

Official Newsletter Department of Mechanical Engineering

अविन्या= वृद्धि

Insight to innovative growth

Editor-in-chief:

Dr. Vaibhav Jain

Editor:

Ms. Surabhi Lata

Student Editors:

Sumit Dikshit

Ikroop Singh Grover

Tushar Aneja

Maharaja Agrasen Institute of Technology

The Head's Desk

It is a matter of great pride and privilege for me to be associated with the Department of Mechanical Engineering for this 19th year. Year 2019-20 has been a year of accomplishments for the Department. We got Accreditation status from NBA. Three of the faculty members of the Department received their PhD degrees from reputed institutes viz. NIT Kurukshetra and DTU. The Department organized Faculty Development programme in which faculty of other institute from NCR participated. A course on SCILab organized by us with the help of NMEICT, IIT Bombay benefitted number of teachers of various schools of Delhi. A large number of faculty members and students presented their research papers in various conferences in Delhi, Pune and Hyderabad.

This year we organized industrial visits almost every fortnight for the students. Two national seminars, sponsored by CSIR and GGSIPU, respectively were organized by the Department. Number of lectures have been also arranged by ASHRAE society and SAE Collegiate Club of MAIT.

Dr. Vaibhav Jain

Department Vision

To be a globally renowned department in Engineering and Technology, excelling in academics, research, innovation, and ethical values, while addressing the needs of industry and society through leadership in Mechanical Engineering.

Department Mission

To prepare responsible and effective engineers for global challenges by:

1. Delivering quality education through cutting-edge technologies.
2. Fostering research, innovation, and the development of socially relevant technologies.
3. Upholding ethical values and promoting sustainable professional growth.

Program Educational Objectives

PEO 1: Build on the capability to work in global organisations as individuals and as team members and leaders and to have competence to start, run and grow one's own business.

PEO 2: Develop the ability of modeling & analytical skills for problem-solving and decision making to deal with latest technological challenges in industry and Research.

PEO 3: Develop expertise in the design process of mechanical systems based on functionality, safety, standards, cost effectiveness, aesthetics and sustainability.

PEO 4: Inculcate ethical responsibilities and service towards peers, society and the nation.

PEO 5: Imbibe strong fundamental concepts of engineering and their application in the emerging fields of Engineering among students.

List of Faculty Members

Dr. Vaibhav Jain

Mr. Anil Gupta

Ms. Surabhi Lata

Dr. Kanchan Mudgil

Dr. Vipin Kr. Sharma

Mr. Deshdeep Gambhir

Dr. Sidharth

Mr. Naveen Solanki

Mr. Sumit Joshi

ASHRAE, Student Chapter MAIT

Membership Number: 8370536



The ASHRAE Student Chapter MAIT was started in Feb 2019. Since its inception the ASHRAE Student Chapter MAIT has witnessed exponential growth. The society was started just with 15 members under the guidance of Dr. Vaibhav Jain and its strength has been increased to 71 student members. Some of the members graduated in year 2020 and currently has 53 student members. The students of this chapter have shown extreme compassion and exuberance in discharging all the tasks taken up by them with utmost dedication and hard work. The Chapter has grown to be stronger, compassionate, tech savvy and slated to give the better engineers of tomorrow. They are continued to indulge in new, green and sustainable technological research and generated more practical experience in our society and with that work smart towards developing new models in the field of HVAC&R. As it is evident from this report, they didn't let COVID-19 to stop them from doing their best and making the best use of the time at home and keep on expanding the chapter and its activities. ASHRAE is a world-renowned organization and they only want to uphold that name by constantly trying hard to be better than before.

Dr. Vaibhav Jain

Team JATAYU

Founded in 2012 under the SAEINDIA Collegiate Club of MAIT, Team Jatayu is a dynamic group of engineering students dedicated to redefining automotive engineering. Specializing in All-Terrain Vehicles (ATVs), the team has excelled in prestigious competitions like Baja SAE India, Baja SAE USA, and Enduro Student India, showcasing technical mastery and resilience.

