



DEPARTMENT OF  
MECHANICAL ENGINEERING  
NEWSLETTER  
Volume # 7

MAY 2019



### FROM THE DIRECTOR'S DESK...

Dear Reader,  
I am delighted to introduce this seventh edition of the Mechanical Department Newsletter. We intend to maintain this regular publication and to use it to keep you in touch with news and developments related to the Department of Mechanical Engineering, School of Technology (SOT).

I take this opportunity to congratulate the editorial team for bringing out this newsletter, which in itself is an achievement considering the effort and time required. May all our students, staff and faculty soar high in uncharted skies and bring glory to the world and their profession with the wings of education.

## FACULTY ZONE

- Publications
- Professional Activities
- Administrative Assignments
- Events
- Lectures & Seminars
- New Joining

## STAFF ZONE

- Training/
- Installation of
- Equipment

## STUDENT ZONE

- Awards
- Internships



### FROM THE HEAD OF THE DEPARTMENT'S DESK

It gives me immense pleasure to share newsletter of the Mechanical Engineering dept., May 2019. Mechanical Engineering Dept. is the most happening dept. of the School of Technology. Newsletter gives an overview of the activities carried out by students, staff and faculties during the month. You may please share your feedback, comments & suggestions to the coordinators



## FACULTY

## PUBLICATIONS

### JOURNALS

Dr Kush Mehta, Dr Vinay Vakharia, Dr Pawan Sharma, Dr Rajesh Patel, Dr Vivek Patel and Dr Jatin Patel published the following journals during the month of May 2019

- ◆ **Mehta KP**, Carlone P, Astarita A, Scherillo F, Rubino F, Vora P. Conventional and cooling assisted friction stir welding of AA6061 and AZ31B alloys. *Materials Science and Engineering: A*. Vol. 759, Pages 252-261, June 2019.
- ◆ Rajesh Gujar, **Vinay Vakharia**, "Prediction and validation of alternative fillers used in micro surfacing mix-design using machine learning techniques", *Construction and Building Materials*, Volume 207, 2019, Pages 519 - 527 , <https://doi.org/10.1016/j.conbuildmat.2019.02.136>.
- ◆ **P. Sharma** and P. M. Pandey, "Corrosion rate modelling of biodegradable porous iron scaffold considering the effect of porosity and pore morphology," *Mater. Sci. Eng. C*, vol. 103, no. May, p. 109776, 2019. <https://doi.org/10.1016/j.msec.2019.109776>
- ◆ Vivek Patel, **Rajesh Patel**, Jatin Patel "Experimental and theoretical evaluation of bubbler humidifier for humidification-dehumidification water desalination system", *Journal of Heat and Mass Transfer*, Springer, 20th May, 2019

### CONFERENCE PAPERS

Dr Vishvesh Badheka and Dr Vinay Vakharia presented the following conference papers during the month of May 2019

- ◆ Experimental study of mechanical and metallurgical properties of modified 9Cr-1Mo steel plates welded by LBW process, author by Kamal Dhandha and **Vishvesh Badheka**, during 34<sup>th</sup> National Convention and National seminar on Emerging Technologies in power sector equipment manufacturing ,organized by Institute of Engineers, Trichy chapter.
- ◆ Research paper titled as " Modelling and Prediction of Freight Delivery for Blocked and Unblocked condition using machine learning technique" was presented at World Conference on Transport Research WCTR 2019 from 26 to 31 May, held at Indian Institute of Technology, Mumbai. Authors are Prachi Pandya, Rajesh Gujar and **Vinay Vakharia**.

# FACULTY

# PROFESSIONAL ACTIVITIES

*Dr Vishvesh Badheka* visited the following industries during the month of May 2019

- ◆ EWAC Alloys, Ankleshwar on 4th May 2019 in connection with ongoing CP projects of two B.Tech students.
- ◆ TCR Engineering Pvt Ltd on 4th May 2019 for testing of welded samples.



