



Sri Venkateswara  
College of  
Engineering

Department of Mechanical Engineering

# AUGUST 2024 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.



# FACULTY EXCELLENCIES

*"A Glimpse of Remarkable Achievements"*



**Funded Project:** The Bureau of Indian Standards (BIS) proposal titled "**Study of Safety, Performance, and Constructional Requirement for Cricket Ball Used in the Game of Cricket,**" submitted by **Dr. S. Gopinath** and his team members **Mr. M. Arul Kumar, Mr. M. Nishal, Mr. K. Ram Prasad, and Dr. Selvaganapathy,** has been approved. BIS sanctioned a sum of **Rs. 4.8 lakh** for this project (**Project Code: PGD 0236**). On behalf of the department, we extend our hearty congratulations to the coordinator and the entire team for this achievement.





# FACULTY EXCELLENCIES

"A Glimpse of Remarkable Achievements"



Congratulations to **Dr. M. Gajendiran** and **Mr. S. Sivaramapandian** for their recent patent grant for the "**Ultrasonic Smart Cane**" (Design No. 419736-001). Their hard work, dedication, and innovative thinking are truly commendable.





# FACULTY EXCELLENCIES

"A Glimpse of Remarkable Achievements"



**Paper Published:** Congratulations to **Dr. M. Prem Ananth** and his research scholar for publishing their research paper titled "**Hybrid ZOA-SNN Technique Heat Transfer Enhancement of the Heat Exchanger**" in the *Numerical Heat Transfer, Part A: Applications* journal, published by Taylor & Francis.

This journal is indexed in the Web of Science, with an **impact factor of 2.8**. ISSN: 1040-7782 DOI: 10.1080/10407782.2024.2354934

NUMERICAL HEAT TRANSFER, PART A: APPLICATIONS  
<https://doi.org/10.1080/10407782.2024.2354934>



Taylor & Francis  
Taylor & Francis Group

Check for updates

## Hybrid ZOA-SNN technique heat transfer enhancement of the heat exchanger

S. Sivasankar<sup>a</sup> and M. Prem Ananth<sup>b</sup>

<sup>a</sup>Department of Mechanical Engineering, SRM Valliammai Engineering College, Chengalpattu, Tamil Nadu, India; <sup>b</sup>Department of Mechanical Engineering, Sri Venkateswara College of Engineering, Kancheepuram, Tamil Nadu, India

### ABSTRACT

This paper proposes a hybrid ZOA-SNN technique for Heat Transfer Enhancement of the Heat Exchanger. The proposed hybrid technique is the combined performance of both the Zebra Optimization algorithm (ZOA) and Spiking Neural Network. Commonly it is named as ZOA-SNN method. The proposed method's main goals are to control temperature and optimize heat transfer (HT). The proposed technique was analyzed using an optimization technique to get a minimal pressure drop and maximum possible heat transfer efficiency for the heat exchanger design. By then, the proposed model is executed on the MATLAB work stage and the performance is calculated using the present procedures. The pressure drop for the proposed strategy is 225 pa. The temperature rise for the proposed method is 3.5 °C. When the temperature drops by 3.5 °C, the heat transfer rate is 4.5 (L/min). Better outcomes are shown by the proposed method in all approaches like Nonprofit Organization (NPO) Obstructive Sleep Apnea (OSA), Global Outstanding Assessment (GOA). From the result, it is concluded that the proposed approach-based temperature is lower and the heat transfer is maximized in contrast to current methods.

