Sri Venkateswara College of Engineering

Department of Mechanical Engineering

JANUARY 2025

IGNITION NEWSLETTER

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About the Department

The department of Mechanical Engineering started its successful journey in 1985 and has been accredited by the NBA since 1998. It is recognized as a research center approved by Anna University, as well. The UG/PG courses offered by the department cover the thrust areas such as Thermal,Design, Manufacturing and Industrial Engineering and is supplemented by well – equipped laboratories, reputed research supervisors and dedicated faculty members. The department has the privilege of housing research cells– namely the Fibre Reinforced Composite (FRP) Cell, Engine Testing and Bio – Fuel Research cell, Tribology research cell,Welding research cell which are used extensively for research and consultancy projects.The department has completed sponsored research projects for a worth of more than 1.5 crore and consultancy projects for more than 75 lakhs. The department has established a center of excellence in Additive Manufacturing and Computer Integrated Manufacturing, which houses the facilities such as Digital Manufacturing, Robotics and HMI based Automation and 3D printers. The department has published more than 150 papers in peer reviewed journals during the last 4 years.

The following programs are offered by the department

1. B.E. Mechanical Engineering

2. B.E. Mechanical and Automation Engineering

3. M.E. Industrial Automation and Robotics

Vision

To be a leader in Higher Technical Education and Research by providing the state of the art facilities to transform the learners into global contributors and achievers.

Mission

1. To be renowned for offering Programs in the field of Mechanical Engineering that imparts competent technical knowledge along with skill, research& innovation, leadership and life skills needed for the students to contribute and achieve at global level.
2. To provide quality education encompassing recent technological developments by continuously upgrading the academic infrastructure thereby enhancing the technical knowledge of students, teachers and supporting staff which facilitates technical assistance to industrial and societal needs.
3. To offer need based training to the students in tools relevant to mechanical engineering.
4. To continuously upgrade the research facility and provide a conducive environment leading to continuous learning, development and transfer of knowledge.
5. To inculcate in students minds about Professional ethics, Human Values and Environmental issues in Engineering.

DISCOVERY DIGEST

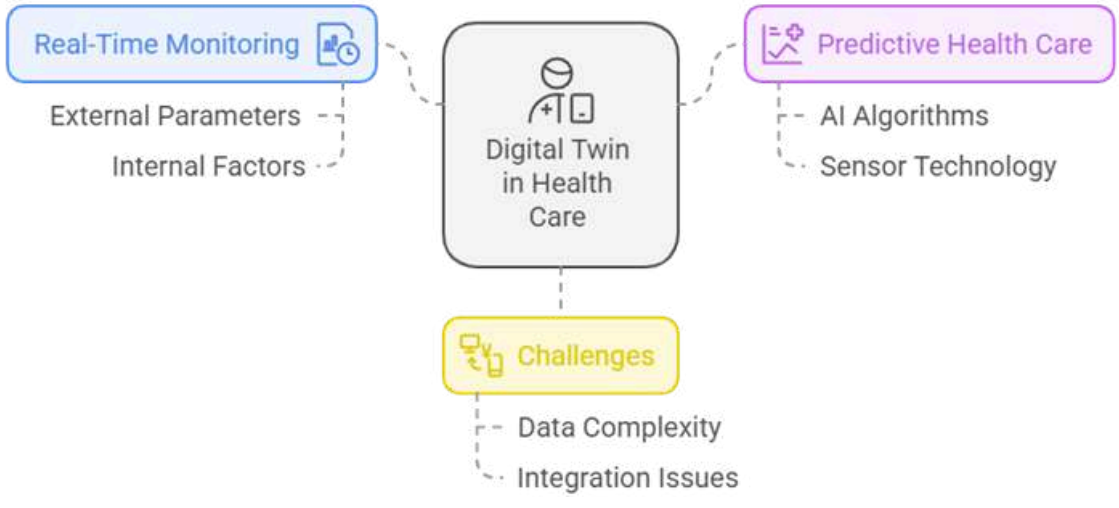
"Navigating the Frontiers"

