



B.S. Abdur Rahman[®]

Crescent

Institute of Science & Technology

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DEPARTMENT OF
MECHANICAL
ENGINEERING



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Chancellor



Mr. Abdul Qadir Abdul Rahman Buhari
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Dr. N. Thajuddin
Pro Vice Chancellor



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INTRODUCTION

**ABOUT THE
DEPARTMENT**

**MESSAGE FROM
DEAN SMS**

**MESSAGE FROM
HOD**

ABOUT THE DEPARTMENT



Mechanical Engineering, founded in 1984, is one of this institution's oldest departments. We provide Bachelors of Mechanical Engineering, Masters in CAD/CAM, Ph.D. by Research, and minor degree programs

We also offer Bachelors in Mechanical Engineering for the employees of Apollo Tyers and Mando Automotive Ltd. The department's program have been accredited by the National Board of Accreditation (NBA). The department has a new building that includes Wi-Fi enabled classrooms, an air-conditioned conference hall, a seminar hall, and a department library. Modern multimedia teaching tools are utilized to supplement lectures and improve teaching quality. Modern practices such as project/ activity-based learning and peer-assisted learning are used. Students can access software on a variety of subjects at any time for self-learning. The department comprises 26 faculty members, 24 of whom have doctorates while others will be completing their Ph.D. shortly. Each laboratory also has experienced technicians on hand to train the students.

ROBO Lab 4.0, Mechatronics Lab, Design Appreciation Lab, Friction Materials Lab, Surface Engineering Lab, CAD Lab, CIM Lab, Dynamics Lab, Fluid Mechanics & Machinery Lab, Machine Shop, Metrology Lab, Material Testing and Characterization Lab, Thermal Engineering Lab, and Basic Workshop are among the department's well-equipped laboratories and workshops. PTC/ Creo 7, Siemens NX 12.0, ANSYS V 2023R2 Campus solution, HYPERWORKS 2017, Mat lab V8 R 2013 a, and Lab VIEW are the key software provided.

The primary research equipment that's readily accessible are ABB Industrial (Welding) Robo, Olivetti S2 - 3D Printer, CNC Turning Centre, CNC Vertical Machining Centre, Surface Roughness Tester, Coordinate Measuring Machine, Vision System, AE with Digital Scope & GPIB interface, Ultrasonic flaw detector, Pin on Disc Wear Tester, Salt Spray Corrosion Apparatus, Vibration Sensors, shakers, and DAQ, Cryogenic Treatment Chamber, Engine Testing Facility, Engine Exhaust Emission Tester, Electrical Discharge Machine, Chase Testing Machine, MMAW Machine, GTAW Machine, GMAW Machine.

MESSAGE FROM DEAN SMS



Dr. H. Siddhi Jailani
Professor & Dean (SMS)

It gives me great pleasure to connect with you through this edition of our department newsletter—a celebration of the outstanding accomplishments, dedication, and resilience of our faculty and students. As we look back on the past year, it's clear that our department continues to flourish, driven by the relentless pursuit of excellence and innovation from our academic community.

Our faculty members remain leaders in advanced research, contributing significantly to fields such as sustainable energy and materials science. Their pioneering work not only advances knowledge but also plays a vital role in shaping the future of mechanical engineering.

Equally inspiring are our students, who consistently showcase their brilliance both in academics and through active participation in extracurricular initiatives. Their enthusiasm for learning and growth energizes our entire department and sets a high standard for achievement.

Mechanical engineering presents complex and evolving challenges, but I am confident that with the unwavering commitment of our faculty, students, and supporters, we will continue to rise above them and reach new heights.

Thank you for your continued encouragement and belief in our mission. I eagerly anticipate another year filled with progress, innovation, and success in the Department of Mechanical Engineering.

MESSAGE FROM HOD



Dr. A.S. Selvakumar
Professor & HOD

As the Head of the Department of Mechanical Engineering, it is a privilege to share a few words about our department's ongoing progress and achievements. We have built strong and dynamic partnerships with a wide range of industries, enabling us to design programs that meet the evolving needs of professionals. Our active involvement in consultancy and collaborative research with leading industrial partners continues to bring valuable real-world perspectives and innovation into our academic environment.

To equip our B.Tech. students with cutting-edge skills, the department offers value-added courses in Industrial Automation and Artificial Intelligence. We also provide minor degree programs in emerging areas such as Robotics and 3D Printing. To further enhance technical proficiency, we regularly organize symposiums, workshops, industrial visits, and internships, ensuring students stay aligned with industry standards and expectations.

Our department maintains consistent engagement with industry to refine and upgrade technical competencies. Faculty members are involved in research, contributing through publications in reputed journals, securing patents, and undertaking funded projects that reflect our commitment to academic excellence and innovation.

I extend my sincere best wishes to all members of the department and look forward to continued growth, collaboration, and success in the years ahead.



DEPARTMENT NEWS

**PROFESSIONAL SOCIETY/
DEPARTMENT ACTIVITIES**

EQUIPMENT PURCHASED

**FINANCE SPONSORS/
SUPPORTS FOR EVENTS**

**COLLABORATION AND
OTHER DEPARTMENT NEWS**

LIST OF PHD AWARDED

Professional Society Activities

ASME EVENTS

1

ALTURA Event by ASME student section

The ASME Student Section, Department of Mechanical Engineering, B S Abdur Rahman Crescent Institute of Science and Technology, Chennai, hosted an electrifying ALTURA 3 – A Tower Building Competition & IPL Auction, showcasing the ingenuity and talent of young engineers and enthusiasts, held at the Mechanical Sciences Block (Seminar Hall, III Floor) on 04.10.2024. The event brought together students from various departments to compete in a thrilling display of technological innovation and racing prowess. The event was inaugurated by Dr. H. Siddhi Jailani, Dean (SMS), and Dr. A. S. Selvakumar, HoD (Mech).



2

ASME Hovercraft Racing Competition 2024

The ASME Student Section, Department of Mechanical Engineering, B S Abdur Rahman Crescent Institute of Science and Technology, Chennai, organized an exciting Hovercraft Racing Competition, held on 27.03.2024 to showcase the innovative spirit and technical skills of the students. The event witnessed participation from 8 teams, comprising a total of 35 students. The competition highlighted the ingenuity and talent of students by featuring innovative hovercraft designs and racing challenges, fostering a spirit of healthy competition and creative engineering solutions.



