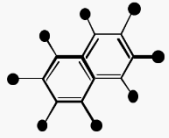




# INDIAN INSTITUTE OF CHEMICAL ENGINEERS



Dr. H L Roy Building, Jadavpur University Campus (Gate No.3), Raja Subodh Chandra Mullick Road, Kolkata 700032

## President's Corner



Dear Members,

Greetings to you all. I hope, in the face of the heat wave and other extremities of the weather affecting large parts of the country, you have managed to stay well and protected. Indeed, each passing day, Climate Change is emerging as one of the foremost global emergencies, blurring the national boundaries. Global Warming and Climate Change are steadily disrupting the balance of nature and posing multiple threats to the very human existence.

Over the last decade or so, amidst the ongoing debates and deliberations, we have become familiar with the concept of 'climate justice' and the pressing need for searching feasible solutions to the burning question of Climate Change. While it is the collective responsibility of the mankind to address this issue and take decisive steps to hold back the damages from worsening further, the Chemical Engineers have a greater stake and greater responsibility in initiating the process of Climate Justice.

They have long been playing a key role in addressing the pivotal issues, such as, Energy Efficiency and Renewable Energy, Energy Storage, Carbon Capture and Reuse, Sustainable Bio-energy, Sustainable Agriculture, Mitigation of Air and Water Pollution, etc.

In recent years, the industries have been unveiling their endeavors for sustainability through gradual and often active practice of 'Green and clean' philosophy. Of late, a number of incidents and mishaps have sprung up worrisome safety issues for the industry. Apart from statutory non-compliance and other techno commercial reasons, one more important faltering point has been lack of adequate awareness about industrial hazards and possible results. I appeal to all my colleagues to take an extra effort to increase safety awareness at all levels starting from the point of labours, drivers, plant operators, supervisors and up to the top management. As a matter of fact, the safety awareness is not limited to industries alone but also to households and the public utility sector. This is a societal responsibility where individuals also need to contribute judiciously.

IChE has all along been a staunch advocate of development through sustainability while at the same time fostering education and skill enhancement in the field of Chemical Engineering and promoting interest of the profession in general. As detailed in the previous issue of the Newsletter (April 2024), our Training Institute, IChE-TI, is going to be an important agent for effective skill enhancement of Chemical Engineering students as well as professionals.

*Contd...*

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While keeping in perspective the present milieu, it is gearing up for effective and meaningful takeaways by industries as well as academia. Already, the new batch of the IChE Online Internship Program (OIP-2024) has started from 2nd June. OIP has been designed so as to address the much-discussed gap between the industry demands and the lacunas in the academic curricula to improve the students' employability. The USP of the Internship Program is that while exposing the students to critical knowledge about the new-age subjects (like Matlab and AI-ML), which represent some of the latest trends and advancements in the domain of Chemical Engineering, it helps develop the students' soft skills simultaneously.

In absence of the popular AMIChE certification course (due to AICTE rules), IChE is exploring other avenues, like collaboration with reputed institutes for Diploma Courses and Training Programmes at the IChE-TI, and, thereby, aiming to benefit dual targets, both industry and academia. Also, during the recent years, IChE has been actively promoting fundamental research activities with stress on sustainability, bio-energy, recycling, pollution reduction, etc., in collaboration with renowned academic institutions.

We have already held the first Industry-Institute conclave in Chennai on 28th April 2024 successfully, wherein positive results have started showing. The second such meeting will be held at chemical industries hub, Bharuch district, Gujarat on 7th July 2024. For the Chemical Engineering community, IChE has recently introduced a dedicated portal in its website where job opportunities in the field of Chemical Engineering and allied areas are being highlighted regularly. It is a step forward to help freshly

passed out students as well as young professionals. Looking at the competitive needs of today, we have selected Industrial

growth through AI IOT, ML and other tools to be the topic for the annual Pankaj P Patel Trust Essay Competition, 2024. In a nut shell, the constant endeavour at our end is to fine-tune a wholesome approach with a view to contributing to the sustainable growth and advancement of the profession.

