

Issue 4 | Volume 1 | May 2025

# THE MECHAZINE



**DEPARTMENT OF MECHANICAL ENGINEERING**

**NATIONAL ENGINEERING COLLEGE**

(An Autonomous Institution Affiliated to Anna University, Chennai)

K.R. Nagar, Kovilpatti - 628503



## From the HoD's desk.....



It is my pleasure to introduce this magazine **MECHAZINE**, a testament to the NEC, Mechanical Engineering Association's unwavering dedication to fostering innovation, collaboration, and excellence in our field. As the Head of the Department of Mechanical Engineering, I am honoured to witness the Association's continuous efforts in promoting cutting-edge research, knowledge sharing, and community building. This technical magazine will provide a glimpse of student and faculty contributions made during academic year 2024-2025.

This publication embodies our department's mission to inspire and empower the next generation of mechanical engineers, equipping them with the skills, expertise, and vision required to tackle complex global challenges. The Association's commitment to promoting interdisciplinary dialogue, industry partnerships, and student engagement is truly commendable.

I extend my gratitude to the Mechanical Engineering Association's leadership, members, and contributors for their tireless efforts in making this magazine a reality. Your passion and commitment to advancing our field are invaluable.

I invite you to explore this magazine, and I am confident that it will inspire thought-provoking discussions, spark new ideas, and strengthen our community's resolve to shape a better future through mechanical engineering. At the end, I would like to thank editorial board members and hope that our collective efforts stimulate further progress in this domain of activity with strong determination at both national and international levels.

We welcome you for any suggestion and contribution for the betterment of this magazine in the forthcoming editions.

Sincerely,  
**Dr S IYAHRAJA,**  
**Head of the Department/Mechanical Engineering,**  
**National Engineering College,**  
**K R Nagar, Kovilpatti - 628503**

## **VISION:**

- Producing globally competitive Mechanical Engineers with social responsibilities.

## **MISSION:**

- Imparting quality education by providing excellent Teaching-Learning environment.
- Inculcating qualities of continuous learning, professionalism, team spirit, communication skill and leadership with social responsibilities.
- Promoting leading-edge research and development through collaboration with academia and industry.

## **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):**

- PEO1: Graduates will have successful profession in Mechanical/Allied Industries or Research/Academics or Business Enterprise.
- PEO2: Graduates will be able to broaden their horizons beyond Mechanical Engineering to address the societal and environmental concerns.
- PEO3: Graduates will have the attitudes and abilities of leaders to adapt the changing global scenario.

## **PROGRAMME SPECIFIC OUTCOMES (PSOs):**

- PSO1: Apply the concepts of Engineering Design to design, analyze and develop the mechanical components and systems using the different analytical/CAD/experimental tools.
- PSO2: Apply the concepts of Thermal Engineering to design, analyze and develop the flow and energy systems using the different analytical/experimental/software tools.
- PSO3: Apply the concepts of Production, Industrial Engineering and Management for analysis, optimization and development of mechanical systems.

## JOURNAL PUBLICATIONS

*Warmest Congratulations to the Distinguished Faculty Members of the Mechanical Engineering Department on the commendable publication of their recent research works in prestigious international and national journals. These scholarly endeavors stand as a powerful reflection of your persistent pursuit of academic distinction, commitment to high-impact research, and passion for knowledge advancement. Your groundbreaking studies, underpinned by analytical rigor and innovation, continue to shape the frontiers of mechanical engineering. By addressing real-world engineering challenges and presenting forward-thinking solutions, your work is not only relevant but also transformative—adding substantial value to the global engineering discourse. These achievements fortify the department's stature as a vibrant center of academic excellence and research innovation. They exemplify the values of scholarly inquiry and contribute significantly to positioning our institution on the global academic map. Furthermore, your success stories inspire the next generation of engineers to immerse themselves in research, sharpen their critical thinking, and adopt a problem-solving mindset. We are proud to celebrate your accomplishments and deeply appreciate your contributions to fostering a culture of excellence. As you continue to push intellectual boundaries and elevate the standards of mechanical engineering research, we eagerly anticipate the future breakthroughs you will achieve.*

NAME OF THE FACULTY	JOURNAL NAME	PUBLISHED DATE	IF SCI, IMPACT FACTOR
Dr.C.Veera Ajay	International Journal on Interactive Design and Manufacturing	March 2025	2.1
Dr.A.Andrews			
Dr.K.Thoufiq Mohammed			
Dr.R.Harichandran	Journal of Materials Engineering and Performance	April 2025	2.2

## NEC TECHFEST 2025 SYMPOSIUM

As part of NEC TECH FEST 2K25, a wide range of technical and non-technical competitions were conducted to bring out the best in student creativity, problem-solving, and hands-on skills. With enthusiastic participation from over 20 colleges, the event attracted more than 250 participants just for the competitions alone.