Digital Twin in Health Care

Dr. A Saravanan

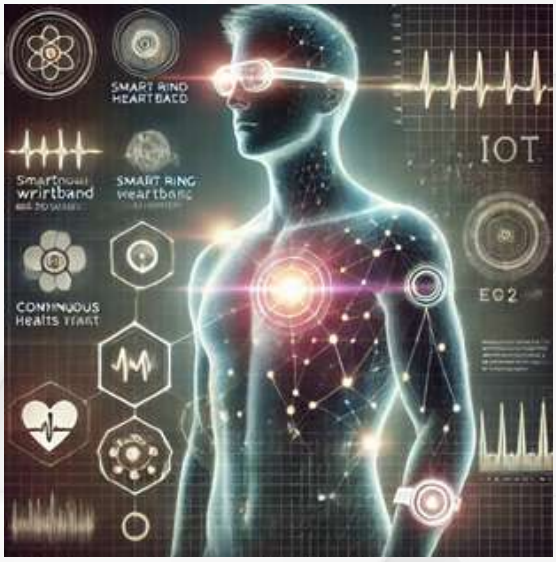
We live in a digital age where smart devices play a crucial role in various aspects of our daily lives. However, while technology has enhanced our convenience and lifestyle, it has also contributed to reduced physical activity, leading to health concerns such as obesity. Fortunately, technological advancements continue to offer innovative solutions to address such critical societal challenges. One such revolutionary technology is the Digital Twin.

A digital twin is a virtual representation of a real-world system or process that remains connected to its physical counterpart, enabling real-time monitoring and interaction. This dynamic connection allows the digital model to receive and process real-time data from the physical system, making it a powerful tool for analysis, prediction, and optimization. When extended to actively control the physical system, this concept evolves into a Cyber-Physical System (CPS).



Digital Twin in Health Care

In the context of health care, the system represents a human body, and the digital model can be developed within a smart device or a cloud-based platform. The key challenge lies in determining which parameters should be used to construct an effective digital twin and how seamless communication between the physical and digital models can be established. Collecting an overwhelming amount of human physiological data could lead to complexity and deviation from core objectives. Therefore, an efficient approach would be to focus on vital external parameters such as SpO_2 levels, heart rate, blood pressure, and body temperature, which can be measured non-invasively in real-time. On the other hand, internal factors like blood glucose levels and lipid profiles require controlled environments and blood samples for accurate assessment, making real-time integration more challenging.



The development of digital twins in health care has the potential to revolutionize personalized medicine, early disease detection, and remote patient monitoring. By leveraging advanced AI algorithms, sensor technology, and real-time data analytics, digital twins can enable predictive health care, reduce hospitalizations, and enhance overall patient outcomes.

As research in this field progresses, the integration of wearable devices, IoT-enabled health monitoring systems, and AI-driven diagnostics will pave the way for a more proactive and data-driven approach to human health management.

By
- Dr. A Saravanan,
Assistant Professor
MEC

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Research Grant Recieved:

Dr. S. Gopinath (Dean, IQAC & BIS Institution Nodal Officer), Mr. M. Nishal, and Mr. K. Ram Prasad (Standards Club Coordinators) *have received a grant of* ***₹4,50,000*** *from the* ***Bureau of Indian Standards (BIS)*** *for their research project titled "****Study of the E-commerce Logistics Operations and Services Parameters to Frame Guidelines and Requirements for E-Logistics Service Providers.****"*

This grant will support their efforts in developing industry standards for efficient and reliable e-logistics services. Congratulations to the team on this achievement!