SAEINDIA EVENTS

3

One Day National Level Workshop on “Taming the dust: Minimizing Brake Particulate Matter Emission”

The Department of Mechanical Engineering organized a one-day National Level Workshop on “Taming the Dust: Minimizing Brake Particulate Matter Emission,” held on 22.08.2024 at B. S. Abdur Rahman Crescent Institute of Science and Technology, Chennai, in association with SAE Southern Section, Mahindra WorldCity Division. A total of 54 participants registered for this workshop, including participants from industries, academicians, research scholars, and students.

4

Importance of Product Design and Validation for Engineering Graduates

As part of the Industrial and Institutional Knowledge Transfer initiative, a guest lecture on “Importance of Product Design and Validation for Engineering Graduates” was organized by the Aerospace Engineering Department / Department of Mechanical Engineering in collaboration with the Society of Automotive Engineers (SAE) – SAEINDIA Southern Section, MWC Division, BSA Crescent Institute of Science and Technology, on 17.10.2024. The presentation was delivered by Mr. P. G. Ramanan, Director, CADDAM Technologies Pvt. Ltd., Chennai. A total of 130 students from B.Tech First-year Mechanical, Aero, Auto, Poly, and Civil Engineering departments participated and benefitted from this program.



ISHRAE EVENTS

5

Guest Lecture on “Equipment Selection in HVAC & Career Opportunities in HVAC and MEP Industries”

“Selection in Heating, Ventilation and Air Conditioning (HVAC) & Career Opportunities in HVAC and MEP Industries” was organized by ISHRAE, Department of Mechanical Engineering, BSA Crescent Institute of Science and Technology, on 30.08.2024. The presentation was delivered by Mr. R. Krishnasamy, Founder, Arostar Private Ltd, Chennai. A total of 93 students from the Mechanical Engineering Department participated and benefitted from this program. The students interacted with the resource person to seek clarification on their inquiries.



ASME, SME, SAE, ISRAE inauguration

6

Inauguration of Technical Societies: Academic Year 2024-25

The Department of Mechanical Engineering boasts four professional societies: the Society of Mechanical Engineers (SME), the Society of Automotive Engineers (SAE), the American Society of Mechanical Engineers (ASME), and the Indian Society for Heating, Refrigeration and Air Conditioning Engineering (ISHRAE). These societies organize a variety of events to benefit students. The inauguration ceremony for these societies, marking the beginning of the 2024-25 academic year, was held on 28.10.2024, at Seminar Hall - I in the Convention Centre.



Other Professional Society Activities

S.No	Name and details of the Society	Details of Guest speaker
1	Latest Trends in Automotive Industry E-Mobility, Safety and Advanced Materials conducted by SAE India on 14.03.2024	Mr. Prasad Arun Kumar, Divisional Manager, Stellantis Ltd, Chennai.
2	Seminar on “College to Corporate” conducted by SAEISS MWC division on 17.4.2024	Mr. R. Govindarajan, Head Product Development- Global Testing and validation, Royal Enfield, Chennai
3	Mecha Rush 2024 – A National Level Technical Symposium conducted by SME, ISHRAE, SAE and ASME on 24.4.2024	Mr. M. Venkatramanan, DGM – Sales and Marketing, HL Mando Anand India Limited

Developmental Activities of the Department

S.No	Details of development activity	Details of Faculty and student participation	Date of held	Objective
1	Faculty Development programme on Engineering Graphics	15 faculty members	08.07.2024-13.07.2024	To share innovative and effective pedagogical techniques for teaching Engineering Graphics to undergraduate students.
2	Workshop – Industry 4.0: Industrial Design Visualisation & Conceptualisation	33 students	07.08.2024 - 09.08.2024	To train on design sketching, 2D/3D modelling, prototyping, and Industry 4.0 integration in mechanical design
3	Special lecture on advanced welding techniques for automotive and aerospace industries	150 students and 6 faculty members	28.10.2024	To expose students and faculty to real-world applications of welding technologies in the automotive and aerospace sectors.
4	ATAL FDP on AI in Hydrogen and Electric Powered Vehicles	150 participants	09.12.2024 – 14.12.2024	To explore AI applications in hydrogen fuel cells and EV technologies

Details of Major Equipment Purchased

S.No	Name of the Equipment	Make & Country	Date of installation	Amount (Rs)
1	purchase 30 numbers of computers (i7 HP)	HP, India	09.10.2024	23,18,700
2	Calibri Mini 3D Scanner and Geomagic Control X Software	Thor 3D - Republic of Kazakhstan	24.04.2024	12,98,000
3	Vickers Micro Hardness tester	Hitech Equipments, Chennai	28.11.2024	5,30,610
4	3D printer	Bambulab, China	10.07.2024	1,90,000
5	PLC Based Bottling Filling Plant and Level Controller	J-tech Instruments - India	11.01.2024	1,72,074
6	Flow Process Control Loop			
7	3D printer	Bambulab, China	10.07.2024	89,000

Details of Financial Support for various events:

Sl. No	Name of the Event	Amount Received (RS)	Whether received from Institution / Outside Sponsors (please specify sponsor details)
1	ATAL FDP on AI in Hydrogen and Electric Powered Vehicles	1,00,000	AICTE
2	Mecha Rush 24 – National Level Technical symposium	27,000	BSACIST
3	National Seminar on High performance materials and its characterization for aerospace and Mechanical Engineering applications	16,300	BSACIST
		5,000	Aeronautical Society of India, Chennai
4	Inauguration of Professional Societies	10,000	BSACIST
5	Inauguration of Professional Societies	9,837	BSACIST
6	Promo video competition	7,000	BSACIST
7	Hovercraft Racing Competition	4,088	BSACIST

Industry / Institute Collaboration

S.No	Name & Detail of Industry	Type of Collaboration	Month & Year	Status	Outcome
1	M/s. HL Mando Anand India Pvt. Ltd., Chennai	Higher studies to the employees with Diploma Qualification	20.12.2017 onwards	Ongoing	Diploma engineers graduated