Meanwhile, we have reached the half way mark in the present year and the second half has been planned with lots of activities. The next Council Election, submission of papers for CHEMCON and SCHEMCON, submission of nominations for a big basket of IChE awards and so on are the major events in the IChE calendar. SCHEMCON is round the corner, to be held at RGIPT at Jais near Amethi, Uttar Pradesh on 21st September 2024. The theme for SCHEMCON '24 is 'New Paradigms of Chemical Engineering'. It is also time for our Regional Centres (RCs) and Student Chapters (SCs) to review their activity level and run the last lap in order to win the best chapter award/s. We appeal to all members for their zealous and active participation in the activities of their respective RCs and SCs, which will not only enrich the members but will also encourage the RCs and SCs to function even better.

I request your supportive participation for the progress and growth of the Chemical Engineering community and effective fulfilment of the societal responsibilities, which would fast forward our Nation as one of the most sought after global industrial and business hubs.

S.I. Thakar

✉: sunilthakar59@gmail.com

## OBITUARY

**With profound grief, we announce the sad demise of our following respected Members:**

**Prof. D.S. De** (LM - 06513). The late Prof. De joined IChE in November 1981.

**Prof. D.N. Ghosh** (LM 01015). The late Prof. Ghosh joined IChE in February 1963.

**Prof. Ch. V. Ramachandra Murthy** (LF 05809). The late Prof. Murthy joined IChE in December 1979.

*We offer our heartfelt condolence to the bereaved families of the departed and valued Members.*

# Online Internship Program (OIP-2024)

IChE-Training Institute (IChE-TI), recognized by DST-SIRO Govt. of India, started a new batch for the online internship program (OIP-2024) from 10 June, 2024 (4-6 Weeks). We are working to bridge the gap between the industry and academia. OIP-2024 will be also considered as the part of the internship program for the Diploma, UG, and PG professional and degree programs as per the AICTE curriculum. This internship training will be a unique opportunity for the students to do an internship from the industry, which is the actual requirement to become employable for the industry. IChE-TI has already provided internship training to more than 3000 students in the last 3 years. The objective of this Internship Program is to offer a compact and holistic approach of training to the aspiring students. This would not only educate them about the latest developments on the technology front but it would simultaneously equip them with the nitty-gritty of being an all-round professional, which is so very important these days.



In today's fast-paced market environment, the youngsters do not have the luxury of a long training period after joining an organization. They have to be at their professional best right from the moment they hit the ground. To an extent, this program would prepare them for all the contingencies.

## Aims of the online internship program:

- Assist the student's development of employer-valued skills, such as, teamwork, communications and attention to learn Engineer's responsibilities and ethics.
- Enhance and/or expand the student's knowledge of a particular area (s) of skill.
- Expose the student to professional role models or mentors who will provide them with support in the early stages of the internship and provide an example of the behaviours expected in the intern's workplace. To familiarize with various materials, processes, products and their applications along with relevant aspects of technology and troubleshooting.
- To know about a particular industry and its operation, product specification and market value. To gain experience in writing technical project reports.
- OIP-2024 certificate will carry the logo of IChE and DST-SIRO, Govt. of India.

Subject available for the Internship:

1. Chemical Process Technology (CPT)
2. Petroleum Refinery Engineering (PRE)
3. Matlab and AI-ML in Chemical Engineering (AIML)
4. Zero Discharge Liquid Management: Industrial Environmental Pollution Management (IEPM)
5. Industrial Process Safety Management (IPSM)
6. Six-Sigma Yellow Belt (6SYB)

## On-Site Industrial Training

From the current year, IChE has introduced on-site industrial training for the students of Chemical Engineering and allied branches from across India. This year, around 35 students undertook training at organisations, such as, Indian Oil, Haldia Petrochemicals Ltd., IVL Dhunseri Petrochem Industries and Bhumistha Infra Services.

The program will be undertaken on a larger scale from the next year, i.e., 2025-26. For the next year, the process of enrolment will begin in January 2025.