### TECHNICAL EVENTS:

- Paper Presentation – Ideas that inspire innovation
- Design-O-Mania (CAD Modelling) – Precision meets creativity
- Mr. Talent – The ultimate test of individual flair
- Techno Chill – A chill zone for logical games and tech quizzes
- Mech Connection – Connecting concepts in a fun and fast-paced relay
- Mr. Assembler – Assembling skills put to the ultimate test

### NON-TECHNICAL EVENTS:

- Technical AI Art & Meme Contest – Where engineering meets humor and creativity
- Miniature Roller Coaster Design Challenge – Fun-filled engineering in motion
- Scavenger Hunt – A thrilling race across clues and campus
- Rocket Launching Contest – Creativity taking flight!

These events brought energy and excitement to the campus and allowed students to showcase both their technical and creative prowess.

## NEC TECHFEST 2025 SYMPOSIUM

With a vision to provide hands-on learning and industrial exposure, NEC TECH FEST 2K25 offered four immersive workshops. Over 120 participants across disciplines attended these sessions, gaining practical knowledge and skills directly from experts in the field.

### WORKSHOPS CONDUCTED:

- **An Introduction to Geometric Dimensioning and Tolerancing** - Understand the language of engineering drawings for precision manufacturing.
- **Mastering CNC Precision** - Dive into the world of CNC machines, tool paths, and programming essentials.
- **Crafting Metal Composites – Stir Casting Method** - Learn the science and process behind creating metal matrix composites.
- **3D Prototyping and Reverse Engineering** - From scanning to modeling, explore the workflow of modern prototyping.

The workshops bridged the gap between classroom learning and real-world industrial applications, leaving participants with new insights and inspiration.

### IMMERSION REDEFINED – VR Experience Fun Corner:

One of the most talked-about attractions of NEC TECH FEST 2K25 was the Virtual Reality (VR) Experience Corner, which offered a glimpse into the future of engineering and interactive learning. From engineering simulations to virtual design exploration, students got to interact with next-gen technology in a fun, engaging setup.

Participants explored:

- Virtual mechanical assembly lines
- Immersive CAD environments
- Roller coaster physics simulations
- VR-based structural walkthroughs

The VR corner was a perfect blend of technology, entertainment, and education, leaving everyone with wide smiles and wide-open minds.

## NEC TECHFEST 2025 SYMPOSIUM



**NATIONAL ENGINEERING COLLEGE**  
**NEC TECH FEST 2K25**

A STAGE FOR MULTIDISCIPLINARY FUSION

**TECHNICAL EVENTS**

- PAPER PRESENTATION
- DESIGN-O-MANIA (CAD MODELLING)
- MR. TALENT
- TECHNO CHILL
- MECH CONNECTION
- MR. ASSEMBLER

**NON-TECHNICAL EVENTS**

- TECHNICAL AI ART & MEME CONTEST
- MINIATURE ROLLER COASTER DESIGN CHALLENGE
- SCAVENGER HUNT
- ROCKET LAUNCHING CONTEST

**WORKSHOPS**

AN INTRODUCTION TO INDUSTRIAL GEOMETRIC DIMENSIONING AND TOLERANCING

**MARCH 14&15 2025**

Faculty Coordinator: N. Muthu Saravanan - 8610606522  
Student Coordinator: Mr. Benial Raven D - 87548355

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**NATIONAL ENGINEERING COLLEGE**  
**NEC TECH FEST 2K25**

A STAGE FOR MULTIDISCIPLINARY FUSION

**WORKSHOPS**

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- Mastering CNC Precision
- Crafting Metal Composites - Stir Casting Method
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## NEC TECHFEST 2025 SYMPOSIUM