Training Programs Offered

S. No	Name of the programme	Programme Duration (Hrs)	Details of Collaborating Agency	No. of Participants		
				Students	Faculty	Others
1	CATIA 3D Experience	45	EDS Technologies Pvt. Ltd	28	NIL	NIL
2	Training Programme on 3D Modeling and Analysis	120 hrs	Equad Engineering Services, Chennai	12	-	-

Important Visitors

S.No	Name of the visitor	Affiliation Details	Details of visit (Date/duration & purpose)	Outcome
1	Mr. M. Venkatraman	DGM – Sales and Marketing, HL Mando Anand India Pvt. Ltd, Chennai	24.04.2024 - Chief Guest for Mecha Rush 2024 - A National Level Technical Symposium	Delivered keynote address on the perspective to spark interest in the symposium themes which motivated the participants
2	Dr. Zareena Kani	Associate Professor, University college of London, UK	22.07.2024	Exploring opportunities for PG programmes at UK
3	Dr. Eral Bele	Associate Professor, University college of London, UK	22.07.2024	
4	Dr. Tamil Selvan Natarajan,	Manager, Apollo Tyres Ltd. Chennai	28.10.2024	Chief Guest for Inauguration of society activities



LIST OF PHD AWARDED

PhD Details

PhD Title



Awarded on
22nd August, 2024.
under the guidance of
Dr.Rasool Mohideen

“Experimental Investigation of Conventional and Inclined Solar Still with Sensible Heat Storage Materials.”

Dr. Emmanuel Agbo Tei



Awarded on
3rd October, 2024.
under the guidance of
Dr.V.Suriya Rajan

“Development of Multi-Metal Sulfide-Coated Steel Fiber for Brake Friction Composites.”

Dr. P. Balaji



Awarded on
22nd October, 2024.
under the guidance of
Dr.V.Muralidharan

“Investigation on Styrene-Butadiene Rubber Composites with Hybrid Fillers for Electric Vehicle Applications.”

Dr. C. Sivakumar



FACULTY ACHIEVEMENTS

**CONFERENCE/ FDP/
WORKSHOP/ SEMINARS
ATTENDED BY FACULTIES**

**ACHIEVEMENTS OF
FACULTIES**

**INTERNATIONAL VISITS
BY FACULTIES**

**PATENTS OWNED BY
FACULTIES**

Conferences / FDP / Seminars / Workshops Attended by faculty.

S. No	Name of the faculty	Name of the programme	Type of Programme	Duration From - To	Organized by
1	Dr. A.S. Selvakumar	NEP 2020 Orientation & Sensitization Programme	Workshop	01.07.2024 - 15.07.2024	IIT Dhanbad MM-TTP
2		Workshop on outcome based Education	Workshop	09.01.2024	BSACIST
3		Safety Instrumentation Systems	Certification course	25.01.24 -31.01.24	BSACIST
4	Dr. S. Mohamed Illyas	International conference on Next Generation materials and devices (ICNMD 2024)	Conference	01.08. 2024 -03.08.2024	Kalasalingam University
5		Workshop on outcome based Education	Workshop	09.01.2024	BSACIST
6	Mr. C. Sivakumar	NEP-2020 Orientation & Sensitization	FDP	18.03.2024 - 26.03.2024	IIITDM Kancheepuram, UGC-Malaviya Mission Teacher Training Centre

7	Dr. V. Muralidharan	NEP-2020 Orientation & Sensitization	FDP	18.03.2024 -26.03.2024	IIITDM, Kancheepura m, UGC- Malaviya Mission Teacher Training Centre
8	Dr. A. Arockia Julias	Mastering E- Content development	FDP	28.02.2024 - 7.03.2024	CDOE, BSACIST
9		International Conference on Materials and Energy Science	Conference	22.3.2024 - 23.3.2024	Aditya Engineering College
10		NEP-2020 Orientation & Sensitization	FDP	18.3.2024 -27.3.2024	IIITDM Kancheepura m, UGC- Malaviya Mission Teacher Training Centre
11		Resilient Geosynthetic Solutions To Counter Soil Erosion	Technical Webinar	07.10.2024	The Institution of Engineers (India)
12		International Conference on Smart Materials for Green Energy & Environmental Sustainability	Conference	11.12.2024 - 12.12.2024	BSACIST
13	Dr. S. Jeavudeen	5th international conference on advances in mechanical	Conference	20.03.2024 - 22.03.2024	SRM Institute of Science and Technology, Chennai

14	Mr. S. Loganathan	NEP-2020 ORIENTATION & SENSITIZATION	FDP	18.03.2024 -26.03.2024	IIITDM Kancheepur am, UGC- Malaviya Mission Teacher Training
15	Dr. K. Sathickbasha	impact of Industry 4.0 on Industries and Academia	FDP	22.01.2024 - 27.01.2024	ATAL FDP- SRM Institute of Science and Technology, Chennai
16		6th International Conference on Tribo-Corrosion ICTC 2024, Indian Institute of Technology (IITD), Delhi.	Conference	10.12.2024 -11.12 2024	IIT Delhi
17		AICTE ATAL FDP on AI in hydrogen and electric powered vehicles	FDP	09.12.2024 - 14.12. 2024	AICTE- ATAL - BSACIST
18	Dr. K. Sathick Basha	NEP 2020 Orientation & Sensitization Programme	FDP	5.03.2024 - 14.03.2024	IIITDM Kancheepur am, UGC- Malaviya Mission Teacher Training
19	Dr. G. Rajesh	Global Conversations in Mechanical Engineering: Bridging Innovation and Sustainability	FDP	19.02.2024 - 23.02.2024	Madanapalle Institute of Technology & Science.

