

# ICAAMME'24

3<sup>rd</sup> International Conference on “Advances in  
Automobile, Manufacturing, and Mechanical Engineering”

5<sup>th</sup>  
April  
2024

## CONFERENCE PROCEEDINGS



**ORGANIZED BY**

DEPARTMENT OF AUTOMOBILE ENGINEERING  
EASWARI ENGINEERING COLLEGE  
(AUTONOMOUS)

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# MESSAGE FROM DIRECTOR



My heartfelt congratulations to the Automobile Engineering team for their pioneering achievements and their successful implementation of innovative ways in comprehending engineering throughout the academic year.

I am delighted to know that the 2nd International Virtual Conference on “ADVANCES IN AUTOMOBILE, MANUFACTURING AND MECHANICAL ENGINEERING (ICAMME ‘24)” has turned out as an opportunity for the students to showcase their skills as well as their team’s performance. Their logical and analytical way of approaching challenges is an aspect to be highly appreciated. I am positive that the magazine to be released will provide a platform for the students to widen their technical knowledge and sharpen their literary strength.

Further, with a piece of guidance, leading them towards the light as every teacher should, I strongly appeal to the students to be steadfast, creative and devoted to the work they desire to achieve. I extend my best wishes for the success of this endeavor.

Best Wishes!

**CHAIRMAN**

SRM Ramapuram and Trichy campus Campus

## **MESSAGE FROM COCHAIRMAN**



I extend my warm greetings to you for your outstanding efforts in organizing the 2nd International Virtual Conference on “ADVANCES IN AUTOMOBILE, MANUFACTURING AND MECHANICAL ENGINEERING (ICAMME ‘24).” Your dedication and meticulous planning have provided a remarkable platform for our students to showcase their skills and contribute to the field of Automobile Engineering.

I am delighted to see the successful implementation of innovative approaches and the logical thinking demonstrated by our students under your guidance. The conference and the forthcoming magazine release will undoubtedly serve as valuable resources for expanding their technical knowledge and honing their literary skills.

As we continue to nurture the next generation of engineers, your leadership and commitment play a crucial role. I commend you for your steadfast dedication and encourage you to keep inspiring our students towards excellence in the field.

With my sincerest appreciation and best wishes for your continued success,

Best Wishes!

**CO-CHAIRMAN**

SRM Ramapuram and Trichy campus Campus

# MESSAGE FROM PRINCIPAL



I extend my heartfelt congratulations to the Automobile Engineering team for their pioneering achievements and successful implementation of innovative approaches throughout the academic year. It brings me great delight to learn about the outcomes of the 2nd International Virtual Conference on “ADVANCES IN AUTOMOBILE, MANUFACTURING AND MECHANICAL ENGINEERING (ICAMME ‘24)” which provided an excellent platform for our students to showcase their skills and team performance.

I commend the students for their logical and analytical approach to challenges, which is truly admirable. Their participation in the conference and the upcoming release of the magazine will undoubtedly contribute to their technical knowledge and literary prowess. As educators, it is our responsibility to guide and inspire students towards excellence. I urge our students to remain steadfast, creative, and devoted to their endeavors. With dedication and perseverance, they can achieve remarkable success.

I extend my best wishes for the continued success of this endeavor and look forward to witnessing the growth and achievements of our students in the field of Automobile Engineering.

Best Wishes!

**PRINCIPAL**

**Easwari Engineering College**

## MESSAGE FROM THE CONVENER



Greeting to you all! My warmest congratulations to the students and staff members of our department for successfully administering the 2<sup>nd</sup> International virtual conference on “ADVANCES IN AUTOMOBILE, MANUFACTURING AND MECHANICAL ENGINEERING (ICAAMME‘24)” on the 28<sup>th</sup> of April 2023.

This international conference is a constructive forum for students to showcase and grow their cognizance in the engineering and industrial sector. Topics such as weight reduction using alternate materials and automation have been undergoing research in the automotive industry. I hope this conference succeeds bringing these subjects to light.

Just as design and research are an important factor in creating automobiles, quality is also an equally important subject to be considered in the production field. As Henry Ford once said, “Quality means doing it right when no one is looking”. As an Automobile Engineer quality should become part of department work culture for self-improvement and societal improvement.

Once again I extend my appreciation to all the students and faculty members who have put in their best efforts to make this event a great success. I wish you all the very best.

**Dr.S.Sathiyamurthy**

**Professor & Head**

## **INSTITUTION PROFILE**

Easwari Engineering College (EEC), a unit of SRM Group of Educational Institutions is functioning under "Valliammai Society". The society was founded by Dr. T. R. Pachamuthu in the year 1981 in order to promote Quality Education by an Academician and Educationist. EEC was established in the academic year 1996-1997 with the Approval of AICTE, New Delhi. The Institution is affiliated to Anna University, Chennai since 2002. College offers 11 Under Graduate Programmes and 6 Post Graduate Programmes covering Engineering, Technology and Management. The Institution has a strong Industry Interaction with reputed National and International Organizations. The college has obtained ISO 9001:2015 Certification from TUV South Asia. The college is accredited with 'A' Grade by NAAC. Training programmes are given to improve the Theoretical and Practical skills of student's right from their first year of study. Campus recruitments by top companies through continuous Industry Institute Interactions (III Cell). In 2016 – 2017, 1041 placement offers were made and 225 companies visited the campus. In 2017-'18, 695 students were placed and 143 companies visited the campus. Highest placement in leading IT and core companies. 1041 were placed in 2017 with highest salary package of Flipkart – 15.4 lakhs/annum, DBS Bank -15-45 lakhs/ annum.