Team Jatayu thrives on collaboration, integrating academic knowledge with real-world applications. From advanced vehicle design to complex manufacturing, their ATVs are known for innovation, performance, and industry-standard excellence. Beyond competitions, the team fosters a culture of learning, mentoring juniors, and contributing to MAIT's legacy of automotive excellence. With a passion for pushing the boundaries of off-road engineering, Team Jatayu continues to inspire future engineers.

Mr. R.C. Saini

3D SPACE Club

3D Space: Additive Manufacturing Society of MAIT, founded in 2019 by 20 visionary students, is dedicated to advancing additive manufacturing. The society transforms ideas into tangible solutions through hands-on experience with 3D printing, enhancing students' CAD skills and mastering Design for Additive Manufacturing (DFAM).

Beyond designing and building 3D printers, the society produces engineering-grade components and fosters interdisciplinary collaboration. It stays at the forefront of the industry through research, competitions, and conferences. Committed to innovation, 3D Space empowers students to excel in the evolving field of additive manufacturing.

Ms. Surabhi Lata

Grants to ASHRAE Student Chapter, MAIT & MAIT-SAEINDIA Collegiate Club

1. Project titled, “**Design and Development of Vapor Compression Experimental Test Rig for Training and Demonstration of Different Psychrometric Processes**” sponsored by ASHRAE, USA with funding of **\$4960** in November 2021 (August 2021-July 2022).
2. Project titled, “**Design and Development of Ice Slurry Generator Experimental Test Rig as Training and Demonstration unit**” sponsored by ASHRAE, USA with funding of **\$4950** in November 2021 (August 2021-July 2022).
3. Project titled, “**Air Conditioner Cum Air Sterilizer for Combined Application of Air Heating and Cooling**” sponsored by ASHRAE, USA with funding of **\$4980** in November 2021 (August 2021-July 2022).
4. Project titled, “**Development of double skin air handling unit with active air purification system as an educational demonstration unit**” ASHRAE, USA with funding of **\$4980** in November 2021 (August 2021-July 2022).
5. DSIR has approved a project titled “**Development and Performance Evaluation of Green Cooling System in LPG Fuelled Vehicles**” under the PRISM and has sanctioned an amount of **Rs 1.97 lakh**.
6. MAIT-SAEINDIA Collegiate Club receive a grant from AICTE of **Rs.1,00,000/- (One Lakh Only)** under AICTE-SPICES 2020-21.

Online Webinar

on

“Production: Non-traditional Machining Methods”

A technical webinar on “Production: Non-traditional Machining Methods” was organized on 13th Dec 2021 for the students of Mechanical Engineering department. The event was presented in association of ACE Engineering Academy.

“Education is the ability to listen to almost anything without losing your temper or self-confidence.” – Robert Frost