Visit to EWAC Alloys

- ◆ Roptelesonic (RTUL) on 8th May 2019 along with lab staff to understand installation requirement of Ultrasonic welding machine



## FACULTY

## PROFESSIONAL ACTIVITIES

*Dr Vishvesh Badheka* attended the following professional activities during the month of May 2019

- ◆ UG Viva for the subject Welding and Casting technology as an External Examiner at Mechanical Engineering Department, BVM, V V Nagar on 11<sup>th</sup> May 2019.
- ◆ EC meeting at Indian Institute of Welding (IIW), Vadodara Branch on 18<sup>th</sup> May where he interacted with industrial members of the professional body.
- ◆ Joint meeting cum MoU ceremony between IACE- IIW on 23<sup>rd</sup> May.
- ◆ 21st AGM of IIW Vadodara Branch and presented IIW-PDPU student chapter activities, and also IACE presentation.
- ◆ Indus University as the member of the selection committee at Metallurgical Engineering Dept, held on 25<sup>th</sup> May 2019
- ◆ AGM of Indian Institute of Metals, Vadodara Branch on 26<sup>th</sup> May 19.
- ◆ Innovative Project Fair by students of ITM universe held on 26<sup>th</sup> May 19 at Vadodara.



MOU Ceremony Between IACE—IIW



# FACULTY

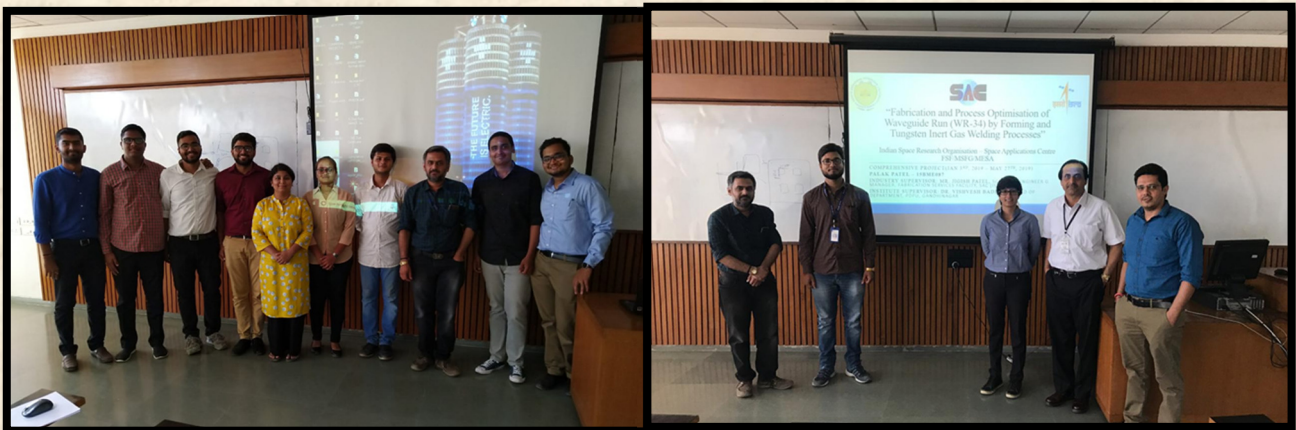
## ADMINISTRATIVE ASSIGNMENTS

- ◆ **Department of Mechanical Engineering** conducted meeting with PhD scholars - Mechanical on 16th May 2019.



PhD Scholars Meeting

- ◆ **Dr Vishvesh Badheka** attended and presented talk during B.Tech Admission 2019 Open Seminar held on 19th May 2019 at Vadodara with 130+ participants.
- ◆ **Dr Vishvesh Badheka** attended B. Tech Admission 2019 open seminar held on 25th May 2019 at Ahmedabad.
- ◆ **Dr. Jatin Patel** conducted the open seminar and information session on 19th May 2019 at Palanpur, Gujarat having participation from 40+ aspirants.
- ◆ **Dr Jay Vora** conducted an open seminar and information session at Surat with an overwhelming response from 150+ students and parents.
- ◆ **Dr Vishvesh Badheka** conducted Comprehensive exams of ongoing PhD scholars on 28th and 31st May 2019.
- ◆ **Dr Vishvesh Badheka** conducted Comprehensive Project Review on 27th May 2019 in presence of ISRO Scientist



ISRO scientist visit during CP review held

- ◆ **Dr. Vinay Vakharia** appointed as NTA representative for smooth conduction of NEET - MBBS/BDS examination during 3rd to 5th May 2019 by National Testing agency, MHRD, Government of India.