20	Dr. G. Rajesh	Multiple Attribute Decision Making Using Analytic Hierarchy Process	Workshop	26.02.2024-01.03.2024	NIT, Mizoram
21	Dr. K. Mohamed Bak	Global Conversations in Mechanical Engineering: Bridging Innovation and Sustainability	FDP	19.02.2024-23.02.2024	Madanapalle Institute of Technology & Science.
22		Mastering E Content Development	Workshop	28.02.2024-7.03.2024	B. S. Abdur Rahman Crescent Institute of Science and Technology
23		NEP-2020 Orientation & Sensitization	FDP	18.03.2024-26.03.2024	IIITDM Kancheepuram, UGC-Malaviya Mission Teacher Training Centre
24		International Conference ICTAMDMES 2024, St. Joseph's College of Engineering, CHENNAI	Conference	21.08.2024-22.08.2024	St. Joseph's College of Engineering, CHENNAI

25	Dr. K. Mohamed Bak	International Conference on Smart Materials for Green Energy and Environmental Sustainability (SMaGEES 2024)” BS AR CRESCENT INSITIUTE OF SCIENCE AND TECHNOLOGY	Conference	11.12.2024-12.12.2024	BSACIST
26		Trends in Emerging Technologies – Future & Beyond - Thought Leaders Talk Series	Workshop	15.05.2024	ICT academy
27	Dr. D. Pradeep Kumar	NEP 2020 Orientation & Sensitization Programme	FDP	01.07.2024 - 15.07.2024	IIT Dhanbad MM-TTP
28	Mr. M. Balasrinivasan	Automotive Durability and NVH	Seminar	29.11.2024	SAE India
29	Dr. M. Abdur Rahman	International Conference on Materials Innovation in Engineering and Technology (ICMIET-2024)	Conference	22.08.2024 - 23.08.2024	M.I.E.T, Trichy

Achievements of Faculty



Dr. M. A. Sai Balaji

Awarded Research Fellow
by INTI University, Malaysia
on Dec' 2023 - Dec' 2025



Dr. K. Sathickbasha

Awarded Research Fellow
by INTI University, Malaysia
on Dec' 2023 - Dec' 2025



Dr. M. Thirumurugan

Faculty All Star Supporter
Awarded by **ASME**
on July 2024

International Visits by Faculties



Dr. A. Muthu Manokar

Attended International
Conference at Delta University of
Science and Technology, **Egypt**
on 22.11.2024 -26.11.2024

Presented Paper titled "Performance improvement in Tubular Solar Still using Watermelon seeds biowaste substance as novel solar energy storage materials: Energy, Exergy, Environmental and Economics: 4E Analysis



Dr. S. Ravikumar

Key note Speaker -International
conference at INTI International
University, **Malaysia**
on 12.12.2024

Applying Lean Six Sigma to Drive Ecosystem Sustainability.

Patents Owned by Faculty

S. No	Details of the Faculty & Affiliation	Title of Patent	Details of Patents
1.	S. Mohamed Illyas	Apparatus for Swirling Jet generator	File No: 420513-001 Date:18.06.2024
2.	Rasool Mohideen Shahul Hameed	Flexible Joint Robotic Arm With Hopper For Materials Handling System	Published in (U/S 11A): 29/03/2024
3.	C. Sivakumar N. Ravikumar	A System For Temperature Measurement In A Tribometer	Patent no: 202341046574

Patents Owned by Faculty

S. No	Details of the Faculty & Affiliation	Title of Patent	Details of Patents
4.	Dr. H. Siddhi Jailani, and Dr.J. Mahashar Ali	A system and method of estimating 3D roughness parameters of material surfaces	Application No: 202443055333 Date: 19.07.2024
5.	Dr. H. Siddhi Jailani, and Dr.J. Mahashar Ali	System and method for estimating surface roughness of large surface area	Application No: 202441073885 Date: 30.09.2024

LIST OF JOURNALS

LIST OF CONFERENCES

**BOOKS / BOOK
CHAPTERS**

List of Journals

1. R.D Ramalingam, G.S Esakkimuthu, S.K Natarajan, M.M Athikesavan. "Energy and exergy studies on the receiver models with materials and heat transfer fluids", *Environmental Science and Pollution Research*, vol. 31, no.3 pp. 4764-78, 2024.
2. Varun Kumar, Pradeep Krishna, R,Masood Fakouri Hasanabadi, K. Sathickbasha "Evaluation of Machine Learning Techniques for the Nd: YAG Laser & TIG Welded Stainless Steel 304", *FME Transactions*. vol. 52, no.1, 2024.
3. P.Balaji P, B.S Rajan, K. Sathickbasha , J.K Katiyar , P.B Sethupathi , K.A Ahmed "A comparative study of original equipment manufacturer brake pads using tribological testing and hybrid ranking for enhanced decision making and cost effectiveness", *Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology*. vol. 238 no.5 pp.483-99, 2024.
4. S.Noman , A.M Manokar "Experimental investigation of pistachio shell powder (bio-waste) to augment the performance of tubular solar still: Energy, exergy and environmental analysis", *Desalination*, vol. 576, 117317, 2024.
5. E.A Tei, RM Hameed, M Illyas, M.M Athikesavan "Experimental investigation of inclined solar still with and without sand as energy storage materials", *Journal of Energy Storage*, vol. 77,109809, 2024.
6. S. Noman, A.E Kabeel, A.M Manokar "Performance improvement of tubular solar still with pistachios shell materials: Energy, exergy, economic, and sustainability analysis", *Journal of Energy Storage*, vol.78,110132, 2024.
7. P. Balaji, K. Sathickbasha, D. Magadevan "The significance of low and high temperature solid lubricants for brake friction

applications and their tribological investigation", *Tribology International*, vol.191,109109, 2024.

8. A.K Musthafa, A.J Arulraj , S.K Rajamanickam , M. Manoharan , S.Sattanathan , P.D. Jeyakumar Biodegradability and mechanical behavior of novel hybrid green composites fabricated with cashew shell particle, sisal fiber and corn starch resin. *Journal of Polymer Engineering*, vol. 44, no.5, 319-329, 2024.
9. A. Baskar , MS Balaji , JK Katiyar , B Nagpal , JR Babu "New population-based simple algorithms for solving global optimisation problems", *International Journal of Mathematics in Operational Research*, vol. 27, no.2, pp.199-222, 2024.
10. Rajmohan Nagarajan, Arockia Julias, "Experimental study on emission, performance and combustion characteristics of ZnO additive diesel fuel with water injection in direct injection diesel engine", *Indian Journal of Environmental Protection*, vol.44, no.2, pp.129-136, 2024.
11. K. Radhakrishnan , SS Hameed , V Muralidharan, SQ Moinuddin "Optimizing process parameters and a comparative study of post-weld heat treatments on the microstructure and mechanical properties of 0.3% C-Cr-Mo-V steel", *International Journal on Interactive Design and Manufacturing*, 2024.
12. S.A Claret, J.P Dharmian , A.M Manokar "Artificial intelligence-driven enhanced skin cancer diagnosis: leveraging convolutional neural networks with discrete wavelet transformation", *Egyptian Journal of Medical Human Genetics* vol. 25 no.50, 2024.
13. S.P Singh, D. Anantha padmanaban , N. Venkatesh waran , MS Balaji "Effect of Ageing Temperature on the Hardness, Microstructural and Dry Sliding Wear Performance of the Functionally Graded A356 Alloy", *International Journal of Metal casting*. pp.1-22, 2024.