### ARTICLE HISTORY

Received 17 December 2023  
Revised 3 April 2024  
Accepted 8 May 2024

### KEYWORDS

Global outstanding assessment (GOA); heat exchanger; heat transfer; optimization; temperature scanner



# FACULTY EXCELLENCIES

"A Glimpse of Remarkable Achievements"



**Paper Published: Dr. Sridharan Veerapuram**, along with students Nitheesh Raj Sambantham Venkatesan and Mahesh Prabhu Sureshkumar, authored a research paper titled "**Weighted Optimization of Drilling Parameters in Jute/Epoxy Graphene Nanocomposite.**" This paper was presented at the International Conference

on **Recent Innovations in Production Engineering (RIPE-2024)**, held from May 30th to 31st, 2024, at MIT Campus, Anna University, Chennai. The paper is published with ISBN: 978-93-95856-95-9.

Proceedings of the International Conference on Recent Innovations in Production Engineering (RIPE-2024)  
30<sup>th</sup> & 31<sup>st</sup> May, 2024, MIT Campus, Anna University, Chennai - 600044, India

ISBN: 978-93-95856-95-9

## Weighted Optimization of Drilling Parameters in Jute/Epoxy Graphene Nanocomposite

Sridharan Veerapuram<sup>\*</sup>, Nitheesh Raj Sambantham Venkatesan, Mahesh Prabhu Sureshkumar  
Department of Mechanical Engineering, SVCE, Sriperumbudur Tk. - 602 117, Tamil Nadu, India  
<sup>\*</sup>Corresponding author E-mail sridharan@svce.ac.in

**Abstract**— Natural fibre reinforced composites have been the topic of recent research. Addition of nanofillers has been reported to enhance the performance of these polymeric composites even at small loading. The machining process has to be optimized for finding out the combination of parameters that offer high quality output. The present paper deals with the optimization of drilling of jute fibre reinforced, graphene filled epoxy nanocomposite. Grey Relational Analysis (GRA) was used to optimize the process parameters. The weight value of each performance characteristic was found out using Principal Component Analysis (PCA). The optimal combination of drilling parameters was found out and compared with the initial value and gain obtained has been reported. Analysis of variance (ANOVA) was performed to find out the significant factors that affect the output characteristics and their contribution has also been discussed.

**Keywords:** Nanocomposites, epoxy, jute, drilling, optimization

grey relational grade. In the process of calculating the grade, the weighting values of output characteristics have been determined based on own estimation or equal weightage has been used. Tools such as fuzzy logic, principal component analysis (PCA) etc. have been used to find out the weighting values in GRA [7]. This paper describes the optimization of drilling process parameters using GRA coupled with PCA.

### II. EXPERIMENTAL PROCEDURE

#### A. Materials

Woven jute mat treated with 5% sodium hydroxide for 2h was used as reinforcement. Graphene was dispersed in epoxy (grade LY556) by bath sonication with solvent assistance. Hardener (HY951) was added to nano phased epoxy and mixed well to achieve good mixture. Alternate layers of resin and fibre were laid and pressed for 24 hr under a load of 2.5 MPa [5]. The following four laminates were prepared: Treated jute/epoxy with 0 wt% graphene. I.



# FACULTY EXCELLENCIES

"A Glimpse of Remarkable Achievements"



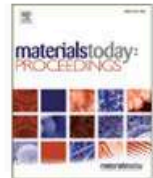
**Paper Published:** Congratulations to **M. Gajendiran** for publishing a paper titled "**Experimental Analysis of Hybrid AM60 Magnesium Composites Reinforced with TiC and TiB<sub>2</sub> via Stir Casting**" in **Materials Today: Proceedings (2024)**.



Contents lists available at [ScienceDirect](#)

Materials Today: Proceedings

journal homepage: [www.elsevier.com/locate/matpr](http://www.elsevier.com/locate/matpr)



## Experimental analysis of hybrid AM60 magnesium composites reinforced with TiC and TiB<sub>2</sub> via stir casting

Dattatray Sadashiv Doifode<sup>a</sup>, Sambasivam Rajan<sup>b</sup>, S.B. Mohan<sup>c</sup>, R. Rathinam<sup>d</sup>, M. Gajendiran<sup>e</sup>, M. Srinivasnaik<sup>f,\*</sup>