## FACULTY

## EVENTS

- ◆ **Prof. Vishvesh Badheka, Dr. Vinay Vakharia and Dr. V. Janardhan** visited and organized Industrial visit to Ceat Industries, INOX CVA and Xylem water solutions, Vadodara for M.Tech Design students on 9th May 2019. (Report 1)
- ◆ IIW-ISNT-PDPU student chapters jointly conducted ‘‘Hands on Training workshop on NDT’’ on 2<sup>nd</sup> May 2019 under the supervision of **Dr Vishvesh Badheka**, (Report 2).
- ◆ **Dr Jatin Patel** organized a visit for the M. Tech. Mechanical (Thermal Engineering) students to two industries named Citizen and Synergy in Ahmedabad region on 17th May 2019. The students have explored the possibilities of industrial training and projects in these industries and three of them got the opportunity to work as an intern at Citizen for six weeks.



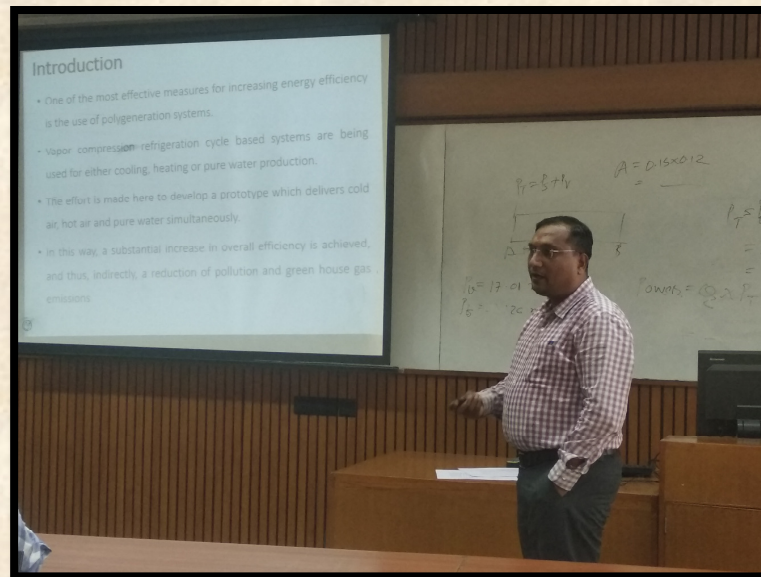
Visit at Citizen Industries Ltd



# FACULTY

# LECTURES/SEMINARS

- ◆ **Dr Jatin Patel** delivered Faculty Seminar on 11th May 2019 where in he shared his background and research journey with the learning and challenges faced during the due course .



Faculty Seminar

- ◆ The faculty seminar by Dr Jatin Patel was followed by Vision Presentations by the Newly joined faculties Dr Pawan Sharma and Dr Ajay Kumar.



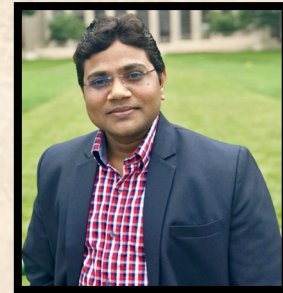
Vision Presentations By New Faculty



## FACULTY

## NEW JOINING

**Dr Ajay Kumar**, B.E. (MITS - Gwalior) , M.Tech (MANIT - Bhopal), Ph.D., - Mechanical Engineering (IISc - Bangalore) with specialization in Development of Polymer Derived Metal Matrix Composites using Friction Stir Processing has joined Department of Mechanical Engineering on **1st May 2019**. He has published 18 Journals, 2 Book Chapters, 1 Patent, and has attended 16 International and 11 National Conferences.



