

MEXPRESS

Mechanical Engineering Department's Official Newsletter

Volume No. 06 Issue No. 07

For Internal Circulation Only

MARCH 2023



REACH US AT



KUMARAGURU
college of technology
character is life

Mechanical Engineering Association
DEPARTMENT OF MECHANICAL ENGINEERING



EDITORS



Dr. C. Velmurugan
Professor & Head



Dr. B. N. Sreeharan
Assistant Professor - II

ASSOCIATE EDITORS



Mr. S. V. Nithesh



Mr. R. J. Yuhendran



Mr. K. V. Vijay Adithya



Ms. Jobisha Celin

CONTENTS

Details	Page No.
Editors' Portfolio	4
Associate Editor's Portfolio	5
Programmes Organized	7
Value Added Programme	11
Papers Published	11
Manuscripts Reviewed	11
Book Chapter Publications	12
Awards Received	12
Programmes Attended - Faculty	13
Snapshots	14
Programmes Attended – Students	15
Paper Presentations	17
CSWA Certificates Awarded	17
Vision, Mission, POs, PSOs and PEOs	18

From the Editors...

Dear Readers,

We are pleased to present the current issue of MExpress Vol. 06., Issue No. 7 of our department's newsletter. We are very happy to introduce our new Associate Editors, Mr. Vijay Adithya and Mr. Yuhendran from second year. This issue of the newsletter includes details about the organized programs, including value-added programs, and published papers and book chapters by the faculty members. The faculty members' contribution to the academic community is also evident in the manuscripts reviewed and the awards received.

The newsletter also highlights the programmes attended by our faculty members and students. Additionally, the students have presented papers and been awarded CSWA certificates.

Finally, the newsletter includes the vision, mission, POs, PSOs, and PEOs of our organization, reflecting our commitment to academic excellence and holistic development of our students.

We hope you enjoy reading this issue and appreciate the dedication and hard work of our faculty members and students.

Best regards,

Editors....



STRICTLY TURBULENT – Part 6



Ms. Jobisha Celin
20BME051
3rd year mechanical - B

**Turbulence in Nature**[Turbulence in Nature](#)

Tornadoes, hurricanes, thunderstorms frighten us but eliminating the scary part and looking into the real cause of how they happen can be quite exciting.

Wind Shear

Wind shear refers to a sudden change in the direction or speed of wind between two adjacent points in the atmosphere. This change can occur either horizontally or vertically and can cause turbulence or instability in the air. Wind shear can happen due to various factors like differences in air pressure, temperature, or terrain.

[Wind shear](#)

One common cause of wind shear is the presence of different air masses with different temperatures, humidity levels, and pressure systems. When two air masses with different properties come into contact, they can create a boundary known as a front. If the boundary is oriented in a way that is perpendicular to the wind direction, it can create a strong horizontal wind shear. This is known as a frontal boundary.

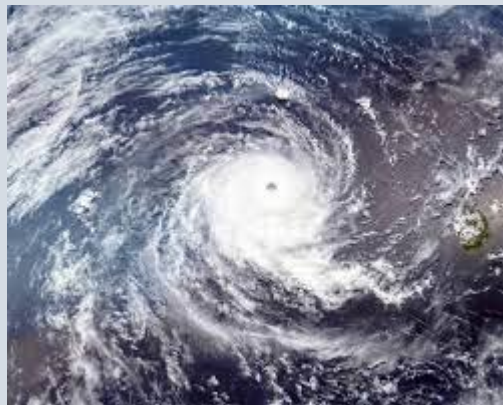
Another common cause of wind shear is the presence of jet streams. Jet streams are high-altitude air currents that flow from west to east across the planet. They are caused by differences in temperature and pressure between the equator and the poles. When a jet stream encounters a low-level atmospheric disturbance, such as a thunderstorm, it can create a strong vertical wind shear that can cause the storm to intensify.

Terrain features, such as mountains, can also create wind shear. When air flows over a mountain range, it can create turbulence and wind shear on the lee side of the mountain. This is known as a mountain wave and can be a significant source of turbulence for aircraft.

Wind shear can lead to turbulence when there is a sudden change in the direction or speed of the wind, which can cause the air to become unstable and create eddies or vortices in the atmosphere. When this turbulence occurs in a circulating manner, it is known as rotors or eddy currents.

Eye of the storm and pressure

The pressure value is generally low in the center of eddies. This is because the vortices in eddies create a spinning motion that results in a drop in pressure in the center of the eddy, known as the vortex core. As the air moves into the vortex, it speeds up and creates a low-pressure area in the center of the eddy. As the vortex rotates it pulls all the air it encloses and creates a suction area, inside.