For any update, you may call:

**Dr. Avijit Ghosh**

Mobile: 9830752111

Or

Visit the IChE Website:

[www.iiche.org.in](http://www.iiche.org.in)

For any query,

You may also mail to:

[iichehq@iiche.gmail.com](mailto:iichehq@iiche.gmail.com)

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Visit [www. benchmark1.in](http://www.benchmark1.in) for state of art information related to these subjects.

These subjects are not yet part of standard curriculum, to full practical application!



## IChE Updates



1. The office of the IChE Training Institute was inaugurated on 16 August 2024 by IChE President, Mr. S.I. Thakar in presence of Hony. Secretary, Prof. S.B. Kuila; Hony. Treasurer, Prof. N. Balasubramanian; Hony. Registrar, Mr. Dhawal Saxena, Prof. M.K. Jha, Director General- IChE-Training Institute & Principal, Muzaffarpur Institute of Technology, Muzaffarpur; and, Dr. Avijit Ghosh, Director, IChE-Training Institute. Other senior members of IChE, honoured guests and staff members of the IChE HQ office were also present on the occasion.
2. A Memorandum of Understanding was signed between Muzaffarpur Institute of Technology, Muzaffarpur and IChE on 16 August 2024 at the newly inaugurated office of the IChE-Training Institute for collaboration in training and internship. On behalf of Muzaffarpur Institute of Technology, Prof. M.K. Jha, Principal of the institution and on behalf of IChE, Mr. S.I. Thakar, President, IChE signed the agreement in presence of Prof. S.B. Kuila, Prof. N. Balasubramanian, Mr. Dhawal Saxena and Dr. Avijit Ghosh.
3. On 16 August 2024, the IChE officials visited Indian Statistical Institute (ISI), Kolkata to hand over a memento to Prof. Dipti Prasad Mukherjee, Deputy Director, ISI. Present on the occasion (from left to right) were Debashis Ghosh, Head of Technology Business Development, IDEAS Technology Innovation Hub, Indian Statistical Institute (ISI) in Kolkata; Prof. N. Balasubramanian; Mr. Agnimitra Biswas, CEO, IDEAS Technology Innovation Hub, ISI; Prof. Dipti Prasad Mukherjee; Dr. Avijit Ghosh; Prof. M.K. Jha and Prof. S.B. Kuila.

*Centre:* The garlanded bust of Dr. H.L. Roy Founder President, IChE on the occasion of Foundation Day on 18 May 2024.

4. Hony. Secretary, Prof. S.B. Kuila, other senior members of IChE and staff members of the IChE HQ office paying floral tribute to the bust of Dr. H.L. Roy on the occasion of the Foundation Day of IChE.

*5a & b.* The national tricolour was hoisted on the occasion of Independence Day on 15 August 2024 in presence of Mr. S.I. Thakar, Mr. Dhawal Saxena, Dr. Avijit Ghosh, many senior members of IChE and staff members of the IChE HQ. Floral tributes were paid to the bust of Dr. H.L. Roy on the occasion.

**Accolade for IChE Member:** IChE Life Member, **Dr. Raghupatruni Bhima Rao**, who is actively associated with the Bhubaneswar Regional Centre, IChE has received an international award, i.e., **FEIAP Engineer of the Year Award** for 2024, from the **Federation of Engineering Institutions of Asia and the Pacific** [FEIAP]. It is an international non-profit organisation, representing the engineering profession worldwide. Dr. Rao is the Former Chief Scientist, CSIR-IMMT, Govt. of India, Former Professor AcSIR, Govt. of India, and Former Principal and Professor of Biju Patnaik University of Technology, Odisha.