## **DEPARTMENT PROFILE**

The Department of Automobile Engineering was established in 2014 with a clear vision: to provide top-tier education, instill relevant skills, and cultivate attributes aligned with evolving global standards and the dynamic needs of the automobile industry. Our department boasts state-of-the-art laboratories equipped with industry-sponsored vehicles and engines from esteemed companies like FORD, Hyundai, and BMW India Pvt. Ltd. With a focus on nurturing the next generation, we have a cadre of qualified and dynamic young faculty members who are dedicated to shaping the future

leaders of the industry. Our faculty comprises seasoned experts, 60% of whom hold Ph.D. degrees, with the remaining actively pursuing theirs.

We take pride in our students' achievements, with 14 Anna University Ranks, including a prestigious Gold Medal. Furthermore, we have funding from the Department of Science and Technology (DST), amounting to Rs. 52.8 lakhs, for a significant research project. Collaborations are integral to our ethos, exemplified by our memorandum of understanding (MOU) with Ashok Leyland Limited, Hosur Plant, offering one-year on-the-job training (OJT) opportunities for final-year students as Engineering Interns, with a generous stipend of Rs. 9000 per month.

Our curriculum is constantly updated to include skill-based courses in emerging areas, ensuring our graduates are well-prepared for the job market. Notably, our students actively engage in Karting race competitions, consistently achieving success under our P.R.I.D.E. activities. Our laboratories are equipped with cutting-edge facilities including Automotive Components, Engine Performance and Emission Testing, Vehicle Maintenance, Machine Shop, Automotive Design, Automotive Electrical and Electronics, Automotive Fuel and Lubricants, and Computer-Aided Drafting and Simulation. Our research endeavors focus on crucial areas such as Composite Materials, Welding, Surface Coating, and Micro Machining, aiming to contribute significantly to advancements in the field.

In essence, the Department of Automobile Engineering is committed to excellence in education, research, and industry collaboration, poised to meet the challenges and opportunities of the automotive sector in the 21st century.

## **VISION**

To impart quality education, skills and attributes based on continuously changing global standards and local industrial requirement and hence emerge as centre for advance studies and research.

## **MISSION**

- M1** To provide quality education to the students based on the continuously changing global graduate attributes.
- M2** To understand the requirement of Automobile Industries of the region and to add value to the students based on their changing needs.
- M3** To tie up with industries for mutual benefit like training, internship and partial delivery of courses for the students.
- M4** To develop partnership with industries for product development and research.
- M5** To offer advance studies courses for becoming centre for excellence in the field of automobile Engineering.

## **PROGRAM EDUCATIONAL OBJECTIVES (PEOS)**

- PEO1** Our graduates will have fundamental technical knowledge and develop core competency in diversified areas of Automobile Engineering with a view to expanding the knowledge horizon and inculcating lifelong learning among students.
- PEO2** Our graduates will pursue advanced studies, research and industrial product development in the field of Automobile Engineering by developing partnerships with industrial and research agencies thereby serving the needs of the industry, government, society and scientific community.
- PEO3** Our graduates will be capable of building their own careers upon a solid foundation of knowledge to solve automobile problems based on interdisciplinary approach and a strong sense of responsibility to serve their profession and society ethically.
- PEO4** Our graduates will have effective communication, leadership, teaming, problem solving and decision making skills by understanding contemporary issues thereby contributing to their overall personality and career development.

## **ABOUT THE CONFERENCE**

The rapid advancements in various scientific disciplines within the developing world have ushered in a new era of possibilities in science and technology. Particularly in the fields of Automobile Engineering, contemporary materials, and Manufacturing, research is progressing at an unprecedented pace. Each year witnesses the exploration and implementation of new materials and manufacturing techniques, continually pushing the boundaries of innovation in Automobile and Mechanical Engineering.

This conference is dedicated to showcasing the latest breakthroughs in materials and manufacturing processes. By bringing together industry professionals and academic researchers, we aim to expedite the transformation of research findings into real-world applications. Our goal is to provide a platform where Researchers, Academicians, Industrial experts, and practicing Engineers can converge to exchange ideas, share knowledge, and discuss the latest developments and trends in the fields of Automobiles, materials, and manufacturing processes.

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3. PUSHPARAJ J - THIRD YEAR
4. SAI PRASANTH KJ - THIRD YEAR
5. KEERTHIVASAN Y - THIRD YEAR
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7. VIJAY S - THIRD YEAR
9. EZHILAN GV - THIRD YEAR
10. KOUTHAM .S - THIRD YEAR

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**PROPERTIES AND BEHAVIOUR OF STEEL SLAG REINFORCED AL-SI METAL  
MATRIX COMPOSITE PREPARED USING STIR CASTING**

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**Abstract**

Metal matrix composites (MMCs) possess significantly improved properties including high specific strength; specific modulus, damping capacity and good wear resistance compared to reinforced alloys. There has been an increasing interest in composites containing low-density and low-cost reinforcements. Among various discontinuous dispersoids used, iron powder is one of the most common and medium-density reinforcements available in large quantities as a solid. Hence, composites with iron as reinforcement are likely to overcome the cost barrier for widespread applications in automotive, aerospace and engine applications. It is therefore expected that the incorporation of iron particles in aluminum will promote properties enhancement at the same time, has the potential for conserving energy-intensive aluminum and thereby, reducing the cost of aluminum products. Nowadays particulate-reinforced aluminum matrix composites are gaining importance because of their low cost with advantages like isotropic properties and the possibility of secondary processing facilitating the fabrication of secondary components. The present investigation has been focused on the utilization of abundantly available industrial iron in a useful manner by dispersing it into aluminum to produce composites by stir casting method.

**Keywords:** Aluminum-silicon alloys, Metal matrix composite, stir casting, Stirrer speed.