MECHANICAL ENGINEERING

PROCEEDINGS OF

NATIONAL CONFERENCE

Recent Trends in Mechanical Engineering (RTME-2025)

25th & 26th April 2025

VIDYA JYOTHI
INSTITUTE OF TECHNOLOGY
AN AUTONOMOUS INSTITUTION

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Vidya Jyothi Institute of Technology

(An Autonomous Institution)

(Accredited by NAAC, Approved by AICTE New Delhi & Permanently Affiliated to JNTUH)

Aziz Nagar Gate, C.B.Post, Hyderabad-500075

Proceedings of

National Conference
on
Recent Trends in Mechanical Engineering
(RTME 2025)

25th & 26th, April 2025

Organized by

DEPARTMENT OF MECHANICAL ENGINEERING

(Accredited by NBA)

National Conference
on
Recent Trends in Mechanical Engineering (RTME 2025)

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About the college

Vidya Jyothi Institute of Technology (VJIT), established in 1998, is committed to fostering scientific temper and promoting world-class professional and technical expertise. Situated in a lush green campus with a built-up area of 31,312 square meters, the institute provides an ideal setting for academic and research pursuits. VJIT is approved by AICTE, permanently affiliated to JNTUH, granted autonomous status by the UGC, and accredited with an A+ grade by NAAC. It was also ranked under the NIRF Innovation category in 2023. With a strong focus on technical knowledge, innovation, and entrepreneurship, VJIT admits 1320 students in B.Tech, 114 in M.Tech, and 120 in MBA programs each year. It is among the most preferred institutions for aspiring engineers and management students. The institute offers undergraduate programs in Civil Engineering (CE), Electrical & Electronics Engineering (EEE), Mechanical Engineering (ME), Electronics & Communication Engineering (ECE), Computer Science & Engineering (CSE), Information Technology (IT), Artificial Intelligence (AI), CSE (Data Science), and CSE (AI & Machine Learning). The departments of CSE, ECE, EEE, ME, IT, and CE are accredited by the NBA, demonstrating a commitment to academic excellence. VJIT has 325 faculty members, with 30% holding doctoral degrees across various disciplines. The departments of CSE, ECE, EEE, and ME have JNTUH-recognized research centers, fostering a robust research culture supported by projects funded by government agencies. The institute has also pioneered industry collaborations in Telangana through MoUs with leading organizations such as Qlik, Virtusa, EPAM, IICT, and ESC. VJIT maintains high standards in technical education through active memberships in professional bodies like ISTE, IEI, CSI, IEEE, and IETE.

About the Department

The Department of Mechanical Engineering offers both an undergraduate program and a postgraduate program with a specialization in CAD/CAM. The department is supported by a team of 21 qualified faculty members, including 6 Ph.D. holders, who bring with them rich experience in teaching and research. The faculty members are actively engaged in publishing their work in reputed peer-reviewed journals, reflecting their commitment to academic excellence and innovation. The department maintains strong ties with leading industries and R&D organizations, enabling collaboration on real-world engineering challenges. It is currently involved in handling funded projects from DST and AICTE, along with undertaking consultancy assignments, thereby contributing to both academic and industrial advancements.

About the Conference

The objective of **Recent Trends in Mechanical Engineering (RTME2025)** Conference is to create awareness among young Mechanical Engineers about the current advances in Research and the importance of the knowledge of solving real-life and industrial problems in the process of achieving individual, collective and societal goals with sustainable technology, processes and products. The conference aims at inspiring young minds by presenting a platform to listen to eminent Researchers and achievers and also to present their work in front of experts and peers.

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Message from Secretary and Correspondent

Dr. PALLA RAJESHWAR REDDY
Secretary and Correspondent,
MLA-Jangaon,Telangana,
Vidya Jyothi Institute of Technology,
Chief Patron- RTME2025

It gives me immense pleasure to know that the Department of Mechanical Engineering is organizing the **"Recent Trends in Mechanical Engineering (RTME 2025)"** conference on **25th and 26th April 2025**. I believe that this conference will provide a unique platform for connecting with experts from various institutions and exchanging valuable ideas on the recent advancements and innovations in Mechanical Engineering.