14. J. J. Johnkutty, S. Haque, J.T. Davis "Exploratory Data Analysis using Machine learning-Behaviour Based Safety", *Journal of Electrical Systems*. vol. 20, no.7, pp.744-54, 2024.
15. SR Kumar, MS Ali, CA Pandian, Muralidharan V, "Condition monitoring of electric vehicle motor testing machine's Vital components using bagged trees and quadratic SVM: a comparative study", *Engineering Research Express*, vol.6, no.2, 025531, 2024.
16. Samuelraj Daniel, M. Amala Justus Selvam, Serajul Haque and A. Haider Lenin, "Experimental Investigations on the Impacts of Aluminum Nanoparticles on a Low Heat Rejection Engine Running on a Blend of Soya Biodiesel and Diesel Fuel", *Malaysian Journal of Chemistry*, vol. 26, no.3, pp.233-250, 2024.
17. S Chandramohan, M Vaithiyanathan, BC Chakraborty, MM Dharmaraj "Synergistic effect of graphene and carbon black on the mechanical and vibration damping characteristics of styrene-butadiene rubber", *Iranian Polymer Journal*, 2024.
18. Ahmed Abdullah Aafaq, H. Siddhi Jailani, "Friction Stir Processing of Al 2124 Reinforced Graphene Metal Matrix Composites and Multi Characteristic Optimization Through Desirability Approach Integrated with ANN", *Transactions of the Indian Institute of Metals*, vol. 77, pp. 2023-2034, 2024.
19. C. K. Arvinda Pandian, Murali Manohar Dharmaraj, M. Thirumurugan & H. Siddhi Jailani, "Basalt fabric/(3-aminopropyl) triethoxysilane modified epoxy laminates reinforced with nano-silica, OMMT and GNP: mechanical and dynamic mechanical studies", *Polymer Bulletin*, vol. 81, pp. 11955–11974, 2024.
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21. Babu Sasi Kumar, Fausto Pedro Garcia Marquez, Muthu Manokar A, "Direct steam generation using evacuated tube collector with nanoparticles: Experimental study", *International Journal of Environmental Science and Technology*, vol. 22, no.1, 2024.
22. Syed Noman, Emmanuel Agbo Tei, A. Muthu Manokar, "Performance improvement of novel Tubular solar still with Green Almonds bio waste as energy storage material: An experimental study on Energy, Economic and Environmental Analysis", *Environmental Science and Pollution Research*, ISSN:1614-7499, vol. 31, pp. 53237–53252, 2024.
23. Syed Noman, A.E. Kabeel, A.Muthu Manokar, "Experimental analysis of Tubular Solar Still with Custard apple seeds a bio-waste material: An Energy, Exergy, Economic, Environmental and Sustainability analysis", *Journal of Energy Storage*, vol. 100, Part A, 2024.
24. E. Kabeel, Almoataz M. Algazzar, Fadl A. Essa, Ammar H. Elsheikh, Ravishankar Sathyamurthy, A. Muthu Manokar, S. Shanmugan, Hitesh Panchal, Ravinder Kumar & Mohamed Abdelgaied, "Geothermal and solar energy in water desalination and power generation: comprehensive review", *Energy Systems - Optimization Modeling Simulation and Economic Aspects*, 2024.
25. Ganesan R, Gurukarthik babu B, Savithiri Vembu, Muthu Manokar A, "Comparative Analysis on the Impact of Various Depths of Different Water Bodies on Standalone Bifacial Solar Photovoltaic Panels: An Experimental Approach", *Iranian Journal of Chemistry and Chemical Engineering, Iranian Institute of Research and Development in Chemical Industries*, vol. 43, pp. 3438-3453, 2024.
26. G. Joy Mathew, D. Najumnissa Jamal, S. Jennathu Beevi, M.S. Murshitha Shajahan, A. Muthu Manokar, "Efficiency Improvement of NTPL Power Plant Using Fractional Order

Controller", *Iranian Journal of Chemistry and Chemical Engineering, Iranian Institute of Research and Development in Chemical Industries*, vol. 43, no. 11, pp. 4162-4173, 2024.

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List of Conferences

1. Syed Noman, Khairun Nisha, Revathi Purushothaman, Rajendran Duraisamy Ramalingam, A. Muthu Manokar, "Study on annual performance and economic analysis of tubular solar still using bio-waste material", *International Conference on Water held at the International Institute of Water*, Jodhpur, India, March 2024.
2. Khairun Nisha, Syed Noman, Revathi Purushothaman, A. Muthu Manokar, "Comparative experimental investigation of tubular solar still with and without madhuca longifolia (bio – waste)" *International Conference on Water held at the International Institute of Water*, Jodhpur, India, March 2024.
3. D.R.Rajendran, A. Muthu manokar, G.Rajesh, Shyam Kumar Chaudhary, Pravin Madhukarrao Thorat, "Experimental Studies on Tubular Solar Stills with and Without Parabolic Trough Reflector Integration", *International Conference on Water held at the International Institute of Water*, Jodhpur, India, March 2024.
4. A. Arockia Julias, C. K. Arvinda Pandian, P. D. Jeyakumar, M. Thirumurugan, M. Vasumathi, "Experimental studies on the buckling strength of epoxy matrix composites reinforced with glass fibre as core and carbon/kevlar fibre as outer layer", *International Conference on Materials and Energy Science*, Aditya Engineering College, March 2024.