**Dr. Pawan Sharma**, B.Tech (UPTU - Lucknow), M.Tech (Gold Medallist) Production Engineering (MNNIT - Allahabad), Ph.D Production Engineering (IIT Delhi) with specialization in Additive Manufacturing has joined Department of Mechanical Engineering on **8th May 2019**. He has published 07 Journals, 2 Patents, and has attended 04 Conferences.





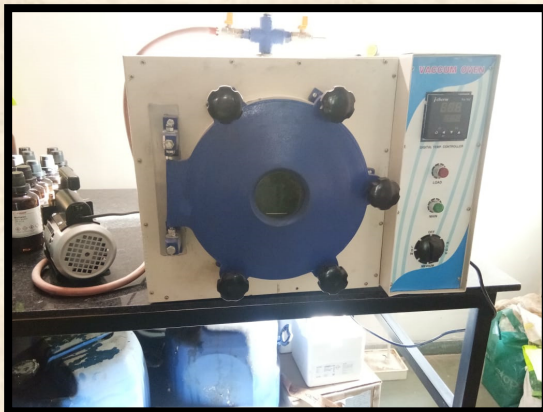
## TRAININGS/ INSTALLATION OF EQUIPMENTS

- ◆ **Mr Trushar Prajapati** attended Training Program on “Orientation Program on Disaster Risk Management.

- ◆ Ultrasonic welding machine, delivered on 17th May and installed on 22nd May 2019 under Welding Research Lab in presence of Dr Vishvesh Badheka and Lab Staff.



Ultrasonic Welding Machine



Vacuum Oven with Vacuum Pump

- ◆ Vacuum oven with vacuum pump installed during the month of May 2019 in C.B.B.S. Lab (Centre Of Excellence) in presence of Mr Trushar Prajapati.

- ◆ Solar air dryer with thermal energy storage was installed successfully at Non-Conventional Energy Sources laboratory in Mechanical Engineering Department during the month of May 2019 in presence of Dr Jatin Patel and Mr Alpesh Rajput.



Solar Air Dryer

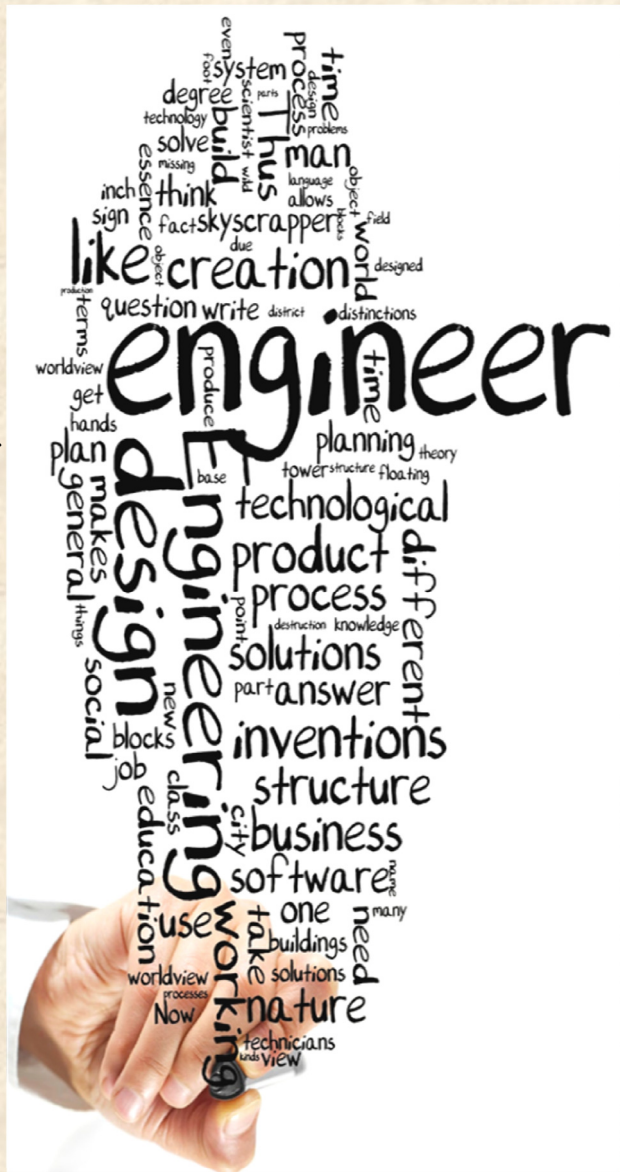
# STUDENTS

## AWARDS

- ◆ *Shalin A Patel* won 3rd prize as cash prize of Rs 10,000/- in research article/case study writing competition organized by PDPU IIC