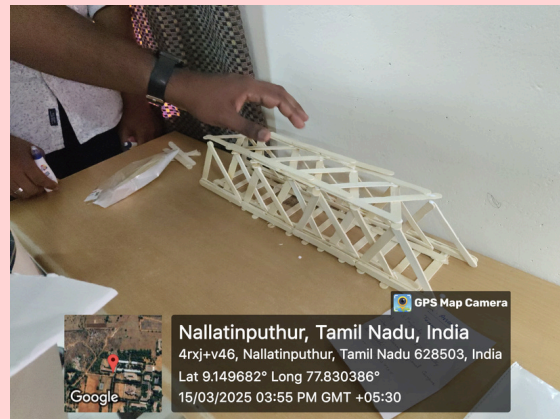
### Water Rocketry



### Paper Presentation



### Design O Mania



### Mr. Assembler



### Miniature Roller Coaster Challenge

## WINNERS AT MEGNAZZ 2K25

### Francis Xavier Engineering College, Tirunelveli



We are proud to celebrate the remarkable achievements of our student team from the Department of Mechanical Engineering, National Engineering College, Kovilpatti, who showcased their excellence at the 20th National Level Technical Symposium – MEGNAZZ 2K25, held on 4th April 2025 at Francis Xavier Engineering College, Tirunelveli. Our students Vijay Sabarish K, Samraj Kumar, Surya, Kabil, Muniya Prakash, and Jeya Karthick brought laurels to the institution by securing prizes in two highly competitive events during the symposium.

The team earned the First Prize in the “Mech Connection” event, where they demonstrated exceptional teamwork, technical understanding, and quick thinking under pressure. Additionally, they showcased their design and engineering visualization skills by winning a prize in the “CAD Modeling” event, proving their proficiency in mechanical design and software tools. These achievements reflect the students’ dedication, innovation, and strong grasp of fundamental engineering concepts. Organized by the Department of Mechanical Engineering at Francis Xavier Engineering College, the symposium provided a dynamic platform for engineering students from across the country to participate in practical, hands-on events and share knowledge. The award ceremony recognized the outstanding performances of participants, with our team standing out as a symbol of excellence and collaborative spirit. We extend our heartfelt congratulations to Vijay Sabarish K, Samraj Kumar, Surya, Kabil, Muniya Prakash, and Jeya Karthick for their well-deserved success. Their accomplishments not only bring pride to our institution but also inspire fellow students to pursue technical mastery and innovative thinking in their academic journey.

## WINNERS AT MECHNOTRON 2K25, Coimbatore Institute of Technology, Coimbatore



Nithin Ivan A, Maheshkumar M, and Vimal Raj S from Coimbatore Institute of Technology showcased exceptional teamwork and technical brilliance at Mechnotron 2k25, a national-level symposium that brought together some of the brightest minds in engineering. Representing their department with confidence and clarity, the trio participated in one of the key technical events and secured the Second Prize among several competitive teams. Their success was the result of a well-balanced combination of planning, innovative thinking, and efficient execution. While each member brought a unique skill set—ranging from analytical problem-solving to effective communication—the true strength of the team lay in their ability to collaborate seamlessly under pressure. Their achievement not only reflects their personal dedication but also highlights the culture of excellence nurtured at CIT. Their performance at the event serves as a source of inspiration for their peers and a proud moment for the institution.



## WINNERS AT SYNERGY 2025, NIT TRICHY

The Annual Mechanical Department Symposium of National Institute of Technology - One of the largest technical symposiums in South India, Synergy, conducted by the Mechanical Engineering Association of NIT Trichy, is a platform to connect upcoming mechanical engineers and enthusiasts, enabling them to learn more through exchange of ideas and information. Happening over a span of 3 days, Synergy showcases a myriad of impressive events, workshops, guest lectures and competitions, providing students with an opportunity to foster their raw talents and satiate their curiosity. Currently, Synergy draws a crowd of more than 2000 attendees, with participants joining from various corners of India, showcasing the diverse technical talent from across the nation. Our final year students participated and won various prizes including cash awards. A big shoutout to them and congratulations!



NAME	EVENT	ACHIEVEMENT
1. SATHYA SEELAN G 2. BENIAL RAVEN D	TRUSS IT	SECOND PRICE
	RESEARCH X	SECOND PRICE
	BRAINS AND BOLTZ	FIRST PRICE
1. SATHYA SEELAN G 2. BENIAL RAVEN D 3. ABINSASHA P 4. VIMAL RAJ S 5. RAMKUMAR S	MECHASCRAP	THIRD

## Celebrating Student Excellence in Industry Engagement

The Department of Mechanical Engineering proudly congratulates its students for securing internships at several esteemed organizations, including prestigious Government Public Sector Undertakings (PSUs) and leading private enterprises. These internship opportunities reflect the students' academic diligence, technical competence, and proactive engagement with industry expectations. By earning positions in such reputable institutions, our students have demonstrated their ability to bridge classroom learning with real-world applications. These experiences not only enhance their professional development but also contribute to building a robust foundation for future careers in engineering and innovation. We commend their dedication and commendable achievement, which continues to uphold the department's tradition of excellence and reinforces our strong industry-academia interface. Their success stands as an inspiration to their peers and underscores the effectiveness of our curriculum in preparing students for the evolving demands of the engineering sector.