5. S. Jeavudeen, Nihaal Ahmed Diwan, Aabid Ahmed, Jana Sai Ram "Comparison of Machining performance of various types", *5th International Conference on Advances in Mechanical Engineering Department of Mechanical Engineering, SRM Institute of Science and Technology, Chennai, India - March 2024.*
6. Syed Noman, Fausto Pedro García Márquez, Muthu Manokar Athikesevan, "Investigation of tubular solar still with watermelon seeds bio waste as thermal storage medium: An Economic analysis "The *Eighteenth International Conference on Management Science and Engineering Management (ICMSEM 2024)*, organized by the International Society of Management Science and Engineering Management (ISMSEM) and hosted by the Universiti Malaya during August 5 - 8, 2024
7. Muthu manokar A , "use of solar distillation to improve the performance of water-cooling solar pv panel *JSI'2024 - International Conference on Engineering Sciences*, organized by University of Sfax, National School of Engineers of Sfax (ENIS) October 11 - 13, 2024, Sfax, Tunisia
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9. Syed Noman, A.E. Kabeel, A Muthu Manokar, "Performance improvement of Tubular Solar Still using watermelon seeds biowaste substance as novel solar energy storage materials: Energy, Exergy, Environmental and Economic: (4E analysis)", *2nd Delta University International Engineering Conference on Research and Innovation (DU-IECRI 2024)*, organized by Delta University Gamasa, Egypt, November 23-24, 2024

10. M ohan A, Udaya prakash J, Muthu manokar A “Bioorganic activated carbonized castor shells for distilled water production: an experimental research”, *4th International Conference on Future Technologies (ICoFT) in Manufacturing, Automation, Design & Energy*, organized by the Department of Mechanical Engineering, NIT Puducherry, 11-13 December 2024

Books & Book Chapters

S. No	Name of the Faculty	Name of the Book / Chapter Details	Name of the Publisher, country & Month of publication
1	J Shahitha Parveen, M Thirumurugan	Advances in Flexible and Printed Electronics / New generation polymer nanocomposites for flexible electronics	IOP Science
2	Shiek Jeavudeen, Murshitha Shajahan, and Muhyiddeen Nafees	Ear-Based Detection of Driver's Drowsiness using Visual Features	Springer
3	Dr.M Abdur Rahman	A Comprehensive Guide to Value Analysis and Value Engineering: Real Time Case Studies With 100+ Illustrations	Amazon https://amzn.in/d/3CGTzot
4	Dr. M Thirumurugan	Powder Metallurgy: Charcaterization, Processing and Optimization Techniques (Book Chapters)	Elsevier

05 STUDENTS CORNER

INDUSTRIAL VISITS

PLACEMENT DETAILS

**STUDENT'S
ACHIEVEMENTS**

STUDENT'S ARTICLES

INDUSTRIAL VISIT DETAILS



21/08/2024

**Department of Mechanical Engineering
B.Tech III Semester
Thejo Engineering Pvt Ltd Chennai**



22/04/2024

**Department Mechanical Engineering
B.Tech V Semester - B Section
North Chennai Thermal Power Station-1 Chennai**



19/11/2024

**Department Mechanical Engineering
B.Tech V Semester - A Section
Infercon Automation Pvt Ltd**



20/11/2024

**Department Mechanical Engineering
B.Tech V Semester - B Section
Infercon Automation Pvt Ltd**



14/02/2024

**Department Mechanical Engineering
B.Tech IV Semester - A Section
Grundfos Pumps India Pvt. Ltd, Chennai**



23/10/2024

**Department Mechanical Engineering
B.Tech V Semester - A Section
North Chennai Thermal Power Station, Chennai**



14/03/2024

**Department Mechanical Engineering
B.Tech IV Semester - B Section
HL Mando Anand India Pvt Ltd, Plant -1**



28/10/2024

**Department Mechanical Engineering
M.Tech IV Semester
EinNel Technologies, Chennai**

PLACEMENT DETAILS

S.NO	RRN	Name	COMPANY NAME
1	200021601001	ABDUL ZAWAHIRUDEEN .S	TVS SUNDRAM FASTENERS LTD, Shadowfax Technologies
2	200021601004	ANANTHAKRISHNAN .M	DAIKIN AIPL
3	200021601005	DAFEDAR MUZAMIL	TVS SUNDRAM FASTENERS LTD
4	200021601007	FARIH FYZAL KARATTIYATTIL	DAIKIN AIPL
5	200021601008	GOKUL RAAM .G	Luminous Power Technologies Pvt Ltd
6	200021601010	MD. ABUTHAHIR KALAM .N	TVS SUNDRAM FASTENERS LTD
7	200021601012	MOHAMED DANISH MUSTAFA .S .M	TVS SUNDRAM FASTENERS LTD
8	200021601021	MOHAMMED ADIL SHARIFF	Shadowfax Technologies
9	200021601024	PERAISOODAN VISWANATH .S	Aviotron aerospace Pvt Ltd
10	200021601026	ROHAN .S	SLEEP WALKERS ENGG SOLUTIONS
11	200021602006	DHEERAJ KUMAR. R	TVS SUNDRAM FASTENERS LTD, DAIKIN AIPL
12	200021602012	GUGAN. B	TVS SUNDRAM FASTENERS LTD
13	200021602014	KADHIR IMRAN. M.L	TVS SUNDRAM FASTENERS LTD
14	200021602021	MOHAMED AMEER SULTHAN. S	TVS SUNDRAM FASTENERS LTD, Aviotron Aerospace Pvt. Ltd.