Research Publications

- ❖ N. Solanki, A. Arora, and R. K. Singh, "Performance Comparison of Refrigerants HFO1234yf and HFO1234ze in a Vapour Compression Refrigeration System Operating Under Fouled Conditions," 2021.
- ❖ Vipin Kumar Sharma, Modeling and analysis of a novel rotational magnetorheological abrasive flow finishing process, *International Journal of Lightweight Materials and Manufacture*, Volume 4, Issue 3, September 2021, Pages 290-301, DOI: <https://doi.org/10.1016/j.ijlmm.2021.02.001>
- ❖ Sachin Gupta, Performance assessment of triangular Obstacles mounted Solar Air Heater Using Taguchi Method, *Journal of Engg. Research* <https://doi.org/10.36909/jer.ICARI.15321>
- ❖ Vipin Kumar Sharma, Sri Kant Rana, Roop Lal and Ramakant Rana, "Wear and Residual Stress Analysis of Waste Sea Shell and B4C Particles Reinforced Green Hybrid Aluminium Metal Composite", *Journal of Engg. Research ICARI Special Issue, 2021*, pp. 215-224, DOI: <https://doi.org/10.36909/jer.ICARI.15317>
- ❖ R. Rana, L. Krishnia, Q. Murtaza, R.S. Walia, Optimizing the Machining performance of CNC tools inserts coated with Diamond like Carbon Coatings under the dry cutting environment, *J. Eng. Res.* (2021). <https://doi.org/10.36909/jer.ICARI.15327>.
- ❖ Satish kumar, Pankaj Chandna & Gian Bhushan (2021). Empirical modelling (A Green's Function) for the prediction of work piece temperature during end milling of Inconel625. *Journal of Thermal Engineering*, Vol. 7, No. 8, Issue 14, pp. xx-xx, December 2021, Yildiz Technical University Press, Istanbul, Turkey
- ❖ Hitesh, R. Wattal and Surabhi Lata, Development and characterization of coal fly ash through low-energy ball milling, Volume 47, Part 11, 2021, Pages 2970-2975, <https://doi.org/10.1016/j.matpr.2021.05.204>
- ❖ Design development and analysis of cylindrical spring with variable pitch for two wheelers, Volume 47, Part 11, 2021, Pages 3105-3111, <https://doi.org/10.1016/j.matpr.2021.06.130>
- ❖ Surabhi Lata and Siddharth, Sustainable and eco-friendly approach for controlling industrial wastewater quality imparting succour in water-energy nexus system, Volume 3, 15 December 2021, 100020, <https://doi.org/10.1016/j.nexus.2021.100020>
- ❖ Chhimwal, M., Agrawal, S., & Kumar, G. (2021). Measuring circular supply chain risk: a Bayesian network methodology. *Sustainability*, 13(15), 8448. <https://doi.org/10.3390/su13158448>
- ❖ Vikas Kumar, Gulshan Sachdeva, Sandeep Tiwari, Parinam Anuradha and Vaibhav Jain (2021), 'An Experimental Investigation on Vapor Compression Refrigeration System Cascaded with Ejector Refrigeration System', *International Journal of Air-Conditioning and Refrigeration*, Vol. No. 29 pp. 03, 2150028.

Online Webinar on “Problem Solving & Creativity”

Department of Mechanical Engineering along with ASHRAE Student Branch Technology organized an online webinar on “Problem Solving & Creativity” on 23rd October 2021. The event started with an introductory note by Mr. Dhruv Malhotra, President, ASHRAE student chapter who shared about the journey and achievements of ASHRAE students of MAIT. The event was graced by Prof. Victor Goldschmidt, Emeritus Purdue Professor of Mechanical Engineering, Fellow and Past Director at-Large of ASHRAE and honorary member of the IIR (International Institute of Refrigeration), ACAIRE (Colombia Association of Air Conditioning and Refrigeration, AAF (Argentine Association of Cold) and ASURVAC (Uruguay Association of Refrigeration, Ventilation, Air Conditioning and Heating)

His talk comprised of the adoption of introspection model which is needed to enrich the engineering skills. There is a dramatic difference between the problem solving techniques presented to us in formal engineering courses and the skills that are called for in actual practice. These differences will be outlined, leading towards a special focus on the need for cooperation between creativity and problem solving in engineering applications. The lecture presented the general steps in problem solving of definition, recasting, ideation, convergence, and validation/implementation. The lecture ended with a listing of ‘pet-peeves’ which will include confusing cause and effect and violating the scientific method. The speaker stressed on the call for creativity among engineering students. The nature of creativity, and methods to enhance creativity will then be outlined challenging each individual to personalize the comments.

The screenshot shows a Zoom webinar interface. At the top, there are several video thumbnails of participants, including Neelam Sharma, Gaurav, and SHAVIST KUMA. The main content area is split into two parts. On the left, a blue slide titled "Blocks to Creativity" lists the following items: Ego, Cultural, Emotional, Intellectual, Environmental, and Functional Myopia. On the right, there is an image of an iceberg floating in the ocean, with a red arrow pointing to the much larger, submerged part of the iceberg, symbolizing hidden or unacknowledged factors. Below the slide, there is a video feed of Dr. Vaibhav Jain, an elderly man with a white beard and glasses, wearing a green plaid jacket over a white shirt. To the right of the video feed is a slide titled "Concluding Remarks" which includes a portrait of Dr. Jain and a list of his qualifications and achievements, such as his PhD from the Department of Mechanical Engineering at the National Institute of Technology, Karakshetra in 2016, and his BE degree in Mechanical Engineering from VTU, Belgaum in 2003.