NAME OF THE STUDENT	ORGANIZATION
SURIYA KUMAR S, VISHWA M, KAPILESHAN S V, RAMESHKANI T	HI-TECH CNC Automation Pvt. Ltd., Coimbatore

## Celebrating Student Excellence in Industry Engagement

NAME OF THE STUDENT	ORGANIZATION
BENIAL RAVEN D	 <p><b>Bureau of Indian Standards, Bengaluru</b></p>
PONE SORNA MUGESH P MAHESHKUMAR M	 <p><b>Indian Institute of Technology, Tirupati</b></p>



**National Engineering College**  
(Autonomous Institution)  
 K.R.Nagar, Kovvur - 628 503.  
 Estd : 1984

DEPARTMENT OF MECHANICAL ENGINEERING- 2026 BATCH

*Congratulations*

To our young engineer who has been selected for 3 to 6 month summer internship program in

**Bureau of Indian Standards (Bangalore Branch Laboratory)**

with stipend of Rs. 20,000 per month



**Benial Raven D**  
III Year MECH

www.nec.edu.in



**National Engineering College**  
(Autonomous Institution)  
 K.R.Nagar, Kovvur - 628 503.  
 Estd : 1984

DEPARTMENT OF MECHANICAL ENGINEERING- 2026 BATCH

*Congratulations*

To our young engineers who have been selected for two month summer internship program in

**Department of Mechanical Engineering IIT Tirupati**

14<sup>th</sup> May 2025 to 11<sup>th</sup> July 2025




**PONE SORNA MUGESH P**  
III Year MECH

**MAHESHKUMAR M**  
III Year MECH

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# PLACEMENTS

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ARUNGANESH S



**Package: 3.72 LPA**

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**Package: 4.5 LPA**

MUTHU KUMAR S

# PLACEMENTS



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DHINESH KUMAR S  
GOWTHAM S  
MOHAMED ZIYAUDHEEN A N  
SARAVANAN P



**Package: 3.72 LPA**

THEGESH K



**Package: 3.6LPA**

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**Package: 3LPA**

GUHAN S

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YOGARANJITH K  
VIJAYARAJ S



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SHEIK SEYAD S



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**Package: 2.4LPA**

GOBI P

## RECENT ADVANCES IN SHAPE MEMORY ALLOY TECHNOLOGIES

Shape Memory Alloys (SMAs) have rapidly evolved from niche materials to smart solutions in high-performance engineering applications. One of the major breakthroughs in recent years is the development of High-Temperature SMAs (HTSMAs), such as NiTiHf and TiPd, which retain their shape-changing abilities even above 100°C—making