[Eye of the storm](#)

This enclosure plays a major role in the creation of the pressure gradient. The outside air is not pulled as much as the inside air. One can sense that higher pressure region outside, suction inside and a swirling terror in between.

PROGRAMMES ORGANIZED

- An Industry – Academia Conclave on **“New Product Development and Product Lifecycle Management”** was organized by the department on 20-02-2023.



PANEL DISCUSSION – 1 (FORENOON)



PANEL DISCUSSION – 2 (AFTERNOON)

Following resource persons were involved in conclave.

1. **Mr. R. Saravanakumar**, Senior Director, Capgemini India.
2. **Ms. Vipraja Pulluru**, Delivery Manager Stellantis PLM Bundle, Capgemini India.
3. **Mr. Raja**, Sr. General Manager and Divisional Head, KSB Ltd.
4. **Dr. N. Sampathkumar**, Head Training & Development, Roots Industries India Ltd.
5. **Prof. Dr. K. Marimuthu**, Department of Mechanical Engineering, Coimbatore Institute of Technology.
6. **Mr. R. Abinеш**, Consultant, Coimbatore Cad Solutions.
7. **Prof. Dr. V Prabhu Raja**, Department of Mechanical Engineering, PSG College of Technology.
8. **Prof. Dr. K. Leo Dev Wins**, Department of Mechanical Engineering, Karunya Institute of Technology.



Conclave was coordinated by **Mr. R. S. Mohankumar**, Assistant Professor – II.

- A Workshop Series on Design Now, using Autodesk Fusion 360, was organized on 30.09.2022, and 11.11.2022 which were handled by **Mr. Mohan Murali**, Executive Trainer, ICT Academy and on 22.02.2023, handled by **Mr. S. R. Deviyaprasanth**, Executive Trainer, ICT Academy.



Students participated: Aakash B (20BME001), Abinesh A (20BME006), Aakash Velanganni D (20BME008), Ananthu Krishna G V (20BME012), Atharsh A R (20BME017), Gowtham R (20BME037), Gowtham S (20BME038), Mahesh Kumar. N (20BME068), Nithesh S V (20BME080), Nithin Karthik S (20BME081), Prasath D M (20BME086), Sanjai S (20BME101), Sujith Kumar S (20BME113), Lalitkishore N (20BME227), Nikil R (20BME233).



Workshop was coordinated by **Mr. R. S. Mohankumar**, Assistant Professor – II.

A seminar on “**Awareness of Opportunities for Higher Studies Abroad**” was organized on 10-02-2023. **Ms. S. Nagalakshmi**, Career Zone Consulting Private Limited was the resource person. **Dr. M. Thirumalaimuthukumaran**, Assistant Professor – III coordinated the seminar.



A seminar on “A successful entrepreneur - My store” was organized on 24-02-2023. **Mr. S. B. Prem**, (ECE Alumni 2019 Batch), Director of Nuvem Animal Care Private Limited, Bangalore. **Dr. S. Thirumurugaveerakumar**, Associate Professor coordinated the event.

- A Workshop on “**Microsoft Excel for Data Analytics**” was organized on 27-02-2023 as part of Yugam 2023.



Dr. B. N. Sreeharan, Assistant Professor – II, Department of Mechanical Engineering, was the resource person. **Dr. V. R. Muruganantham**, Associate Professor and **Dr. M. A. Vinayagamoorthi**, Assistant Professor - II coordinated the event.



- Another workshop as a part of Yugam 2023 was organized on “**New Product Development-Product Simulation using Edgecam**” on 28-02-2023.



Mr. Vijikumar, Sr. Engineer, Kriatec Services Private Limited, Coimbatore was the resource person. **Dr. V. R. Muruganantham**, Associate Professor and **Dr. M. A. Vinayagamoorthi**, Assistant Professor - II coordinated the event.



- **ASNT Level II Certification course on NDT** started on 25/02/2023 in association with Shri Sai NDT services. **Dr. A. P. Arun**, Assistant Professor - III welcomed the resource person and handed the session to **Mr. Velumani**.



On the first day of the course, **Mr. Velumani** handled the session on Ultrasonic testing. Totally 9 students from the Third and Second years registered for the course. The registered students have exposure to ultrasonic testing with hand on sessions in the Centre for NDT. The course was coordinated by **Dr. A.P. Arun**, Head, Centre for NDT and **Dr. V. Manivelmuralidaran**, Assistant Professor III.