S.NO	RRN	Name	COMPANY NAME
15	200021602026	MOHAMED MALIK ALI	TVS SUNDRAM FASTENERS LTD, Shadowfax Technologies
16	200021602028	MOHAMMED JEELAN. M.J	Shadowfax Technologies
17	200021602029	NANDHAKUMAR	APPOLLO TYRES LTD,CHENNAI
18	200021602031	RAJARAM. R	Lanson Toyota Motors ltd
19	200021602034	YUVAN SANKAR. B	APPOLLO TYRES LTD,CHENNAI
20	200021602037	BATHRINATHAN. T	TVS SUNDRAM FASTENERS LTD
21	200021602042	MOHAMED ASHIK. K	TVS SUNDRAM FASTENERS LTD, Shadowfax Technologies
22	200021602043	MOHAMED SHAHIL AKTHAR. J	TVS SUNDRAM FASTENERS LTD
23	200021602045	MOHAMMED ABDULLAH. M	Shadowfax Technologies
24	200021602046	MOHAMMED ADHIL. K.M	Shadowfax Technologies
25	200021602048	MOHAMMED ZUBER. I	TVS SUNDRAM FASTENERS LTD
26	200021602052	RAGHUL. K	TVS SUNDRAM FASTENERS LTD
27	200021602062	SRIRAM KUMAR. V	Shadowfax Technologies
28	200021602065	THOMSON. Y	TVS SUNDRAM FASTENERS LTD
29	200021602067	VASANTH KUMAR. K	Shadowfax Technologies

STUDENT ACHIEVEMENTS

S.No	Name of the student	RRN	Type of recognition/Award Achieved	Details of Awarding organization
1	Esakki Pandi	220021601015	Won 2nd Place In SILAMBAM EVENT (ORION'24)	BSACIST
2	Poojha S	210021601066	Participated in final round of Art of Elevator Pitch	IIM Bangalore
3	Surjith J	210021601084	Secured 1st place at CIPET Symposium, Young Scientists Competition and Received Rs 3000/-	Central Institute of Petrochemicals Engineering And Technology (CIPET)
4	Shahul Hameed	210021601076	International Internship	Air Master, HVAC installation & Maintenance, Kingdom of Bahrain
5	Shakel Ahamad S	210021601077	Internship at Government Organization	BHEL, India
6	Muhsin A R	210021601062	Internship at Government Organization	CSIR-CEERI, India
7	Mohammed Ziyavudeen R P	210021601057	Internship at Government Organization	CSIR- CEERI, India
8	Surjith J	210021601084	Internship at Government Organization	CSIR-CEERI India
9	Sathick.A.S	230021601040	Securing 1st place in hovercraft racing competition	ASME BSACIST

S.No	Name of the student	RRN	Type of recognition/Award Achieved	Details of Awarding organization
10	Sathick.A.S	230021601040	Securing 2nd place in tower building competition	ALTURA by ASME BSACIST
11	Kowshika.T	230021601017		
12	Sakthi narayanan	230021601038		
13	Mohamed Muneeb	230021601021		
14	Abdul Ghani A	230021601001	Second prize in technical event Buzz Blitz	Loyola-ICAM College of Engineering and Technology, Chennai
			Second prize in technical event Gearup	
			First prize in Technical event Lathe Master	KCG college of Technology, Chennai
			First prize in Technical event Mr.Machinist	St.Jospeh college of Engineering
			Second prize in Technical quiz	
15	Dhanush S	230021601011	Third prize in Technical event Gearup	Loyola-ICAM College of Engineering and Technology, Chennai
16	Aadel Abdul Qader	220021601002	International Internship	Ashgan Al Rabie Automotive Co, Riyadh, Saudi Arabia
17	Yuvanshankar R	220021601067	Internship at Government Organization	Southern Railway, Trichy
18	Joshua Joy Mark G	220021601024	Presented paper at International conference	SAE

STUDENT ARTICLE



GOKUL RAJ M

230021601013

3rd YEAR/ MECHANICAL

UNFOLDING INNOVATION: THE MECHANICAL MARVEL BEHIND NISAR'S RADAR

The Antenna Deployment Mechanism is one of the most critical mechanical systems in the NISAR satellite, ensuring that the large radar antenna can be stowed compactly during launch and fully deployed once in orbit. NISAR's antenna is a 12-meter diameter deployable mesh reflector, designed to fit within the fairing of the GSLV launch vehicle and then expand to its full size in the microgravity of space. The deployment mechanism uses a series of hinges, motor-driven actuators, springs, and locking devices to unfold the antenna panels in a precise sequence, ensuring structural stability and proper alignment for radar operations. The mesh surface is stretched over a lightweight frame, and the deployment system must handle this process smoothly to avoid damage, misalignment, or incomplete extension that could compromise mission objectives. The system operates autonomously, with sensors and feedback loops verifying each stage of deployment to confirm successful execution.

The design of this mechanism has to account for several challenges: the violent vibrations during launch, the vacuum of space, extreme temperature variations, and the need for flawless operation in a zero-gravity environment where no manual repairs are possible. Engineers have incorporated redundant actuators, fail-safe latches, and robust supports to ensure that the antenna deploys successfully even if one component fails. Materials used in the mechanism are selected for their thermal stability, strength-to-weight ratio, and resistance to space radiation. Once fully deployed, the mechanism locks the reflector in place, creating a rigid and stable platform for the L-band and S-band radar systems to capture high-resolution Earth images with scientific precision and long-term reliability. The success of the NISAR mission depends on the reliability, accuracy, and robustness of this deployment system, making it a prime example of advanced aerospace mechanical engineering and meticulous design integration.

KOWSHIKA T
230021601017
3rd YEAR/ MECHANICAL



RECYCLING OF PLASTIC WASTE IN AEROSPACE AND MECHANICAL ENGINEERING

Plastic waste recycling is gaining momentum in aerospace and mechanical engineering as industries seek sustainable alternatives to traditional materials. With growing environmental concerns and stricter regulations, engineers are exploring ways to repurpose post-consumer and industrial plastic waste into high-performance components. Advanced recycling techniques such as chemical depolymerization and thermal processing allow plastics like PET, PE, and polycarbonate to be broken down and reconstituted into usable forms. These recycled polymers can be reinforced with fibers or additives to enhance strength, thermal resistance, and durability, making them suitable for non-critical aerospace parts, housing structures, insulation panels, and interior cabin components. In mechanical fields, recycled plastics are increasingly used in prototyping, tooling, and lightweight structural elements, offering cost savings and reduced carbon footprints.