**We congratulate Dr. Rao for his accomplishment and wish him many more achievements in the days to come.**

## SCHEMCON 2024

20 & 21 September 2024

**Theme: New Paradigms of Chemical Engineering**

Organised by

**IChE – RGIPT Student Chapter**

**Department of Chemical and Biochemical Engineering  
Rajiv Gandhi Institute of Petroleum Technology, Jais, Amethi**

In association with

**IChE Amethi Regional Centre**

**Email: [schemcon2024@rgipt.ac.in](mailto:schemcon2024@rgipt.ac.in),**

**Website: [www.schemcon2024.com](http://www.schemcon2024.com)**

# Climate Change and Sustainable Manufacturing – V

## Energy and Water Conservation Ideas in Chemical, Petrochemicals and Refinery sectors -3/3

Joy M. Shah<sup>1</sup>

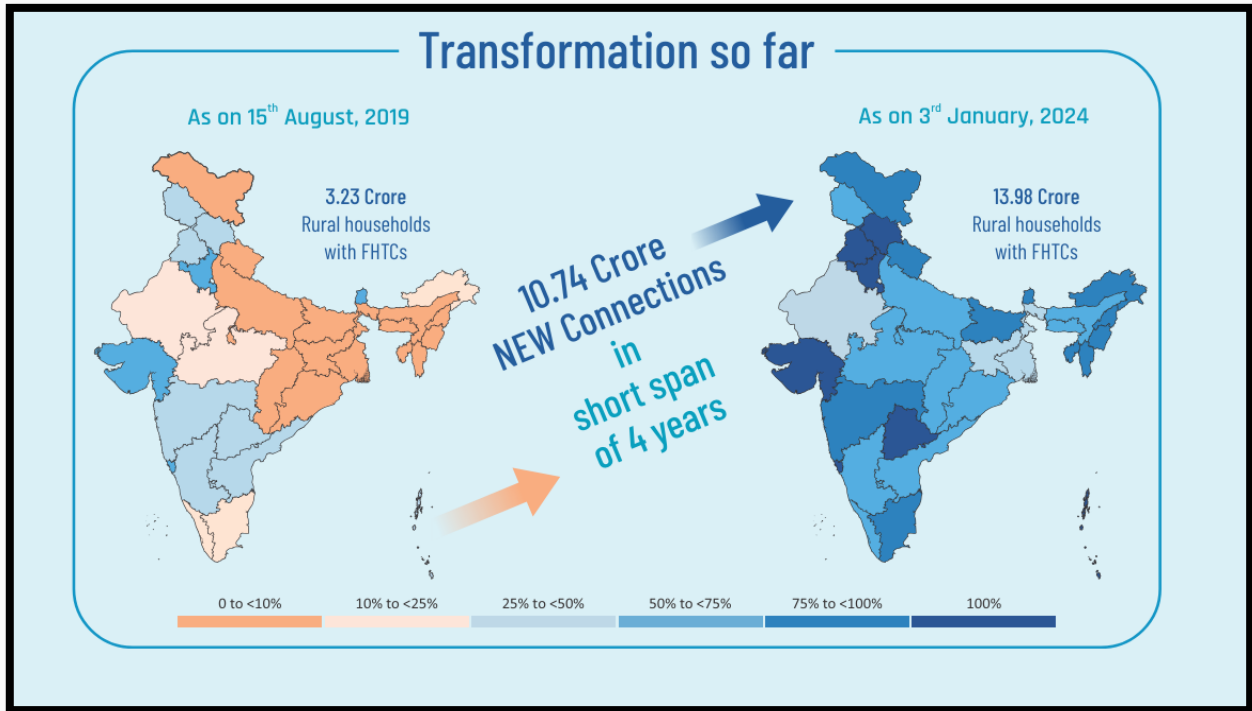
**“Anyone who can solve the problems of water will be worthy of two Nobel prizes - one for peace and one for science” - John F. Kennedy**

Introduction: India has 18 percent of the world’s population, but only 4 percent of its water resources and only 2.45 percent of surface water, making it among one of the most water-stressed in the world. A large number of Indians face high to extreme water stress, according to a recent report by the government’s policy think tank, the NITI Aayog. Per capita availability of water is reduced from 5177 Cu.m to 1486 Cu.m over last 70 years as per ministry of water resources. It is likely to further reduce to 900 Cu.m. by 2050. The conditions are worsened and more challenging due to climate change, intense flood in one area where as drought in other areas as well as very erratic monsoon.

