

The Head's Desk

It is a matter of great pride and privilege for me to be associated with the Department of Mechanical and Automation 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. V. N. Mathur

Faculty Corner



Ms. Garima Sharma completed her PhD in "Study of Factors Influencing the Performance of Service Organizations: A Case of Telecom Service Providers" from Delhi Technological University, in May 2022.

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 with 15 members under the guidance of Dr. Vaibhav Jain and its strength has been gradually increasing. 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. Even, the COVID-19 couldn't 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

WORLD EARTH DAY 2022

Department of Mechanical & Automation Engineering and Department of Mechanical Engineering in association with the Institute Innovation Council (IIC) and ASHRAE MAIT Student Branch celebrated “World Earth Day (22 April)” on 23rd April 2022. The event was graced by Mr. Ashish Rakheja, Managing Partner at AEON Consultants. He is associated with ASHRAE as Director at Large (DAL) and is also seasoned Consulting Engineer who has designed over 2000 projects including Hotels, Airports, Hospitals, Retail, Residential, Commercial, High rises and Industrial projects. Mr. Ashish Rakheja delivered a talk on “Net Zero Water Building” focusing on the conservation of water. Various techniques for water treatment and distribution were highlighted and explained. The innovations in water savings like low flow fixtures, toilet fixtures, and wall - mounted sensors were presented. The speaker highlighted the world water use and the current situation of water in India. The lecture presented various rating systems of energy conservation such as IGBC, GRIHA, LEED, MOEF and IPC standards. The concept of carbon neutrality and green building footprint was also presented. The lecture ended with a short eye-opening video on Earth and its ecosystem.



Faculty Pursuing PhD

- ✚ Mr. Anil Kumar Dahiya
- ✚ Mr. Atul Kaushik
- ✚ Mr. Naveen Solanki
- ✚ Ms. Piu Jain
- ✚ Mr. Ramakant Rana
- ✚ Mr. Rakesh Chander Saini
- ✚ Ms. Rachna Chawla
- ✚ Ms. Surbhi Upadhyay
- ✚ Mr. Vikas Sharma
- ✚ Mr. Madhukar Chhimwal
- ✚ Mr. Anupam Thakur
- ✚ Mr. Deshdeep Gambhir
- ✚ Mr. Ashwni
- ✚ Ms. Surabhi Lata
- ✚ Mr. Satish Kumar

PHD

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

Research based-Online Webinar

Department of Mechanical & Automation Engineering and Department of Mechanical Engineering organized a webinar on the different research topics in the month of January 2022.

“Experimental investigations on mechanical behaviour of friction stir welded aluminum-based composites”

The event was based on the research work carried out by Dr. Narinder Kaushik during his PhD program on 29th January 2022. Dr. Narinder Kaushik presented mechanical behaviour of friction stir welded aluminum-based composites with the adoption of Friction Stir welding technique. The talk started with the introduction of composite materials and introduction of FSW process. The speaker briefly explained the influence of microstructural features obtained after FSW on the mechanical and tribological properties of the FS welded joints. The lecture concluded with the future scope of the research work.

GUEST SPEAKER

Dr. Narinder Kaushik is presently working as an Assistant Professor in the Department of Mechanical and Automation Engineering at Maharaja Agrasen Institute of Technology, Delhi. He has been awarded the Ph.D. degree from National Institute of Technology, Kurukshetra (NITKKE). Prior to working in MAIT, he had worked at Vashu College of Engineering, Rohtak for 9 years summing his total teaching experience to 14 years. His research interests include experimental and numerical aspects of fabrication of composite materials, wear analysis and tribological behavior of composite materials, and some novel approach in friction stir welding (FSW) etc. He has authored many research papers in International Journals and Conferences of repute. He is also in the reviewer board of some reputed international journals.