Despite promising developments, challenges remain. Recycled plastics often have inconsistent properties, limiting their use in high-stress or safety critical aerospace applications. Engineers are addressing this by blending recycled polymers with virgin materials, using nanofillers for improved mechanical performance, and implementing strict quality control during processing. Additive manufacturing (3D printing) has also opened new avenues, allowing recycled plastic filaments to be used in custom parts with minimal waste. In mechanical systems, recycled plastics are being integrated into gears, bearings, and enclosures where wear resistance and dimensional stability are essential. As material science advances and recycling technologies improve, the role of recycled plastics in aerospace and mechanical engineering is expected to expand supporting a circular economy while meeting the industry's demand for lightweight, cost-effective, and eco-friendly solutions.



SATHICK A S
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3rd YEAR/ MECHANICAL

SHAPE-MEMORY ALLOYS (SMA)

A REVOLUTION IN AEROSPACE

In aerospace engineering, achieving weight savings, reliability, and multi-functionality is essential and Shape-Memory Alloys (SMAs), particularly Nickel-Titanium (Nitinol), are emerging as a transformative solution. These metals possess the remarkable ability to “remember” and return to a preset shape when heated, thanks to a reversible phase transformation between martensite (soft, easily deformable, stable at lower temperatures) and austenite (rigid, shape-retaining, stable at higher temperatures). In addition to this Shape Memory Effect, SMAs exhibit super-elasticity, allowing them to recover large strains instantly without heat when above their transformation temperature. These properties enable SMAs to replace bulky electromechanical or hydraulic actuators with simple wires, rods, or springs-reducing system weight, eliminating lubrication needs, improving reliability, and lowering maintenance costs. Since actuation is triggered thermally, often by passing electric current directly through the SMA, the resulting systems are compact, vibration-resistant, and highly durable.

Applications of SMAs in aerospace are growing rapidly. Morphing wings use SMA actuators to adjust wing geometry mid-flight, improving aerodynamics without heavy flaps or slats. Satellites and spacecraft use SMA wires to deploy antennas, solar panels, and instruments—offering quiet, reusable alternatives to pyrotechnics. Jet engines explore SMA-based control of vanes, nozzles, and cooling flaps for better efficiency. UAVs benefit from lightweight SMA landing gear systems that reduce complexity. While SMAs face challenges like slower thermal response and fatigue over many cycles, engineers are addressing these with hybrid SMA-composite structures, embedded sensors, resistive heating, and cryogenic variants for deep-space missions. As aerospace systems become more adaptive, SMAs are set to enable lighter, quieter, and more efficient actuation with near-organic responsiveness.

AL FAZIM.M
240021601010
2nd YEAR/ MECHANICAL



FROM STRENGTH TO INTELLIGENCE: MATERIALS THAT THINK

Engineering materials are no longer just strong and lightweight—they are becoming intelligent and adaptive. Recent advances show how structures can respond to their surroundings instead of staying rigid. Two exciting examples are morphing surfaces made with shape memory alloys (SMA) and smart composites with embedded sensors. Both hold the potential to change the way we design machines, vehicles, and everyday systems. Shape memory alloys have the rare ability to “remember” their original form. When heated or electrically activated, they return to that shape, creating movement without traditional motors or hydraulics. This property makes it possible for surfaces to change their geometry in real time, reducing drag, improving efficiency, and adapting to different operating conditions. From aircraft wings and wind turbine blades to automotive parts, morphing structures are being explored as a way to combine flexibility with strength.

Smart composites go one step further. By embedding tiny sensors—such as fiber optics, piezoelectric layers, or nanoscale networks—engineers can turn ordinary materials into self-aware systems. These composites can sense stress, detect small cracks, or monitor vibrations before damage becomes serious. Instead of waiting for a breakdown, machines and structures could “tell” us when they need maintenance, improving safety and cutting costs. Of course, challenges remain. SMAs can wear out after repeated cycling, while embedding sensors without weakening the material requires precise techniques. Costs are also a concern for large-scale use. But researchers are tackling these hurdles with nanotechnology, hybrid materials, and advanced manufacturing methods. Looking ahead, smart adaptive materials represent a step toward engineering that feels almost alive—able to sense, respond, and adapt. For mechanical engineers, this shift means designing systems that are not only efficient and durable but also intelligent, setting the stage for innovations that blur the line between mechanics and smart technology.



AHAMED IBRAHIM MOHAMED HANIFFA

220021601007

2nd YEAR/ MECHANICAL

ADAPTIVE TORSION BEAM SUSPENSION SYSTEM

Conventional vehicle suspensions are typically fixed in both stiffness and damping characteristics, designed as a compromise between ride comfort and handling performance. These systems often struggle to adapt to varying road conditions or driving dynamics, resulting in limitations in overall vehicle responsiveness. The Adaptive Torsion Beam Suspension System introduces a purely mechanical innovation that dynamically adjusts torsional stiffness in real time, responding intelligently to changing driving conditions. This enhances ride quality, vehicle stability, and safety—without relying on electronics, sensors, or hydraulic components. By integrating a coordinated system of mechanical linkages, variable-stiffness torsion beams, and preload-adjustable springs, the suspension can react instantly to variations in load, speed, and road surface irregularities. During normal driving scenarios, the system delivers soft damping for enhanced comfort, while in sharp turns or sudden maneuvers, the torsion beams mechanically stiffen to reduce body roll and improve cornering stability, all through passive mechanical action.

The core advantage of this system lies in its self-adaptive mechanical design, which intelligently responds to dynamic forces without external control inputs. Components such as preloaded cams, spring collars, and multi-lever linkages work in concert to modulate stiffness automatically based on the mechanical forces acting on the wheels and suspension arms. This eliminates the need for active electronics or sensor-based feedback loops, significantly reducing system complexity, cost, and long-term maintenance requirements while maintaining high reliability and durability. Furthermore, the suspension architecture is designed for modular integration, making it feasible to retrofit onto existing conventional vehicles without extensive redesign. By combining advanced mechanical engineering principles with adaptive functionality, the Adaptive Torsion Beam Suspension exemplifies how purely mechanical systems can deliver smart, responsive performance that rivals electronically controlled active suspensions—offering a compelling solution for next-generation vehicle dynamics.

06

STAFF CO-ORDINATORS



Dr. M. A. Sai Balaji /SAE



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Creators:



ABDUL GHANI.A
Pre-Final Year/ Mech



SATHICK.A.S
Pre-Final Year/ Mech



SUSIKARAN.V.S
Pre-Final Year/ Mech

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