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Research Publication:

Dr. G. Girish *published a research paper titled "**Analysis of Microstructure and Hardness of a Double-Layered AA7075 Build Developed by Friction Stir Additive Manufacturing**" in January 2025. The paper appears in the Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science. Congratulations on this significant contribution to materials and manufacturing research!*

Analysis of microstructure and hardness of a double-layered AA7075 build developed by friction stir additive manufacturing

G Girish View all authors and affiliations

OnlineFirst | https://doi.org/10.1177/09544062241312881

Contents | Get access | More

Abstract

In this work, a double-layered AA7075 build was formed using the friction stir additive manufacturing technique, and the microstructural evolution along the build and hardness were investigated. Build cross-section and microstructural evolution were conducted using optical macroscopy, electron backscattered diffraction, and transmission electron microscopy, while hardness measurement was conducted using a Vickers hardness tester. Solid-state deformation resulted in a defect-free build with a basin-shaped cross-section. Recrystallized microstructures were observed along the build due to dynamic recrystallization, with grain sizes measuring 2.32, 2.70, and 2.82 μm at the top, center, and bottom, respectively. Maximum hardness of 146.3 HV was observed at the top of the build, and the values dropped at the overlapped and bottom zones due to grain growth caused by excess thermal cycle. Enhancement in hardness is attributed to strain hardening, grain boundary strengthening, and Orowan strengthening mechanisms.

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Research Publication:

Mr. Arulkumar Muniyappan and Dr. Prem Ananth Muthuvel *published a research paper titled* ***"Enhanced Tribological Performance of Laser-Textured TiN-Coated Ti6Al4V Alloy Surfaces: A Comparative Study with Untextured Surfaces"*** *in* ***January 2025****. The paper was published in the journal Processes, Vol. 13(1), Article 204.*

Congratulations to the authors for their significant contribution to advanced materials and surface engineering research

Open Access Article

Enhanced Tribological Performance of Laser-Textured TiN-Coated Ti_6Al_4V Alloy Surfaces: A Comparative Study with Untextured Surfaces

by **Arulkumar Muniyappan** [1,*], **Prem Ananth Muthuvel** [1,*], **Anandhavelu Sanmugam** [2], **Mohammad Ahmad Wadaan** [3], **Almohannad Baabbad** [3], **Nallal Muthuchamy** [4,*] and **Kang Hyun Park** [4,*]

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Processes **2025**, *13*(1), 204; **https://doi.org/10.3390/pr13010204**

Submission received: 3 December 2024 / Revised: 31 December 2024 / Accepted: 10 January 2025 / Published: 13 January 2025

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Research Publication:

Dr. P. Raghu *and his research scholar* ***S. Venkatesan*** *published a research paper titled "****Influence of the Injector Nozzle on Hydrogen-Powered Juliflora Biodiesel in HCCI Engines: A Surface Response Methodology Approach****" in Global NEST Journal, Vol. 27, No. 1, Article 06903. The journal is SCIE-indexed with an* ***H-index of 38*** *and an impact factor of* ***1****. Congratulations to the authors for their significant contribution to sustainable energy and engine performance research!*

Global NEST Journal, Vol 27, No 1, 06903

Global NEST

Influence of the injector nozzle on hydrogen-powered juliflora biodiesel in HCCI engines: a surface response methodology approach

Venkatesan S.[a], Raghu P.*[,b] and Nagaraj M.[c]

[a]Research Scholar, Department of Mechanical Engineering, Sri Venkateswara College of Engineering, Pennalur, Sriperumbudur–602 117, Tamilnadu, India.

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Received: 18/10/2024, Accepted: 03/12/2024, Available online: 19/12/2024

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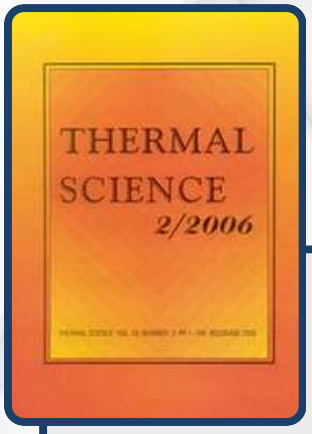
https://doi.org/10.30955/gnj.06903

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Research Publication:

Dr. V. Sridharan *and his research scholar* ***Mr. Selvamani Tamizhselvan Lakshmanan*** *published a research paper titled "****Enhancing Solar Collector Performance: An Experimental Study on Zigzag Rectangular Angled Strips and Nanofluid Integration****" in Thermal Science (2024), Online-First Issue 00, Pages 287-287. The journal is indexed in Web of Science (WoS) and Scopus with an* ***impact factor of 1.1****. Congratulations to the authors for their significant contribution to renewable energy research!*