SAE India Collegiate Club

FMAE BAJA – 2021

Team Jatayu, SAEINDIA collegiate club, MAIT participated in FMAE BAJA 2021 from 1st October 2021 to 5th October 2021 at Hyderabad, Telangana.

Event Name	Rank	Price Monet (Rs.)
Suspension event	1 st	15,000/-
Rock Climb event	1 st	10,000/-
Hill Climb	2 nd	-
Endurance and Fuel Economy	2 nd	10,000/-
Overall Champions	1st	1,00,000/-
Total Price		1,35,000/-

Team Jatayu secured the title of the **overall champions in India** for **FMAE BAJA 2021**.



Efficycle 2021

Team Kalam participated in SAEINDIA NIS Efficycle 2021 in virtual mode from 13th November 2021 to 21st November 2021 under the guidance of Mr. R. C. Saini.

The team has designed a 3 wheel (2F 1R) configuration vehicle in hybrid mode. Among 40 teams, Team Kalam secured 9th rank all over India.



Efficycle 2021: Effique 4-Wheel Category

Team Kalam Motorsports participated in SAEINDIA NIS Efficycle 2021 in virtual mode in 4-wheel category. The event was held from 13th November 2021 to 21st November 2021. In this event, the team designed the 4-wheel (2F 2R) configuration vehicle in a hybrid mode. Among 30 teams, Team Kalam secured **4th rank all over India**. They also secured **1st rank in design compliance** and **2nd rank in dynamic evaluation**.



Electric Vehicle India Expo 2021

The students of SAE Collegiate Club, MAIT received the opportunity to be exhibitors and showcase the own vehicles at the EV India Expo 2021. The team interacted with the forefront members of EV companies like Morris Garages, Mahindra, Tata Motors, Okaya and also with startups, that are coming up with brilliant innovations. A number of positive and motivating responses on the current designs were received so that the designs are easily absorbed in the industries as per their demand.



Individual Achievements

- ✚ Dr. Sumit Joshi participated & completed successfully AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Clean Energy Manufacturing: Transformation for Sustainable Development" from 04/10/2021 to 08/10/2021 at DTU, New Delhi.
- ✚ Dr. Sumit Joshi successfully completed the AICTE approved National Initiative for Technical Teachers Training (NITTT) modules (Module 1 to Module 4).

ATAL workshop on Robotics: Advances and Applications

A 5-Days AICTE sponsored workshop was conducted from 23th to 27th August 2021 in which more than 100 participants from different parts of the country participated. It was conducted on the online platform.

Chief Guest of the program was Prof. Prem Kumar Kalra, (Director, Dayalbagh Education institute), Guest of Honour of the function were Prof. Rajive Kumar (Member Secretary, AICTE) and Dr. Mamta Rani Agarwal (Adviser-I, ATAL Academy), Dr. Amit Dutta (Deputy Director, ATAL AICTE) and Coordinator chaired the function. Also, Directors of different academies, and AICTE official were also present with the participants. Adviser-I, ATAL Academy, Dr. Mamta Rani Agarwal addressed the participants about online FDP and various initiatives by ATAL Academy. It was a great Initiative by ATAL Academy.



"Happiness comes from helping others, by being with others, and by sharing, even if it's only a smile."

Maharaja Agrasen Institute of Technology
Department of Mechanical Engineering

Brahmgupt Block, Block No. II,
Maharaja Agrasen Institute of Technology
PSP Area, Plot No. 1, Sector – 22, Rohini, Delhi – 110086.