<sup>a</sup>SVKM' Institute of Technology, Dhule, Maharashtra, India

<sup>b</sup>Mechatronics Engineering, SNS College of Technology, Coimbatore, India

<sup>c</sup>ECE Department, S.A. Engineering College, Chennai, India

<sup>d</sup>Professor, Department of Science & Humanities, Karpagam College of Engineering, Coimbatore 641032, India

<sup>e</sup>A.P. Mechanical Department, Sri Venkateswara College of Engineering, India

<sup>f</sup>Department of Mechanical Engineering, School of Engineering, Jawaharlal Nehru University (JNU), New Delhi 110067, India

### ARTICLE INFO

#### Keywords:

AM60 Mg alloy  
TiC  
TiB<sub>2</sub>  
Selective Laser Melting (SLM)  
FESEM

### ABSTRACT

Rapid progress was made in the development of additive manufacturing process, which went commencing being uncomplicated model substitutes to talented additive process. With powders, additive method such as full melting, segment by segment material fusion, and congeal of fine particles may present inimitable opportunities and compensation. Titanium carbide (TiC) and titanium diboride (TiB<sub>2</sub>) are employed as reinforcements in the creation of AM60-based hybrid metal matrix magnesium composites. Hybrid AM60 nanocomposites were made using well-known additive manufacturing techniques such selective laser melting. The AM60 bar was created from cylindrical type specimens. The reinforcements are increased by percentages two combination of hybrid composites are prepared AM60 with 4 % Titanium carbide (TiC) and titanium diboride (TiB<sub>2</sub>) and 8 % Titanium carbide (TiC) and titanium diboride (TiB<sub>2</sub>). Consequences of the reinforcement were evaluated using micro tensile and micro hardness tests. Among the samples and specimens are showed in harmony through ASTM values, micro tensile and micro hardness characteristics are evaluated using Digital tensometer instrument and a Vickers hardness tester. Vickers Hardness Numbers (VHN) for AM60 magnesium alloy with 4, and 8 % reinforcing are 185.9, and 206.8, respectively. The highest ultimate tensile strengths are, respectively, 703.15, and 809.9 MPa. An Optical Micrograph is used to evaluate the bonding structure of composites, while a Field Emission Scanning Electron Microscope (FESEM) is used to evaluate micro tensile specimens. The greater impact of the different reinforcements Titanium carbide (TiC) and titanium diboride (TiB<sub>2</sub>) has led to more improved tensile and hardness properties.



# FACULTY EXCELLENCIES

"A Glimpse of Remarkable Achievements"



**Conference Attended: Dr. S. Muniraj and Mr. A. Kumaraswamy presented a paper at the 2nd International Conference on Technological Advancements in Materials, Design, Manufacturing, and Energy Sectors (ICTAMDMES 2024), held on 21st and 22nd August 2024 at St. Joseph's College of Engineering, Chennai. Their paper, titled "An Experimental Study on the Evaluation of Correlation between Turning Parameters and Surface Finish of Magnesium Alloy," explored the relationship between turning parameters and the surface finish of magnesium alloy.**





# FACULTY EXCELLENCIES

"A Glimpse of Remarkable Achievements"



**Conference Attended: Dr. S. Ponnuvel** participated in the International Conference on **Advanced Materials for Sustainable Technologies** held on **22nd and 23rd August 2024** at **Ramaiah Institute of Technology, Bangalore**. During the event, Dr. Ponnuvel presented a technical paper titled

**"Dynamic Mechanical Analysis and Machining Performance Study with Sustainability Assessment on Drilled Hole Quality Characteristics of Glass Fiber Reinforced MWCNTs Filled Epoxy Nanocomposites."**





# FACULTY EXCELLENCIES

"A Glimpse of Remarkable Achievements"



**Training Attended:** We are pleased to announce that Dr. S. Gopinath has successfully passed all course assessment requirements for the **ISO 14001: 2015 Lead Auditor Training Course on Environmental Management Systems**. The course was delivered by

**IRCLASS SYSTEMS AND SOLUTIONS PRIVATE LIMITED**  
from **17th June 2023** to **1st July 2023**.  
Congratulations to **Dr. S. Gopinath** on this noteworthy achievement.