Thermal Science 2024 OnLine-First Issue 00, Pages: 287-287
https://doi.org/10.2298/TSCI240709287S
Full text (1445 KB)

Enhancing solar collector performance: An experimental study on zigzag rectangular angled strips and nanofluid integration

Selvamani Tamizhselvan Lakshmanan *(Department of Mechanical Engineering, Rajalakshmi Engineering College, Thandalam, Tamil Nadu, India), tamizhiisha@yahoo.com*
Veerapuram Sridharan *(Department of Mechanical Engineering, Sri Venkateswara College of Engineering, Pennalur, Sriperumbudur, Tamil Nadu, India.)*

Solar thermal collectors have become an increasingly popular technology for harnessing renewable energy and have gained significant attention as a sustainable solution to meet the growing global energy demands. These systems efficiently convert solar radiation into thermal energy, making them a viable option for a variety of applications across the residential, commercial, and industrial sectors. The use of nanofluids as the working fluid in solar thermal collectors has been extensively investigated as the incorporation of nanoparticles has been demonstrated to enhance the thermal properties of these systems ultimately leading to improvements in their overall efficiency. This experimental study investigates the performance of a conjugate flat-plate solar collector with the inclusion of zigzag rectangular shaped angled strips inside the absorber tube. The study also explores the use of various nanofluids such as MgO/DIW, ZnO/DIW, and Al2O3/DIW at a 1.0% volume concentration as the working fluid to determine their potential for enhancing the thermal efficiency of the solar collector. The

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Mr. Arulkumar Muniyappan *successfully completed the SWAYAM online course on "**Industrial Automation and Drives**", a 4-credit course, with a consolidated score of **63%** in the proctored examination held on 1**5th December 2024**. The course was offered by Prof. Sanjay Agrawal and Mr. Rahul Baghel of Chhattisgarh Swami Vivekanand Technical University, Bhilai.*

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ignou THE PEOPLE'S UNIVERSITY

SWAYAM ONLINE COURSE CERTIFICATION

This Certificate is awarded to

Arulkumar Muniyappan

for successfully completing the 4 credit course

Industrial Automation and Drives

with a consolidated score of 63% marks

in the proctored examination held on 15-12-2024

*offered by **Prof. Sanjay Agrawal and Mr. Rahul Baghel** of*

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Roll No:TN01001078

Uma Kanjilal

Prof. Uma Kanjilal
National Coordinator
Indira Gandhi National Open University, New Delhi

Issued On: 28/01/2025

Mr. Ankit Arora
Registrar
Chhattisgarh Swami Vivekanand Technical University, Bhilai

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Recognition for Contribution to Innovation:

Dr. C. Senthamaraikannan *received a Certificate of Appreciation for his significant contribution as a reviewer of innovative ideas under the* ***INSPIRE-MANAK*** *(Million Minds Augmenting National Aspiration and Knowledge) program for the* ***academic year 2024-25****. His dedication to fostering creativity and nurturing future innovators is highly commendable. Congratulations on this recognition!*

विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF SCIENCE & TECHNOLOGY

राष्ट्रीय नवप्रवर्तन प्रतिष्ठान – भारत
National Innovation Foundation - India

inspire

inspire - manak

million minds augmenting national aspiration and knowledge

Certificate of Appreciation

This is to certify that

Dr C Senthamaraikannan of Sri Venkateswara College of Engineering, Chennai, Tamil Nadu

has significantly contributed as reviewer of innovative ideas submitted under the **INSPIRE - MANAK** program for the academic year 2024-25.

We sincerely acknowledge and appreciate his dedication and efforts in fostering creativity and nurturing the ***Innovators of Tomorrow***.