I am confident that this conference will play a crucial role in fostering proactive research and development activities, particularly in the areas of sustainable technology, processes, and products. The discussions will address the growing challenges of society, focusing on how cutting-edge developments in mechanical engineering can provide solutions to real-world industrial problems. The conference will offer a fantastic opportunity to explore advanced topics such as **Design Engineering**, **Thermal Engineering**, and the transformative impact of **3D Printing** and **Materials Engineering** in shaping the future of manufacturing and technology.

Special thanks to all the speakers, authors, and co-authors for their valuable contributions to **RTME 2025**. I look forward to your gracious presence and hope you have an enriching experience at the conference. I also extend my congratulations to the Conference Chair, Conveners, and the organizing team for taking the lead in making this event a reality.

Dr. PALLA RAJESHWAR REDDY

Message from Principal

Dr. A. SRUJANA
Principal,
Vidya Jyothi Institute of Technology,
Patron - RTME 2025

I congratulate the Department of Mechanical Engineering for organizing the **"Recent Trends in Mechanical Engineering (RTME 2025)"** conference on **25th and 26th April 2025**. This conference aims to foster innovative ideas and methodologies for addressing the challenges faced by mechanical engineers today. It will serve as an excellent platform for identifying and discussing the issues encountered by faculty members, research scholars, students, and industry professionals in the field of Mechanical Engineering.

I am confident that the participation of eminent scholars and engineering graduates from various parts of the country will provide a significant boost to ongoing research and innovation in areas such as Design Engineering, Thermal Engineering and Manufacturing Engineering. The exchange of ideas at this conference will undoubtedly pave the way for future advancements in these critical areas.

I would like to extend my heartfelt thanks to all the contributors who have shared their research work for this conference. I also appreciate the efforts of the various committees involved in organizing this event and ensuring its success. I trust that all participants will benefit from insightful discussions and will return with valuable knowledge to further their research and professional growth.

I convey my best wishes to the Department of Mechanical Engineering and the Conference Chair for a successful and enriching conference. I look forward to the great success of **RTME 2025**.

Dr. A. SRUJANA

Message from Dean

Dr. A. PADMAJA
Dean, Accreditation & Rankings,
Vidya Jyothi Institute of Technology,
Executive Committee – RTME 2025

My heartiest congratulations to the faculty of the Department of Mechanical Engineering for organizing the **"Recent Trends in Mechanical Engineering (RTME 2025)"** conference on **25th and 26th April 2025**. I am confident that this conference will address the challenges and recent advancements in the domain of Mechanical Engineering, particularly in emerging fields like **3D Printing**. The conference will bring together experienced faculty and industry professionals to discuss and present papers on the latest trends and technologies. I believe that the participants will gain valuable insights into **3D Printing** and other cutting-edge technologies, which will help them, stay ahead in this rapidly evolving field.

My best wishes to all the participants and organizers of **RTME 2025**. May the conference be a great success and foster meaningful discussions and collaborations in the field of Mechanical Engineering.

Dr. A. PADMAJA

Message from Academic Coordinator

Mrs. G. SRILATHA
Academic Coordinator,
Vidya Jyothi Institute of Technology,
Executive Committee – RTME 2025

It gives me immense pleasure to welcome all the delegates and participants to the **"Recent Trends in Mechanical Engineering (RTME 2025)"** conference on **25th and 26th April 2025**, organized by the Department of Mechanical Engineering at Vidya Jyothi Institute of Technology, Hyderabad.

I believe that this conference presents a unique opportunity to engage with researchers, engineers, and scientists from across the globe, exploring the latest trends in Mechanical Engineering. I am confident that the eminent speakers will provide valuable insights on a range of cutting-edge topics, including the **Role of AI-ML in Mechanical Engineering** and **Embedded Systems in Robotics**, **3D**. These discussions will offer fresh perspectives and create an excellent platform for participants to interact, exchange ideas, and foster collaboration.