## INTERNSHIP

- ◆ *Pratyush Srivastava* is undergoing his internship at Tata Motors, Ahmedabad
- ◆ *Rajnish Kumar* is undergoing his Internship at Arvind limited for six weeks.



MC 15 Batch Farewell

### Newsletter Coordinators

Faculty Coordinator: Dr Pankaj Sahlot  
Staff Coordinator: Mrs Pooja Nimavat

# REPORT - 1



## A REPORT ON INDUSTRIAL VISITS



**ORGANIZED BY**

**MECAHNICAL ENGINEERING DEPARTMET**

**FOR**

**M.TECH DESIGN STUDENTS**

**9<sup>TH</sup> MAY 2019**

**COORDINATED BY**

**PROF. VISHVESH BADHEKA**

**DR. VINAY VAKHARIA**

**PANDIT DEENDAYAL PETROLEUM UNIVERSITY-  
GANDHINAGAR**

## **OVERVIEW OF TRIP:**

We started our journey from the university by 6:30 AM and reached CEAT TYRES LIMITED by 9:30 AM. After having a fruitful discussion with the executives of the organization, we were then taken for the Plant Visit along with their Testing Facility. After having Lunch at CEAT we then headed to second industry i.e. INOX CVA which is 15 minutes journey from CEAT and reached by 2:30 PM. The executives took us for the Plant Visit and explained each and every process effectively. After meeting the GM of the organization we headed to XYLEM WATER SOLUTIONS, India Technological Center and reached by 5:30 PM. We were greeted by the Executives, followed by the Center visit, and visit to different areas of the Center. After spending a good amount of time at the center we then headed back to the university and reached by 10:30 PM.



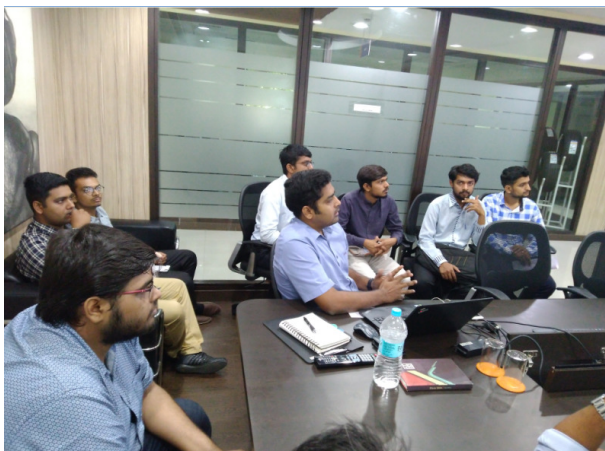
## **DETAILS OF VISIT:**

### **1. CEAT TYRES LIMITED, Halol.**

CEAT TYRES LIMITED is located at Halol which is about 50 kms away from Vadodra. They manufacture tyres for Passenger Cars, trucks, busses and two wheelers. The plant at Halol has a capacity to make 20000 tyres a day. Their latest achievement is of making a tyre last for 1 lac kilometers. The company consist of R&D center, manufacturing plant as well as Testing Facility. After completing security checks we were taken to the conference room where we were greeted by Mr., Subramanyam who is Vehicle Dynamics Testing Engineer at CEAT.



He gave us a brief introduction of the company and their products as well as the facilities they have. It was then followed by the brief introduction of the B.Tech interns who were doing their projects at CEAT followed by their experience and status of their projects.