Dr. Arvind C. Ranade
Director
National Innovation Foundation - India

Place: Gandhinagar, Gujarat
Date: 13.01.2025

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Recognition for Best Emerging Mentor:

Dr. Suseel Jai Krishnan S *was recognized as one of the Best Emerging Mentors, representing* ***SVCE****, at the* ***Bharat Mobility Global Expo 2025****. The event, organized by ATMA India (****Automotive Tyre Manufacturers Association India****), was held on* ***21st January 2025*** *at* ***Bharat Mandapam, New Delhi,*** *the prestigious venue of the G20 Summit 2023. This national-level initiative was attended by* ***Honourable Minister Shri. Nitin Gadkari*** *ji and supported by the Ministry of Commerce and Industry, under the vision of* ***Honourable Prime Minister Shri. Narendra Modi*** *ji. Congratulations to Dr. Suseel Jai Krishnan S for this well-deserved recognition!*

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Recognition for Contribution to BIS Initiatives:

The Bureau of Indian Standards (BIS) extended heartfelt appreciation to ***Dr. S. Gopinath (Dean, IQAC & BIS Institution Nodal Officer), Mr. M. Nishal,*** *and* ***Mr. K. Ram Prasad (Standards Club Coordinator)*** *for their unwavering support and dedication to fostering student engagement in BIS initiatives at Sri Venkateswara College of Engineering.*

Students from the Standards Club played a pivotal role as volunteers in coordinating various events during the World Standards Day Celebration at Kalaivanar Arangam. Dr. S. Gopinath, Mr. M. Nishal, and Mr. K. Ram Prasad consistent efforts in nurturing talent and promoting active participation were highly recognized.

Congratulations to the faculty members for their contributions, and we look forward to continued collaboration with BIS!

FACULTY ACHIEVEMENT

"A Glimpse of Remarkable Achievements"

Training program attended: *Eight supporting staff members successfully completed the CNC Milling Operation and Programming with FANUC Oi - MC training program at National Skill Training Institute, Guindy, Chennai, under RDSDE, Tamil Nadu. The one-week course was held from 6th to 10th January 2025, enhancing their technical expertise in CNC machining. The trained staff members are:* ***Mr. Baskaran A, Mr. Dinesh Kumar K., Mr. Rajesh B., Mr. Raman E., Mr. Sakthivel K., Mr. Seenu V., Mr. Senthilkumar N., Mr. Subash N.*** *Congratulations to all for successfully completing the training program!*

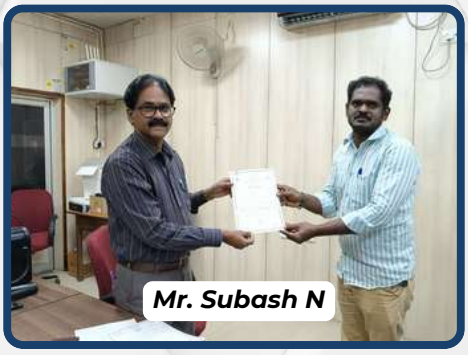

Mr. Raman E


Mr. Seenu V


Mr. Rajesh B.


Mr. Dinesh Kumar K


Mr. Senthilkumar N


Mr. Subash N


Mr. Sakthivel K


Mr. Baskaran A

STUDENTS ACCOLADES

"Diverse Talents, One Campus Spirit"

Kaustubha Kumar Manchi

S.B. Barath Sriram

Research Paper Published:

*Congratulations to **Kaustubha Kumar Manchi** and **S.B. Barath Sriram**, students of II Year B.E. Mechanical Engineering, along with faculty members **Mr. M. Nishal, Mr. K. Ram Prasad**, and **Dr. S. Saravanan (Jr.)**, for publishing their research paper titled "**Ammonia-Based Exhaust Heat Recovery System for Hybrid Vehicles**" in the Journal of University of Shanghai for Science and Technology (ISSN: 1007-6735), November 2024. The journal is Scopus-indexed, marking a significant contribution to sustainable automotive technologies. Congratulations to the entire team!*

Mr. M. Nishal

K. Ram Prasad

Dr. S. Saravanan (Jr.)