VALUE ADDED PROGRAMME



A value-added programme on “ASNT Level II – NDT” is being conducted in the department from 25-02-2023 till 25-03-2023. **Mr. S. Sivaperumal**, M/s. Shri Sai NDT Services, Puducherry was the resource person. The value added programme is being coordinated by **Dr. A.P. Arun**, Head, Centre for NDT and **Dr. V. Manivelmuralidaran**, Assistant Professor III.



PAPERS PUBLISHED



Dr. R. Manivel, Professor, published a paper entitled "Design and Parametric Study of Counter-Rotating Propeller of Unmanned Aerial Vehicles for High-Payload Applications based on CFD-MRF Approach" in the International Journal of Vehicle Structures & Systems, 14(7), 840-848, ISSN: 0975-3060 (Print), 0975-3540 (Online). It was published by MechAero Foundation for Technical Research & Education Excellence.

Dr. B. N. Sreeharan, Assistant Professor – II, published a paper entitled “Experimental Investigation on Hardness, Wear and Microstructure of Aluminium Metal Matrix Composite Reinforced with Aluminium Oxide and Boron Carbide”, in the International Journal of Vehicle Structures & Systems, 14(7), 836-839, ISSN: 0975-3060 (Print), 0975-3540 (Online), doi: 10.4273/ijvss.14.7.02



MANUSCRIPTS REVIEWED



Dr. C. Velmurugan, HoD, reviewed the following papers:

- “Mechanical Properties and Thermal Analysis of Polyimine Nanocomposites Reinforced by Silicon carbide nano-whiskers” for the Scopus indexed International Journal of Nano Materials.
- “Effects of point defects on the monoclinic angle of the B19'/B19” phases in NiTi-based shape memory alloys” for the Scopus indexed International Journal of Materials and Design.
- “Mechanical and wear performance of A356/Al2O3 aluminium nanocomposites by considering the mechanical milling time and microstructural properties” for the Scopus indexed International Journal of Industrial Lubrication and Tribology.



Mr. B. Jeeva, Assistant Professor – II, reviewed the following papers: “Design and Development of Drone Spray System for Agricultural Utilization in Nigeria” for the Google Scholar and Publons indexed Asian Journal of Research in Computer Science, an International Journal and “Innovative Wind Energy Generating Device Coupled with Air Convergent” for the Google Scholar and Publons indexed Current Journal of Applied Science and Technology

Dr. V. R. Muruganantham, Associate Professor, reviewed a paper entitled “Simulation Studies of Battery & Super Capacitor Energy Storage System for Solar Vehicle” presented in the International Conference on Contemporary Research Advancements in Mechanical Engineering – 2023.



BOOK CHAPTER PUBLICATIONS



Dr. V. R. Muruganantham, Associate Professor and **Dr. M. Thirumalaimuthukumar**, Assistant Professor – III, published a book chapter titled “Environmental Pollution” in the book Environmental Science Research published by Integrated Publications, Delhi, 123-137, 978-93-95118-34-7



AWARDS RECEIVED



Dr. V. R. Muruganantham, Associate Professor, received Active Lead Auditor Award from National Science Foundation, Coimbatore on 25-02-2023 for successfully conducting Energy and Energy Audits at various colleges.

PROGRAMMES ATTENDED



Mr. S. Sivakumar, Assistant Professor – II, participated in an FDP on “Online Teaching Platform and Tools” from 06-02-2023 to 12-02-2023, organized by AICTE, Chanakya university, Patna.

Mr. B. Jeeva, Assistant Professor – II, participated in a Training on “Web of Science Training & Certification Program 2023” from 30-01-2023 to 02-03-2023, organized by Clarivate, India. He also participated in an FDP on “Universal Human Values- II” from 13-02-2023 to 18-02-2023, organized by AICTE, New Delhi.



Dr. V. R. Muruganantham, Associate Professor, participated in an CPC Conclave on “Productivity conclave 2023” on 21-02-2023 organized by Coimbatore Productivity council, Coimbatore Chapter.

Dr. S. Sivakumar, Assistant Professor – III, participated in a Workshop on “Quality and Reliability of systems - DRDO” from 17-02-2023 to 18-02-2023, organized by R & D Kumaraguru College of Technology and DRDO, Cochin.



Dr. S. Balasubramanian, Associate Professor, participated in a Workshop on “Technology Readiness Level” on 02-10-2023 organized by R & D KCT. He also participated in a workshop on “Quality and Reliability of systems - DRDO” from 17-02-2023 to 18-02-2023, organized by R & D KCT and DRDO, Cochin.