# FACULTY EXCELLENCIES

*"A Glimpse of Remarkable Achievements"*



**FDP Attended: Mr. G. Kirubakaran** successfully attended the **ATAL Faculty Development Program (FDP)** on **"Biodegradability & Environmental Impact Assessment on Biofibers & Green Composites,"** held from **19th August 2024 to 24th August 2024** at **Sri Krishna Institute of Technology, Kovaipudur, Coimbatore**





# EVENTS - SME INAUGURATION

*“Recapping the Buzzworthy Happenings”*

The inauguration of the Society of Mechanical Engineers (SME) for the academic year **2024–2025** took place on **29th August 2024**. The SME is a multidisciplinary technical club that aims to offer various opportunities to SVCE's student community, including workshops, webinars, and events for skill enhancement and holistic development, preparing them to be future-ready engineers.

The inauguration ceremony began at 09:30 AM in the **Video Hall**, with nearly 80 students from the mechanical department in attendance.

**Dr. V. S. Sriraja Balaguru**, Assistant Executive Engineer at TNEB, graced the event as the chief guest. The program commenced with a welcome speech by **Dr. S. Saravanan**, Coordinator of SME, followed by **Dr. S. Ramesh Babu**, HOD, who emphasized the significance of the SME club and encouraged the Office Bearers to fulfill their roles with dedication. The event continued with an introduction by the President of SME, **Mr. V. Saravanan**, a final-year student.

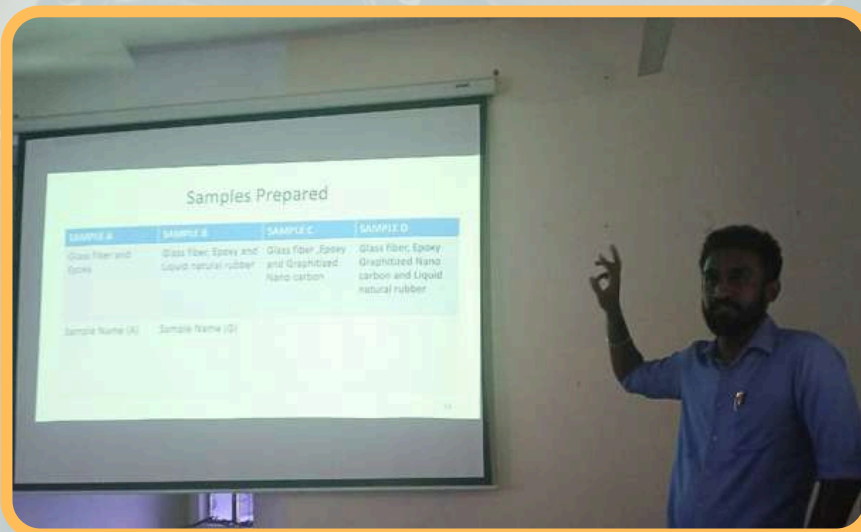




# EVENTS

## “Recapping the Buzzworthy Happenings”

An **MoU** was signed with **PlugzMart**, a leading EV charger manufacturing company based in Chennai, on **30th August 2024**. PlugzMart is at the forefront of electric vehicle charging technology, providing innovative and energy-efficient solutions. Their advanced systems and intuitive software are designed to meet the growing demands of the evolving transportation sector, further promoting the adoption of electric vehicles. This collaboration marks a significant step towards enhancing smart charging infrastructure.



**Mr. J. Allen Jeffrey**, a part-time scholar under the guidance of **Dr. S. Ponnuvel**, presented his Pre-Confirmation Seminar on **August 5, 2024, at 10:30 AM**. The seminar was held in the **CAE Laboratory** of the Mechanical Engineering Department.