STUDENTS ACCOLADES

"Diverse Talents, One Campus Spirit"

Achievement at Road Safety Ideathon 2025: *A team of II-year Mechanical Engineering students (2023-27 batch), under the guidance of Dr. Suseel Jai Krishnan S, secured the Second Prize in the Sustainable Tyres theme at the Road Safety Ideathon 2025.*

Winning Team Members: ***Mr. Harish, Mr. Sharath V. S., Mr. Abishak***

This prestigious event was part of the ***Bharat Mobility Global Expo 2025****, attended by Honourable Minister* ***Shri. Nitin Gadkari*** *ji and supported by the Ministry of Commerce and Industry under the initiative of Honourable* ***Prime Minister Shri. Narendra Modi*** *ji.*

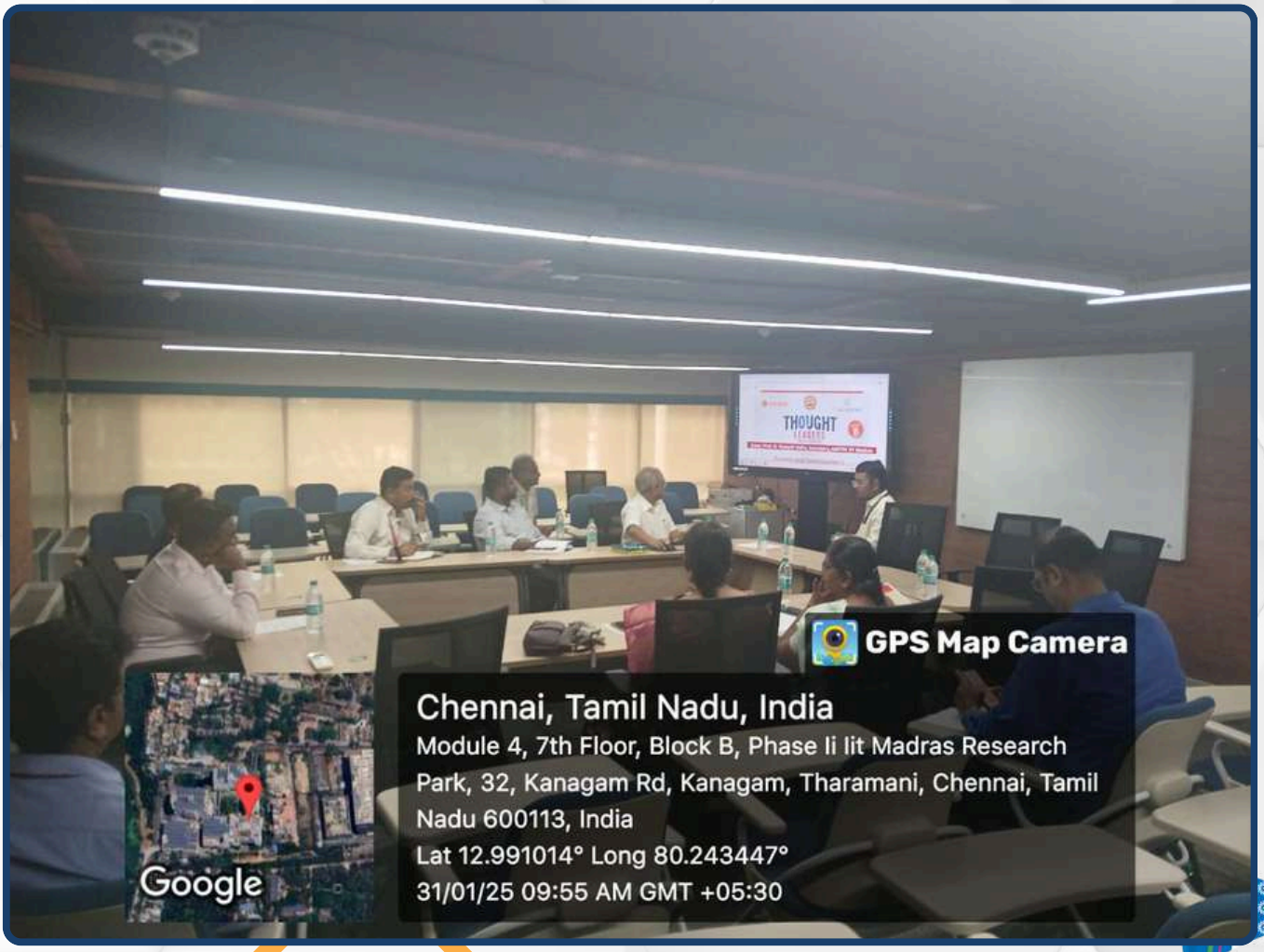
*The competition, organized by ATMA India (****Automotive Tyre Manufacturers Association India****), took place on* ***21st January 2025*** *at* ***Bharat Mandapam, New Delhi,*** *the venue where the G20 Summit 2023 was held.*