Dr. Narinder Kaushik
Department of Mechanical and Automation Engineering

MAHARAJA AGRASEN INSTITUTE OF TECHNOLOGY
AGRASEN CHOWK, SECTOR-22, ROHINI, NEW DELHI-110086

DEPARTMENT OF MECHANICAL & AUTOMATION ENGINEERING
&
DEPARTMENT OF MECHANICAL ENGINEERING

PRESENTS
WEBINAR SERIES
DR. NARINDER KAUSHIK, SPEAKER

EXPERIMENTAL INVESTIGATIONS ON MECHANICAL BEHAVIOUR OF FRICTION STIR WELDED ALUMINUM BASED COMPOSITES

PIN-ON-DISC APPARATUS
DUCOM (TR-20LE)

Pin, Counter face disc, Load lever, LVDT, Pin specimen, Counter face rotating disc

PIN-ON-DISC DRY SLIDING WEAR ANALYSIS

- The manufactured composite ought to have a decent wear protection performance, when it is suited in any application. Consequently, the impact of applied load, sliding distance and wt. % of SiC particles on the output response characteristics such as wear rate, specific wear rate and frictional force are researched.

$$\text{Volumetric loss} = \text{Height loss} \times \text{cross sectional area of pin}$$
$$\text{Wear rate (WR)} = \frac{\text{Volumetric loss}}{\text{Sliding distance}} \frac{\text{mm}^3}{\text{m}}$$

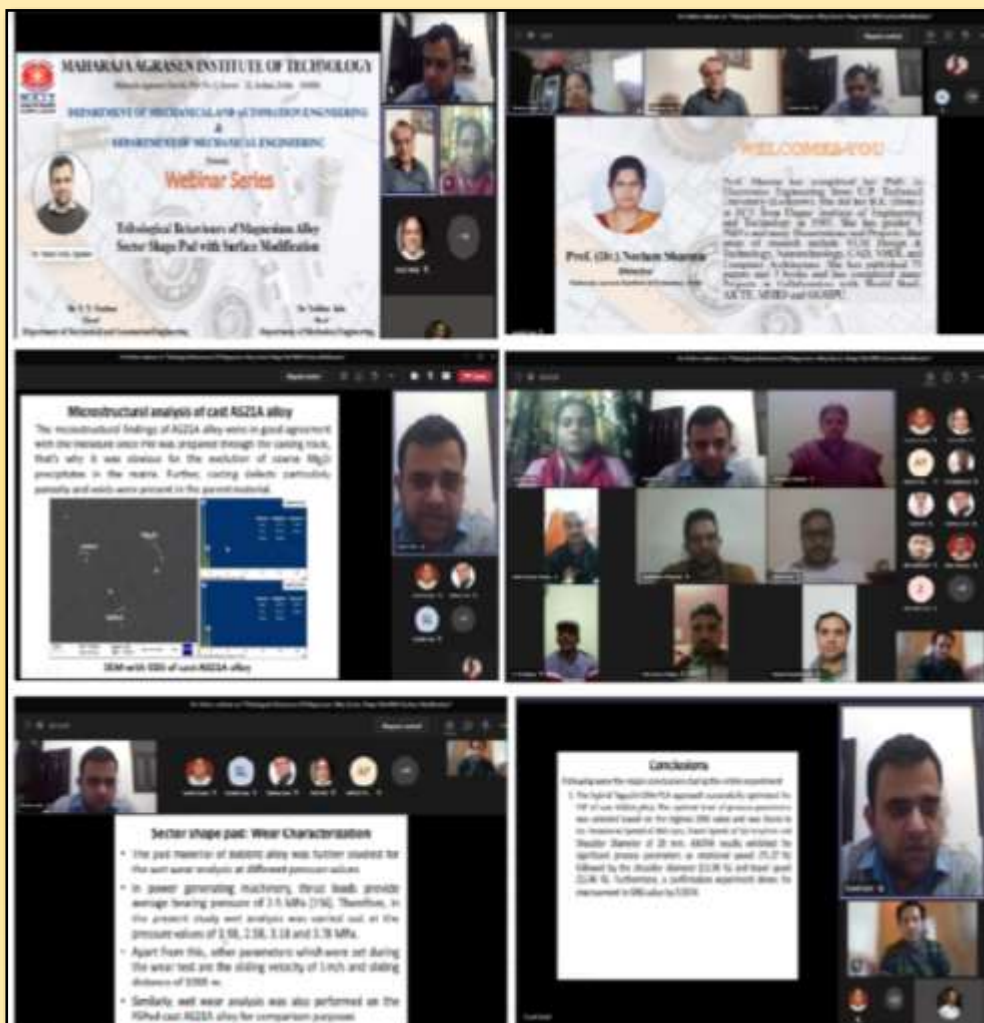
DEVELOPMENT OF FSW TOOLS

The trials welds were carried out using tools of different profiles viz., square, cylindrical threaded and conical