# EVENTS

*“Recapping the Buzzworthy Happenings”*

An **MoU** was signed with **Thirumala Press Components Limited**, Chennai, on **30th August 2024**. Thirumala Press Components holds a prestigious position in the manufacturing sector, specializing in sheet metal pressed components for the automobile, tractor, and general engineering industries. This partnership is expected to foster collaboration and provide valuable industry exposure for future endeavors.



- A **Progress Monitoring cum Feedback & Impact Evaluation** visit was conducted on **1st August 2024** at the **University College of Engineering, Kancheepuram**. Expert members from various departments participated in this evaluation process, focusing on assessing the impact and progress of ongoing academic and research initiatives.



# EVENTS

*“Recapping the Buzzworthy Happenings”*

On **30th August 2024**, a team from our department successfully completed a Training and **Boot Camp Program** at **Government Higher Secondary School, Cheyyar**, as part of the **ATAL School Meet initiative**.

The program, led by **Dr. S. Ilayavel** and **Dr. S. Ananda Babu**, included comprehensive training sessions and interactive workshops for the students. The geotagged photos and videos from the event have been shared as documentation of the program's success.

We express our gratitude for the opportunity to contribute to this impactful program and look forward to further collaboration.





# INDUSTRIAL VISIT

*“Factory Chronicles: Where Learning Takes Shape”*

On **29th August 2024**, the **II-year Mechanical Engineering** students visited **ESAB India Private Limited** for an industrial visit. Accompanied by faculty members **Mr. Ramprasad** and **Mr. Nishal**, the students gained detailed insights into the company's advanced production processes. The visit highlighted the sophisticated technology behind plasma cutting machines, welding torches, and gas regulators, which are crucial for various industrial applications. The assembly of welding kits was particularly noteworthy, demonstrating ESAB's meticulous approach to quality and innovation.





# INDUSTRIAL VISIT

*“Factory Chronicles: Where Learning Takes Shape”*

On **30th August 2024**, the **II-year Mechanical and Automation Engineering** students visited **Bisleri International Pvt. Ltd.** in Poonamallee for an industrial visit. Accompanied by faculty members **Dr. A. Saravanan** and **Dr. U. Magarajan**, the students explored the role of automation in food processing and beverages. The visit provided insights into the automated processes from filtration to bottle filling and packing, highlighting the advanced technology used in the industry.





# PLACEMENTS

"Opening Doors to Career Opportunities"

*Congratulations!*



**Devaraj S**  
(2127211001012)



**LAKSHMANAN K**  
(2127211001039)



**Surya S J**  
(2127211001072)

Congratulations to **Devaraj S, Lakshmanan K** and **S.J. Surya** on their placement at **McDermott**, a company in the oil and gas industry. They have been appointed as **Associate Piping Engineers**, on **24th August 2024**. We wish them success in their new roles!



# ALUMNI WRITE-UP

“TAGLINE”



**Ankit Shenoy**  
**(Mech: 2015 -2019 Batch)**  
**Mechanical Engineering** -  
**Automotive option,**  
**University of Windsor, Canada**

*SVCE in simple terms is an institution which provides opportunities to those who are looking for it. When looking back at my years at SVCE I consider myself fortunate for having taken part not only in the interesting and informative course of mechanical engineering but also events like Baja and formula Bharat which helped me in gaining off textbook knowledge in the field of my interest. I had also spent my time both as a hosteller and day scholar, where I learned a lot which helped me shape who I am as a person now. The practical knowledge I gained from best labs workshops, equipment's, opportunity and experienced faculty at SVCE have given me the edge over my peers while pursuing master's in automotive engineering at university of Windsor in Canada. Finally, I am nothing but proud to be a graduate of mechanical engineering from an institution which has provided me with everything I could have hoped for to help me succeed in future.*



# 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*