



SITARAMBHAI NARANJI PATEL
INSTITUTE OF TECHNOLOGY AND RESEARCH CENTRE, UMRAKH

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CHEMICAL ENGINEERING DEPARTMENT

Three Day Workshop

On

**“New Advancements in Heat and Mass Transfer:
Fundamentals and Application”**

(18th to 20th December, 2023)

In Association with

Gujarat Technological University



Organized by:



Chemical Engineering Department

**Shri Sitarambhai Naranji Patel Institute of Technology &
Research Centre, Umrakh**

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**A Report of Three Days Workshop
On
New Advancements in Heat and Mass Transfer: Fundamentals
and Application”
on dated 18th - 20th December 2023.**

The Department of Chemical Engineering, in Association with Gujarat Technological University, organized a three-day workshop on “New Advancements in Heat and Mass Transfer: Fundamentals and Application” dated 18th - 20th December 2023. More than 50 students and faculties from Chemical Engineering Department, SNPIT&RC Umrakh, have participated. Three Days workshop schedule is as follows.

SHRI SITARAMBHAI NARANJI PATEL INSTITUTE OF TECHNOLOGY MANAGED BY VIDYABHARTI TRUST, UMRRAKH- BARDOLI Department of Chemical Engineering in Association with Gujarat Technological University Three Days Workshop on “New Advancements in Heat and Mass Transfer: Fundamentals and Application” on dated 18th - 20th December 2023.			
Time	18-12-2023	19-12-2023	20-12-2023
10.00 am - 10.30 am	Inauguration		Industrial Visit
10.30 am - 12.30 pm	Heat Transfer: Innovation and Application, Prof. Hemant M. Jariwala, Assistant Professor, GEC Valsad	Mass Transfer: Fundamentals and Application, Dr. Jaydeep M. Barad Associate Professor, SNPIT&RC Umrakh	
12.30 pm to 1.15 pm	Lunch		
1.30 pm – 3.30 pm	Laboratory Practices on Heat Transfer Operation, Prof. Riya B. Patel Assistant Professor	Laboratory Practices on Mass Transfer Operation Prof. Riya B. Patel Assistant Professor	Valedictory



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Day 1

Agenda:

- Welcome and Inauguration
- First Session on Heat Transfer: Innovation and Application
- Second Session on Laboratory Practices on Heat Transfer Operation

Inauguration

The programme commenced with the lighting of the Ceremonial lamp by Prof. Hitesh M. Jariwala GEC, Valsad, Dr. Piyush S. Jain Principal, SNPIT&RC Umrakh, Dr. Miral R. Thakker, Vice-Principal & Head of Chemical Engineering Department, Dr. Chandrabhushan T. Pal, Course Coordinator and Dr. Jaydeep M. Barad, TPO SNPIT&RC Umrakh.





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First Session

After the Inaugural ceremony, **Prof. Hitesh M. Jariwala GEC, Valsad** conducted a highly interactive Heat Transfer: Innovation and Application session. He explained the Basics of Heat Transfer Operation and provided knowledge about DWSIM software to participants. Heat transfer can occur in three modes: conduction, convection, and radiation, and basic laws related to conduction, convection, and radiation modes. The first **conduction** is the transfer of heat from one part of a substance to another part of the same substance or one substance to another in physical contact with it without appreciable displacement of molecules forming the substance. Second, **convection** is transferring heat within a fluid by mixing one portion of the fluid with another. Convection is possible only in a fluid medium and is directly linked with the transport of the medium itself. Third, **radiation** is the transfer of heat through space or matter by means other than conduction or convection. Radiant energy (electromagnetic radiation) requires no medium for propagation and will pass through a vacuum.





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Second Session

Prof. Riya B. Patel Assistant Professor, conducted a second session related to Laboratory Practices on Heat Transfer Operation. The session covered the design of heat exchange using DWSIM software. Also, she solved examples related to heat exchanger design using DWSIM software in lab sessions with the participants.





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Day 2

Agenda:

- Welcome to Expert
- First Session on Mass Transfer: Fundamentals and Application
- Second Session on Laboratory Practices on Mass Transfer Operation

First Session

On the Second day 19 December 2023, the workshop began with the session on Mass Transfer: Fundamentals and Application by Dr. Jaydeep M. Barad, in which he described several points on Mass Transfer Operation. Mass transfer is the net movement of mass from one location (stream, phase, fraction, or component) to another. Mass transfer occurs in many processes, such as absorption, evaporation, drying, precipitation, membrane filtration, and distillation.