Dr. N. Sangeetha, Senior Associate Professor, participated in a Workshop on “Quality and Reliability of systems - DRDO” from 17-02-2023 to 18-02-2023, organized by R & D KCT and DRDO, Cochin.



Dr. M. A. Vinayagamoorthis, Assistant Professor – II, participated in a Workshop on “Patent Search Workshop” from 20-02-2023 to 22-02-2023, organized by Turnip, Turnip Innovations Pvt. Ltd., Kolkata, India.



Dr. B. Senthilkumar, Associate Professor, participated in a Workshop on "Quality and Reliability of systems - DRDO" from 17-02-2023 to 18-02-2023, organized by R & D KCT and DRDO, Cochin.

SNAP SHOTS



NDT Training Programme



Award received by Dr. V. R. Muruganantham

PROGRAMMES ATTENDED

Mr. C. Abhisheek (21BME002) of second year has took part in national level webinar named computational design and dynamic which was organized by Mr. Abin Roy from 1st February 2023 to 3rd February 2023.

Mr. M. Gokulakrishnan (21BME024) of second year has participated in the Intra college event named drahaa- comic writing which was organized by Kumaraguru drama troupe and Kumaraguru hasaya on 26th February 2023 and secured the runner position.

Mr. C. Ashwin (21BME013) of second year has participated in two regional level workshops named Automotive embedded system and Innovative vehicle designing organized by Bosch (Yugam) on 28th February 2023 and 1st March 2023.

Further details about the programmes attended by the students are given below:

S. No.	Roll number	Name of the student	Name of Event	From	To
1	21BME062	Mr. Pravan B G	Microsoft Excel for Data Analytics	27-02-2023	27-02-2023
2	20BME251	Mr. Sridharan S	Microsoft Excel for Data Analytics	27-02-2023	27-02-2023
3	21BME023	Mr. Gokul	Microsoft Excel for Data Analytics	27-02-2023	27-02-2023
4	21BME209	Mr. Kanishk M	Microsoft Excel for Data Analytics	27-02-2023	27-02-2023
5	19BME077	Mr. Harshavarthan K S	Microsoft Excel for Data Analytics	27-02-2023	27-02-2023
6	22BME117	Ms. Swetha S	New Product Development-EdgeCAM	28-02-2023	28-02-2023
7	21BME002	Mr. Abhisheek C	New Product Development-EdgeCAM	28-02-2023	28-02-2023
8	21BME091	Mr. Thinagar A M	New Product Development-EdgeCAM	28-02-2023	28-02-2023
9	21BME062	Mr. Pravan B G	New Product Development-EdgeCAM	28-02-2023	28-02-2023

S. No.	Roll number	Name of the student	Name of Event	From	To
10	21BME016	Mr. Bhoopathy R	New Product Development-EdgeCAM	28-02-2023	28-02-2023
11	21BME004	Mr. Adithya T	New Product Development-EdgeCAM	28-02-2023	28-02-2023
12	22BME019	Mr. Dev Aanandh.M	New Product Development-EdgeCAM	28-02-2023	28-02-2023
13	22BME009	Mr. Arun Kumar S	New Product Development-EdgeCAM	28-02-2023	28-02-2023
14	22BME062	Mr. Mohana Sundaram M J	New Product Development-EdgeCAM	28-02-2023	28-02-2023
15	22BME126	Mr. Yogesh S	New Product Development-EdgeCAM	28-02-2023	28-02-2023
16	22BME040	Mr. Jai Harish D	New Product Development-EdgeCAM	28-02-2023	28-02-2023
17	21BME017	Mr. Deepak R	Finite element analysis using ANSYS	01-03-2023	01-03-2023
18	22BME099	Mr. Shrikanth P	Finite element analysis using ANSYS	01-03-2023	01-03-2023
19	21BME078	Mr. Shreenath B	Finite element analysis using ANSYS	01-03-2023	01-03-2023
20	22BME008	Mr. Anirudh V R	Finite element analysis using ANSYS	01-03-2023	01-03-2023
21	22BME049	Mr. Kiran Raghav J	Finite element analysis using ANSYS	01-03-2023	01-03-2023
22	22BME011	Mr. Arunesh	Finite element analysis using ANSYS	01-03-2023	01-03-2023

PAPER PRESENTATION



Mr. S. V. Nithesh (20BME080) and **Mr. K. T. Imayan** (20BME045) participated and presented their paper entitled "**Experimental investigation of Fused Deposition Modeling process parameters to optimize the fabrication of connecting bush**" guided by Dr. B. N. Sreeharan, Assistant Professor – II, in the **ICRACM-2023** (International Conference on Recent and Advanced Composite materials) held at SRM University from 22nd to 24th February.