Government of India realised the water scarcity in India and have taken proactive action by many schemes to make water available to citizen of India as well as Industries in India. In November 2019, the Ministry of Jal Shakti for the first time set up a committee of independent experts to draft the new National Water Policy (NWP). The NWP is based on the consensus that has emerged through these wide-ranging deliberations and focuses on:

- A shift away from a supply-centric approach involving dam construction and groundwater extraction, **to managing demand and distribution of water.**
- Diversifying public procurement operations to include nutri-cereals, pulses and oilseeds to encourage farmers to change their cropping patterns and save water.
- **Reduce-Recycle-Reuse** for integrated urban water supply and wastewater management, treatment of sewage and eco-restoration of urban river stretches through decentralised wastewater management.
- Non-potable uses of water such as flushing, fire protection, vehicle washing **must mandatorily shift to treated wastewater.**
- The NWP points to huge amounts of water stored in big dams, which are still not reaching farmers and explains how irrigated area can be expanded at very low cost by deploying pressurised closed conveyance pipelines, combined with Supervisory Control and Data Acquisition (SCADA) systems and pressurised micro-irrigation.
- Supply of water through “nature-based solutions” such as the rejuvenation of catchment areas through compensation for eco-system services.
- Blue-green infrastructure in the form of rain gardens and bio-swales, restoration of rivers with wet meadows, constructed wetlands for bio-remediation, urban parks, permeable pavements, green roofs, etc. are proposed for urban areas.

Industries can participate, not only achieve water conservation in their own premises but improve water availability in nearby areas to support new water policy. Jal Jeevan Mission established in 2019, is envisioned to provide safe and adequate drinking water through individual household tap connections in rural area by 2024 by recharge and reuse through grey water management, water conservation, rain water harvesting as well as Amrit Lake. Jal Jeevan Mission looks to create a *jan andolan* (people's movement) for water, thereby making it everyone's priority as it also increases water requirement. The transformation is shown in below mentioned figure which will also increase water requirement and increases stress on water availability.



In this article, I shall talk about ideas for water conservation which I practiced in Industry over the years. You may check possibilities to implement at your plants.

**WMS 1: 5R principle:** Most of the water conservation ideas in industries and commercial establishment follow 5R principles, i.e. refuse, reduce, reuse, recover and recycle. Always ask for 5R in every design, operation and maintenance related to water. You will see the glimpses of 5R in subsequent ideas.

**WMS 2:** First step in water conservation is to identify source and sink of water. Carry out water balance and identify gaps to understand actual consumption by each unit. Carry out audit to establish baseline water usage. Also establish quality of water required for various purpose and quality of waste water produced from different units. If required, provide water flow meters at all users to monitor and control water usage. Once unit knows the current state of water usage, further action can be possible. My experience says that most of people are ignorant of water balance of their site/plant.

**WMS 3:** The largest water consumer in chemical industries is normally cooling tower. Cooling water Cycle of concentration (CoC) and its blow down requirement is decided based on either allowable Chloride level or Calcium hardness level. By careful design and monitoring of water treatment program, operating chloride and calcium hardness can be increased to increase CoC and lead to water conservation significantly.



WMS 4: Major water usage in cooling tower is evaporation loss to cool down water. For high load of cooling in condensers or cooling of high temp streams; process- process exchanger for energy recovery or use of air finned cooler can be economical option leading to reduction of significant water evaporation in cooling tower.

WMS 5: Cooling tower blow down is high TDS, high Silica stream but normally free of TOC/COD. It is reused for fire water being treated water, washing, flushing and cleaning of floor and equipment as well as for direct contact cooling by some of the operators.

WMS 6: Boiler blow-down can be reduced and boiler drum CoC can be increased by careful design and monitoring of water treatment of boiler drum. Change from fixed blow-down rate to on demand blow-down practices. Provide online conductivity meter to minimise blow-down.

WMS 7: Service water utility points are given in all chemical plants. Major loss of water can be running hose from such utility points even if it is not required. To minimise water wastage, install automatic shut-off nozzles to hoses, switch to high pressure- low volume nozzles.