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Second Session

Prof. Riya B. Patel Assistant Professor, conducted second session related to Laboratory Practices on Mass Transfer Operation. The session covered the design of the distillation column using DWSIM software. Also, she was solving examples related to Distillation Column design by DWSIM software in lab sessions to the participants.





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Day 3

Agenda:

- Industrial Visit at Bardoli Sugar Factory, Bardoli
- Valedictory Function

Industrial Visit at Bardoli Sugar Factory, Bardoli

On Day 3, 20 December 2023, the workshop will start with an industrial visit to Bardoli Sugar Factory, Bardoli. According to the route and time plan, the bus departed from SNPIT&RC UmraKh Vidhya Bharati campus at 10.00 am and reached the Bardoli Sugar Factory at 10:15 am. A sugar factory visit was arranged successfully with the help of administrative officer Mr. Rinkesh Patel. After the completion of the entry procedure at the main gate to enter the plant, one mechanical engineer was appointed to visit, welcomed us with safety helmets and guided us about the plant. The important role of sugar factory in the Surat region was explained to all visitors. They gave a brief introduction for general processing of sugar manufacturing and utilization of its by-products in other industrial applications. All the participant's along with the faculties start for the tour of different part of sugar production units (e.g. Extraction of Juice, Clarification, Evaporation, Centrifugation, Gradation & Packing) and explained the Sugar manufacturing process with details about reactors, Effluent Treatment Plant & Cooling Tower. Mr. Bhatt Sir has also explained the chemistry behind the sugar manufacturing process.

All the participants enjoyed watching the systematic packaging procedures of sugar into plastic bags & automatic transportation system of these packed sugar bags to trucks. Wonderful channel from packing of sugar to its marketing was explained. All the participants were gathered at the main building gate, where a group photo with faculties was taken. Bus was departed from the Bardoli Sugar Factory & reached safely to SNPIT&RC UmraKh Vidhya Bharati campus at 1 pm.

College Faculties & Staff Presence in the Visit: -

1. Dr. Nilesh S. Dumore
2. Prof. Priyanka H. Patel
3. Mr. Abhiraj Rathod



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Valedictory Function

At the end of the workshop, the Valedictory session was held at 2.30 pm, which was chaired by Dr. J. M. Barad, TPO SNPIT&RC, Umrakh, Dr. Nilesh S. Dumore, In-charge Head, Chemical Engineering Department & Course Coordinator, Dr. Chandrabhushan T. Pal, Course Coordinator, Prof. Jignesh A. Parmar, Prof. Riya B. Patel, Prof. Priyanka H. Patel, Prof. Hetvi S. Pathak. Dr. Jaydeep M. Barad expressed his view to all participants that you learn the fundamentals and application of heat and mass transfer operation from this workshop, which will benefit your future endeavors. Afterward, a certificate distribution program was done to all participants. At the end of the valedictory function, Dr. Nilesh S. Dumore concluded the workshop with an interactive feedback session with participants and congratulated all the participants and organizers for the successful completion of the workshop.



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Concluding Remarks

We would like to express our sincere gratitude to Dr. Meghal A. Desai, Associate Professor SVNIT, Surat, Dr. Chetan M. Patel, Associate Professor SVNIT, Surat, and Dr. Arvind A. Mungray, Associate Professor SVNIT, Surat whose guidance has contributed to the successful execution of the workshop.

We would like to thank Shree Manharbhai L. Patel (Managing Trustee), Shree. Kiritbhai N. Patel (Secretary), and Shree. Bharatbhai S. Patel (Co-Secretary), thank you for your support and providing us with a platform for successfully completing the workshop.

We would like to acknowledge our obligation to Dr. Piyush S. Jain, Principal, Dr. Miral R. Thakker, Vice Principal and Head of Chemical Engineering Department, Dr. Nilesh S. Dumore and Dr. Chandrabhushan T. Pal, Course Coordinator and all teaching and non-teaching staff of chemical engineering department for their enormous cooperation in the organisation of this workshop.