creative forces behind the RUAS Cult Instagram page, his photos and videos have not only drawn admiration across campus but have also caught the attention of audiences beyond. His work is striking, stylish, and full of personality—just like him

Abhishek has been instrumental in capturing some of RUAS's most unforgettable moments. Whether it's the electrifying atmosphere of Akaira or the celebrations of National Technology Day, his lens has been there—beautifully framing the spirit and significance of every major event with skill and creativity.

@RUAS.CULT

https://youtu.be/1KE74KVvzZw?si=9lEr6PPTGX1wBsOp

https://www.instagram.com/ruas.cult?igsh=dTZ6d3EzNm1nZDZk

NAME : SAKSHI K YERI

(1ST YEAR, ROBOTICS ENGINEERING)

EVENT: LA SCENA

Description: Participated in various theatrical competitions including Nukkad Natak (street play) and Out of the Box (thematic skit) as part of a team.

Role & Contribution:

- In Nukkad Natak, portrayed dual roles of a concerned citizen and a politician, highlighting political issues through street theatre.
- In Out of the Box, played the role of a beautiful girl who assists a detective in solving her friend's (enemy's) murder, adding depth to the storyline with dramatic acting.

Achievements: Secured Second Prize in Out of the Box and received a participation certificate for Nukkad Natak.

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Strengthening Skills through Hands-On Learning!

The Basic Pneumatics Training Program was successfully conducted on 27th & 28th June 2025 at the MSRUAS–Janatics Advanced Training Centre, Bangalore, for the team from Mysore Wifiltronics Pvt. Ltd.

During the two-day program, participants gained valuable knowledge and practical experience in:

- Fundamentals of Pneumatic and Electro-Pneumatic systems
- Operation of Direction Control Valves, Cylinders, and FRL units
- Design and simulation of pneumatic circuits using ISO symbols
- Troubleshooting and fault-finding in pneumatic circuits
- Signal logic and basic automation control

The interactive practical sessions helped engineers strengthen their understanding of both theoretical principles and industrial applications, paving the way for efficient system design and automation practices in their workplace.

We sincerely thank Mysore Wifiltronics Pvt. Ltd. for deputing their team and encouraging a culture of continuous learning.

A special thanks to Janatics India Pvt. Ltd. for their expert support and collaboration in making this training program a meaningful and impactful experience.

We now look forward to the upcoming Advanced Pneumatics Training Program.

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

JANATICS LABORATORY

Modular Manufacturing System

Features

➢ Modular System
➢ Various technologies connected to Mechatronics and Automation
➢ Material handling techniques like conveyor, linear or rotary pick and place units
➢ Various combinations possible
➢ Robotics

Application

The Modular Manufacturing System is a miniature Factory Automation System which demonstrates the application of manufacturing processes and Automation Technologies. It enables user to learn and understand the following technologies connected to Mechatronics and Automation

➢ To build a mechatronics system for industrial scenarios
➢ To understand the concepts of technology Mechanics, Pneumatics, Vacuum, Electrical drives, Sensors, PLC controls, Robots and Communication interfaces
➢ To Learn about Mechanical set up of a Machine
➢ To learn about Pneumatic and Electrical actuators
➢ To learn about the Pneumatic & Electrical connections
➢ Selection of sensors for various applications
➢ Material handling techniques like conveyor, linear or rotary pick and place
➢ PLC programming using Ladder Logic
➢ Fault finding techniques

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Industrial Visit

On 9th June 2025, the 4th semester Mechanical Engineering students embarked on an industrial visit to the Shivanasamudra Hydroelectric Power Plant. This visit provided valuable insights into the functioning and infrastructure of one of Karnataka's oldest hydroelectric facilities

The students were accompanied and guided by Dr. Ananth S. I and Mr. Arun Karthik S, whose expertise and support enriched the learning experience, making it both informative and engaging.

EDITORIAL TEAM

PATRONS

Prof. Kuldeep Kumar Raina
Vice Chancellor , RUAS

Dr. Sarat Kumar Maharana
Dean , FET

CHIEF EDITOR

Dr. Dayananda B S
Head, ME

EXECUTIVE EDITOR

Mr. Naveen Kumar K H
Assistant Professor

Mr. Sandeep N
Assistant Professor

MANAGING EDITORS

Mr. Rathan Raj N
2nd sem, MECHANICAL

Miss. J V Renuka K
2nd sem, MECHANICAL

Mr.Akul Abhilash Nair
2nd sem, MECHANICAL