We were handed over the safety shoes and taken for a plant visit which was facilitated by the Plant Engineer and explained the tyre making process from raw materials till the finished product. How the Rubber is mixed with steel wires, production of a whole tyre from 8 different parts, how they are joined, how finished tyre is made all that was nicely explained by the Plant Engineer.

We then headed back to the conference room where we had a discussion on possibility of Projects for Design students. They inquired about the type of expertise we have and based on that they floated two projects which were on vibration data analysis and Design and Modeling.

We were then sent to the Testing facility where they showed us how the tyres under development are tested under severe conditions as well as at different conditions of load. By the time the testing facility visit was completed our faculties had already discussed the projects and they happily agreed to take interviews of the students for which the results are awaited.



## 2. INOX CVA, Halol

INOX CVA is an organization offering comprehensive solution in cryogenic storage, vaporization and distribution engineering which is located at Kalol near Halol. They have two units one at Kalol and another at Kandla near Gandhidham, This unit manufactures Cryogenic storage tanks which are capable of keeping the fluids at the same temperature for more than 20 days.

We were greeted by Mr. Deepak Acharya who is the Chief Operation Head who took us to visit the plant. He briefly explained the manufacturing process, how to read the material manufacturing code. Nondestructive techniques used for inspection of welds, leakage tests, QC laboratory etc.



After having the plant visit we had a short meet with the Design Head and interacted whether there is a possibility of having a 1 year dissertation project. As their process of recruitment of interns was already completed he assured that next year he would be more than happy to have interns from PDPU. This interaction was followed by a meeting with the Vice President who inquired about the curriculum of M.tech Design and said that they have projects based on FEA analysis of pipelines. We then headed for the next industry.

### 3. XYLEM WATER SOLUTIONS PVT. LTD., Vadodara

Xylem is a leading water technology company committed to "solving water" by creating innovative and smart technology solutions to meet the world's water, wastewater and energy needs. Its R&D center is located at Vadodara and their manufacturing plant is at Savli which is 20 kms away from Vadodara. They manufacture water pumps, Water Treatment Plants and also provide rental solutions.

Our visit was at their India Technology Center where we were greeted by Mr. Pruthvish Patel who is Senior Manager FEA at Xylem. After brief introduction we were taken to their different dedicated labs and sections starting from their control electronics lab, where different sensors are invented, followed by their material study and Reverse engineering lab where they study their competitors' material and their method of cost reduction.

This was followed by the visit to their advanced engineering department comprising of FEA and CFD department where they validate their design and lastly their new product and development department.



## **OUTCOME OF THE VISIT:**

We got a taste of how the industry works, how the R&D works, also we get to see different equipments like 3D scanner which directly scans the object and converts to steriolithography file, live experience of testing machines, and also two dissertation projects at CEAT which were possible due to the efforts of our faculties.

It helped us understanding the current work environment and even the trends and expertise that is required to have in the present situation.

## **VOTE OF THANKS**

We would like to covey our gratitude and thanks to Professor Vishvesh Badheka, Dr. Vinay Vakharia for coordinating the visit for us. We would even like to thank all the Industries and their respective executives for allowing to visit us and share their valuable knowledge and experience with us.



## Workshop on Non-Destructive Testing Techniques

IIW-PDPU and ISNT-PDPU Student Chapters organized workshop on Non-destructive testing techniques for **second year mechanical engineering and M.Tech Nuclear Engineering students** on **2nd May 2019**, in association with Hertz Testing and Training Centre. The event will be supervised by Chetan Shah (from Hertz Testing and Training Centre), Dr. Vishvesh Badheka, Chairman IIW-PDPU student chapter and Dr. Jaykumar Vora, Chairman ISNT-PDPU student chapter.

**Content of workshop:** Workshop was conducted at metallurgy lab/E207 for six groups, each group of around 25 students. Following NDT techniques were demonstrated followed by hands on training DPT, MPT, UT

### Hands on by students in DP Test





## Hands-on by Students in MPT



## Hands-on by Students in UT





Mr S Randhawa, VP, SS operation, RATNAMANI Metals & Tubes Ltd, visited during workshop along with Prof T P Singh.



M.Tech- Nuclear Engineering students participated during NDT workshop