Out of ***58 team****s across India, the SVCE team was selected among the* ***Top 9 Finalists*** *after progressing through multiple virtual rounds. Congratulations to the team and mentor for this remarkable achievement!*

EVENT

"Recapping the Buzzworthy Happenings"

- ***Dr. S. Ponnuvel*** *attended Xposure, an event organized by ICT Academy on* ***31st January 2025*** *at the* ***Advanced Manufacturing Technology Development Centre*** *(AMTDC),* ***IIT Research Park****, Tharamani. The event explored opportunities in* ***Advanced Manufacturing Technology****, focusing on internships for students and training for faculty in smart manufacturing and modern industrial practices.*



PLACEMENTS

"Opening Doors to Career Opportunities"

Jagdeesh S K
(2127211001030)

Puthra Ganesh V
(2127211001058)

Congratulations to the final year students ***Mr. Jagdeesh S K*** *and* ***Mr. Puthra Ganesh V*** *for securing placements at* ***M/s. Indian Molasses Company(IMC) Limited*** *as a* ***Graduate Engineer Trainee.*** *Wishing them success in their careers ahead!*

PLACEMENTS

"Opening Doors to Career Opportunities"

*I am **Puthra Ganesh V**, a **final-year B.E. Mechanical Engineering** student at SVCE, and I am thrilled to share that I have been placed at IMC (Indian Molasses Company) Limited. My journey to placement was challenging, as I faced multiple rejections in various interviews.*

I realized that my communication skills needed improvement, so I sought guidance from the Communication Skills Development Faculty at our college. With their support and training, I was able to enhance my communication abilities, which played a crucial role in securing this opportunity. I extend my heartfelt gratitude to my department faculty and communication skills mentors for their unwavering support.

IMC Recruitment Process

- ***1st Round** – **Online Test** (03/01/2025): A 50-minute test consisting of 50 general aptitude questions.*
- ***2nd Round** – **Technical Interview** (23/01/2025): Shortlisted candidates were assessed on technical knowledge, mini projects, and final year projects.*
- ***3rd Round – HR Discussion**: This round focused on personal background, family details, and overall suitability for the company.*

After successfully clearing all rounds, I was offered a position at IMC Limited. My journey highlights the importance of perseverance and continuous self-improvement, and I am grateful for the guidance and resources provided by SVCE.

EDITORIAL TEAM

Dr. S. RAMESH BABU
Professor & Head
Mechanical Engineering

Dr. M. Mohandass
Associate Professor
Mechanical Engineering

Dr. S. MUNIRAJ
Assistant Professor
Mechanical Engineering

Mr. A. Ranjith Raj
Assistant Professor
Mechanical Engineering

STUDENT EDITORIAL TEAM

Mr. Kiran Kumar D P
IV Year
Mechanical Engineering

Mr. Mithun Aravind O
IV Year
Mechanical Engineering

Mr. G Bharath Kumar
III Year
Mechanical Engineering

Mr. Lokesh P
III Year - Mechanical and Automation Engineering

Mr. M Sanjay
II Year
Mechanical Engineering

Mr. Lithesh C
II Year - Mechanical and Automation Engineering