Mr. S. Vaseekaran (20BME120) and **Mr. V. Vetriselvan** (20BME122) participated and presented their paper entitled "**Design of Buffer Tank in Heat Pump System**" guided by Dr. M. A. Vinayagamoorthi, Assistant Professor – II, in the **ICRACM-2023** (International Conference on Recent and Advanced Composite materials) held at SRM University from 22nd to 24th February.



CSWA CERTIFICATES AWARDED

The following students from third year were awarded CSWA Certificates by M/s. Dassault Systems after successfully completing their CSWA Certificate Exam conducted in the CADD Centre on 26-02-2023. Students were trained by the Centre of Exemplary Learning (CoEL).

Roll No.	Name of the Student
20BME006	Mr. ABINESH
20BME022	Mr. BRANESH KUMAR J
20BME026	Mr. DEVAPRASATH A
20BME034	Mr. GOWSHICK G
20BME042	Mr. HARIRAJULU S
20BME047	Mr. JAI SHANKAR S
20BME048	Mr. JEEVABHARATHI
20BME053	Mr. KALAISELVAN P
20BME054	Mr. KALAISELVAN P
20BME058	Mr. KASHYAP RAJEEV
20BME063	Mr. KISHORE A
20BME070	Mr. MANOJKUMAR T
20BME072	Mr. MONISH P
20BME079	Mr. NISANTH R

Roll No.	Name of the Student
20BME082	Mr. PRABHAKAR T R
20BME090	Mr. RAHUL V
20BME093	Mr. RAMANAN
20BME104	Mr. SHAKEEL AKTHAR
20BME201	Mr. ABDUL KHAN HUSSAIN S
20BME220	Mr. JOEL PRINCE P
20BME040	Mr. GURUBRAN R
20BME073	Mr. MOULEESWAR K
20BME119	Mr. THILAK T
20BME219	Mr. JOEL DAVID
20BME123	Mr. VIJAY M
20BME052	Mr. JODIRR RAMANA V



KUMARAGURU
college of technology

COIMBATORE – 641 049

Department of Mechanical Engineering

INSTITUTE VISION:

The vision of the college is to become a technical university of International Standards through continuous improvement.

INSTITUTE MISSION:

Kumaraguru College of Technology (KCT) is committed to providing quality Education and Training in Engineering and Technology to prepare students for life and work equipping them to contribute to the technological, economic, and social development of India. The College pursues excellence in providing training to develop a sense of professional responsibility, social and cultural awareness and set students on the path to leadership.

DEPARTMENT VISION:

To emerge as a centre, that imparts quality higher education through the programme in the field of Mechanical Engineering and to meet the changing needs of the society.

DEPARTMENT MISSION:

The department involves in sustained curricular and co-curricular activities with competent faculty through teaching and research that generates technically capable Mechanical Engineering professionals to serve the society with delight and gratification.

B. E. MECHANICAL ENGINEERING

PROGRAM EDUCATIONAL OUTCOMES (PEO's):

- PEO 1 :** Graduates will take up career in manufacturing and design related disciplines.
- PEO 2 :** Graduates will be involved in the execution of Mechanical Engineering projects.
- PEO 3 :** Graduates will take up educational programme in mastering Mechanical sciences and management studies.

PROGRAM OUTCOMES (PO's):

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSO's):

1. Apply the fundamentals of science and mathematics to solve complex problems in the field of design and thermal sciences.
2. Apply the concepts of production planning and industrial engineering techniques in the field of manufacturing engineering.

M. E. INDUSTRIAL ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES (PEO's):

- PEO 1 :** Graduates will be mid to higher level management / engineering professionals with responsibilities in engineering management, data analysis and business operations.
- PEO 2 :** Graduates will be engineering professionals, and technology leaders who would manage such functions as plant engineering, production, supply chain and quality management.
- PEO3 :** Graduates would function as educators or researchers in academic institutions.

PROGRAM OUTCOMES (PO's):

- P01 :** An ability to independently carry out research /investigation and development work to solve practical problems.
- P02 :** An ability to write and present a substantial technical report/document.
- P03 :** Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.
- P04 :** Apply knowledge and competencies in manufacturing, analytics, supply chain, quality and engineering management.
- P05 :** Apply principles of industrial engineering to solve problems in industry.
- P06 :** An ability to work as part of interdisciplinary teams, communicate effectively, model and design engineering systems optimally.