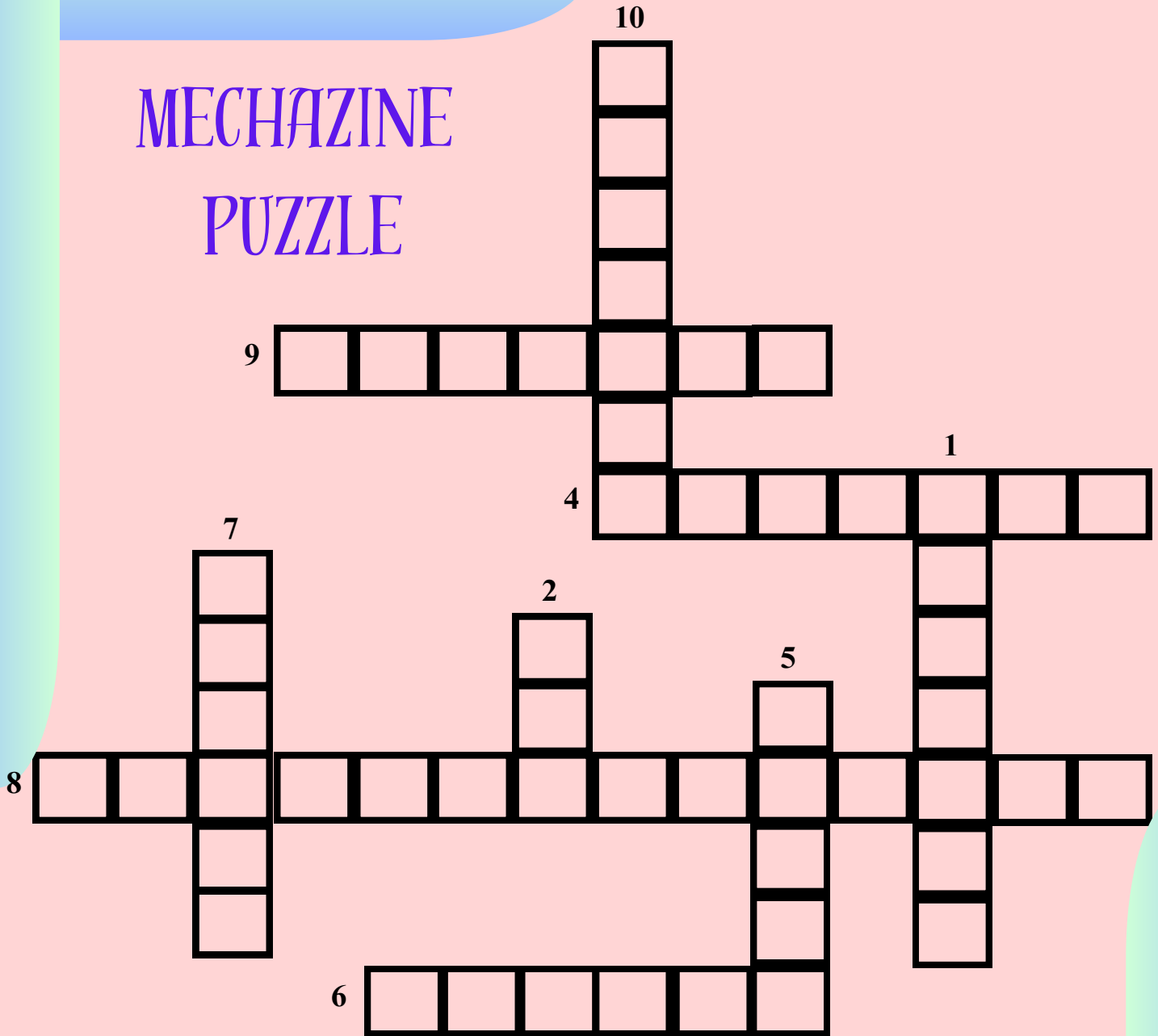
them suitable for aerospace engines and automotive exhaust systems. Additionally, 3D printing of SMAs using techniques like Laser Powder Bed Fusion has enabled the creation of complex, custom-designed actuators and biomedical implants. Another cutting-edge innovation is Magnetic Shape Memory Alloys (MSMAs), which respond to magnetic fields instead of heat, allowing for faster and more efficient actuation in robotics and micro-devices. In the field of soft robotics, SMAs are now embedded in flexible grippers and artificial muscles, enabling human-like motion for medical and wearable applications. Meanwhile, self-healing and self-deploying SMA structures are being used in aerospace for deployable satellite components and morphing wings. On a microscale, SMA-based actuators are revolutionizing MEMS and NEMS technologies, finding use in lab-on-a-chip devices and drug delivery systems. In healthcare, bio-compatible SMAs are now used for smart stents and implants that adapt to body temperature, enhancing patient safety.

*inked by*

**THANGA JAGA MATHESH.I.M**

**3<sup>rd</sup> Year Mechanical Engineering Department**

## MECHAZINE PUZZLE



### ACROSS:

4. A mechanical unit that transmits power and alters torque and speed. (7)
6. A device that controls the direction or characteristics of fluid flow. (6)
8. Study of heat (14)
9. A rotating machine that extracts energy from a fluid flow. (7)

### DOWN:

1. A machine element that reduces friction between moving parts. (7)
2. Software used for creating precise drawings and models. (3)
5. A machine tool used for shaping metal or wood. (5)
7. Internal resistance of a material to external force. (6)
10. A process of joining two materials by melting them together. (7)

# EDITORIAL TEAM



Benial Raven D  
4th Yr Mech



Sathya Seelan G  
4th Yr Mech



Thanga Jaga Mathesh I.M  
3rd Yr Mech



Reffino D  
3rd Yr Mech