I extend my heartfelt congratulations and best wishes to the Conference Chair, Conveners, and the entire organizing team for their sincere efforts in hosting this conference. May the conference be a great success and lead to fruitful discussions and advancements in the field of Mechanical Engineering.

Mrs.G. SRILATHA

Message from Conference Chair

Dr. G. SREERAM REDDY
Professor & HoD,
Department of Mechanical Engineering,
Vidya Jyothi Institute of Technology,
Conference Chair- RTME 2025

I congratulate the Department of Mechanical Engineering for organizing the **"Recent Trends in Mechanical Engineering (RTME 2025)"** conference on **25th and 26th April 2025**. I would like to convey my best wishes to all the participants of this conference and encourage them to carry forward the knowledge and insights gained from the event. We are pleased that this conference has attracted numerous research contributions from both academic and industrial research groups. The quality and quantity of submissions have been outstanding, reflecting the growing interest in the field. We extend our sincere thanks to all the contributing authors and a special acknowledgment to our technical program committee members, external reviewers, and organizing committee members for their excellent efforts in reviewing a large number of high-quality research papers.

DR. G. SREERAM REDDY

Message from Convener

Dr. V PHANINDRA BOGU
Associate Professor
Department of Mechanical Engineering,
Vidya Jyothi Institute of Technology,
Convener - RTME 2025

It is our pleasure to welcome you all to the Recent Trends in Mechanical Engineering (RTME 2025) conference, to be held on 25th and 26th April 2025. This conference will provide an excellent platform for the exchange of knowledge based on the latest research and will serve as an essential part of academic development in the field of Mechanical Engineering.

The role of Mechanical Engineering in the advancement of modern technologies is widely recognized, with significant impacts on industries and societal development. The rapid advancements in areas such as Design Engineering, Thermal Engineering, Manufacturing Engineering, 3D Printing, and Materials Engineering are pivotal in shaping the future of technology. Additionally, the increasing importance of Industrial Engineering, AI-ML in Mechanical Engineering, and the Role of Embedded Systems in Robotics is evident in addressing modern engineering challenges. Moreover, the exploration of Multipurpose Materials and their Applications is vital for driving sustainable solutions.

We are confident that the innovative ideas emerging from this conference will offer valuable perspectives on the challenges being discussed and provide solutions to key issues in Mechanical Engineering.

We extend our best wishes to all the participants and hope you have an enriching learning experience during this conference.

National Conference

on

Recent Trends in Mechanical Engineering (RTME-2025)

Organized by Department of Mechanical Engineering

Program Schedule					
Date & Time	**10:00 to 10.30**	**10:30 to 11:00**	**11:00 to 12:00**	**12:00 to 12:40**	**12.40 to 3.20**
25-04-2025	Inauguration	Guest Lecture	Presentations	LUNCH	Presentations
26-04-2025	Presentations				Valedictory

PRESENTATION SCHEDULE

Sl. No.	Paper ID	Author Name	Title	Page. No
1	D301	Mohammed Asif Kattimani, khaja Salwa uddin, Abdul Sameeullah khan, Mohd Shajee uddin	Fault detection in metallic beam using vibrational analysis by fem	1
2	D302	Mohammed Asif Kattimani, Mohd Khalid Ahmed, Mohammed Abdul Jabbar, Mohammad Hazee, Nawaf Ibn Kamil	Design and analysis of a spray dryer	2
3	D303	M. Mohd Nemath	Comparative Analysis on Dimensional Accuracy of FDM Printed Skull with Human Dry Skull	3
4	D304	S Ramakrishna, Mohammed Abdul Rahman, Yawar Shah Khan, Mohammed Abdul Rahman, Lavareddy Ganeshwari	Applications of 3D Aided Design in Architecture and Planning	4
5	D305	K. Prasanna Kumar Reddy, K. Varshit, P. Karthik Reddy	Computational modeling and performance analysis of turbine impellers	5
6	D306	S. Ramakrishna, V. Phanindra Bogu, Shaik Ismail, P Raghuram Reddy, M Mallesh	Effect of stress ratio on fatigue life of structural steel	6

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