Research based-Online Webinar

“Tribological behaviors of magnesium alloy sector shape pad with surface modification”

Dr. Sumit Joshi presented magnesium alloy sector shape pad with adoption of Friction Stir Processing (FSP) on 8th January 2022. Further, the principle of FSP was very well explained along with the supporting literature. Dr. Sumit Joshi presented a talk discussing about the Friction Stir Processing (FSP), a surface modification technique, used for investigation of the properties of Magnesium alloys. The talk started with the introduction of various types of magnesium alloys and their applications. Further, the principle of FSP was explained with supporting literature. Dr. Sumit listed the various types of equipment utilized for achieving the research objectives. The speaker briefly explained the influence of microstructural features obtained after FSP on the mechanical and tribological properties of magnesium alloys. The FSP produced magnesium alloys was further explored for the thrust bearing applications. The speaker stressed the studies of magnesium alloys at elevated temperature applications.



Industry-Institute Interaction

AIR FLOW PVT. LTD.

An industrial visit to Air Flow Pvt. Ltd, Greater Noida was organized on 26th May, 2022 for students of Department of Mechanical and Automation Engineering and Department of Mechanical Engineering. 20 students accompanied with 2 faculty members. attended the same. Department instructed the students about the processing and productions of the Air Flow Pvt. Ltd. At the company, the students were briefed about the exhaust and ventilation fan manufacturing process by the technical staff. Mr. Abhishek and Arun (PO) who gave presentation related to the history of air flow and its operations and production. Students were taken around various divisions and explained about the operations in each division specifically shearing, bending, fitting, and assembling division.

After the lab processing the students went for the balancing units and storage warehouse. The students were guided about the Research and Development department and were shown the propulsion jet and explained its uses. Overall, it was highly interactive and learning visit for the students on the concepts related to production and operations in a large manufacturing plant.



Multicolor Pvt. Ltd.

An industrial visit to Multicolor Pvt. Ltd, Haryana was organized on 10th June, 2022 for faculty members of Department of Mechanical and Automation Engineering and Department of Mechanical Engineering. 4 faculty members, Dr. V. N. Mathur, Mr. R. C. Saini, Ms. Surabhi Lata and Mr. B. R. Saini and one alumni student, Mr. Ranauq Dua, were taken around the company to understand the new upcoming trend in the construction field. The visit aimed at understanding the development of pure steel structures with no use of cement or concrete. The visit around the company displayed basic conventional processes to develop the steel components to predefined design and dimensions. These pre-fabricated components are transported to the construction site and all are assembled to develop multi-storeyed structures. It also aimed at identifying the expanse of knowledge to be imparted to the students in this upcoming field of steel structures. Overall, it was highly interactive and learning visit on the concepts related to production and operations in a large manufacturing plant for developing pre-fabricated steel structures.

Research Publications

S.no.	Name	Conference Details	Year
1	Dr. Vaibhav Jain	Presented the project titled "Air Conditioner Cum Air Sterilizer for Combined Application of Air Heating and Cooling" (funding of \$4980 in March 2021, ASHRAE, USA) in ASHRAE Winter conference 2022 scheduled at Las Vegas, 29 Jan-Feb 2, 2022.	February 2022
2	Mr. Madhukar Chhimwal	"International Conference of Advance Research and Innovation (ICARI-2022)" organized by International Journal of Advance	March 2022
3	Mr. Anupam	"International Conference of Advance Research and Innovation (ICARI-2022)" organized by International Journal of Advance	March 2022
4	Dr.. Ramakant Rana	"International Conference of Advance Research and Innovation (ICARI-2022)" organized by International Journal of Advance	March 2022
5	Ms. Surbhi Upadhyay	3rd International Conference on "Recent Advances in Materials, Manufacturing and Thermal Engineering (RAMMTE-2022)	July 2022
6	Ms. Piu Jain	3rd International Conference on "Recent Advances in Materials, Manufacturing and Thermal Engineering (RAMMTE-2022)	July 2022

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

Department of Mechanical & Automation Engineering
Brahmgupt Block, Block No. II,
Maharaja Agrasen Institute of Technology
PSP Area, Plot No. 1, Sector-22, Rohini, Delhi-110086.