WMS 8: Many times running water hose are required for hot work in high hazards industries as per procedure. Review procedure and provide water hose with quick shut off valve / ball valve which can be opened in case of requirement.

WMS 9: Normally water pumps gland is leaking lead to wastage of water. Check possibility to replace gland by single mechanical seal and stop water leakage.

WMS 10: Condensate recovery in plants are observed 50-70% due to losses in traps, leaks, pressure loss in system. Strive to improve condensate recovery more than 90% by careful audit of malfunctioned trap, arresting leakages by online sealing as well as stopping very low pressure steam venting, reduce vent steam from low pressure vessels and deaerators, which is very much feasible.

WMS 11: Many of the industries require regular floor cleaning due to dust accumulation. Normally fresh water is used. It is possible to use treated effluent for floor cleaning.

WMS 12: Water is mainly used in industries for once through cleaning of equipment, floor etc. Now with technology advancement, for many applications, water free cleaning process or circulating water cleaning processes are developed. Identify such alternate equipment and floor cleaning process which are free of freshwater. E.g. vacuuming to remove solids and dust, UV bath for filter elements, back flushing, oxidation, etc.

WMS 13: Use of non-potable water/ treated effluent water for industrial services, e.g. Fire water, effluent water pH adjustment or dilution, floor washing, equipment cleaning, atmospheric scrubbers etc. Many industries uses drinking water for above mentioned services, it can be replaced by non-potable water / treated effluent water/cooling tower blow-down.

WMS 14: Condensate is recovered and recycled after polishing to remove contaminants. However, when treatment of boiler drum and steam is working well, iron pick up from steam and condensate system is negligible. In such cases, it is possible to recycle/reuse major part of the condensate directly to deaerator for

energy and water saving. The stream for direct recycle to be selected based on risk assessment of possibility of contamination due to process upset or process fluid leakage.

WMS 15: Cleaning of filter, equipment, etc is periodically done many times. Review and reduce cleaning schedule from periodic and regular to need based cleaning. Use water bath instead of cleaning under continuous sprinklers. Provide necessary indication e.g. DP meter; to assess cleaning requirement.

WMS 16: Water pinch analysis for chemical, petrochemical and refinery complex is not new concept. As the plants are built in phases, this concept is normally overlooked while design. It is essential to carry out water pinch analysis for reuse, recover and recycle water. I propose following stages to prepare road map for zero liquid discharge.

- Carry out pinch analysis and identify reuse of water based on quality requirement and re-route it.
- Segregate low TDS stream which can be recycled with minimum reject and with minimum treatment.
- Segregate high TDS water where water is free of silica and Calcium / magnesium salts. I.e. only sodium salts. This can be recovered and recycled at slightly higher level of treatment.
- Balance water can be recycled with extensive treatment.
- If target is for zero liquid discharge, identify waste steam/ heat available with in process which is lost to atmosphere and plan for water recovery in multi stage evaporators.

WMS 17: Water conservation while landscaping.

Many commercial and industrial facilities have landscapes that require irrigation. In my recent assessment of one of facility, water consumption of gardening was very high. Taking action to make this efficient can save a lot of water.

- Use native plants or other plants that require little water to thrive in your region.
  - Do not turf grass in all open areas. Plant turf grass only in areas where people will use it actively for recreation.
  - Use efficient water sprinklers for watering of turf grass and maintain it in good condition.
  - Use drip irrigation and/ or micro irrigation for watering of plants.
  - Organize your landscape into hydrozones. Hydrozones are areas of landscape with plants and vegetation that have similar water requirements. This prevents overwatering of some plants and avoids under-watering of others.
  - Keep soil healthy and add mulch to prevent water loss through evaporation.
  - If watering with a hose, make sure it has a shut-off nozzle.
  - Water landscapes in the morning to prevent water loss due to evaporation. Avoid watering when it is windy.
- Use a rain barrel and rain pond to collect water for use in the landscape

WMS 19: Water Harvesting: Rain water harvesting is now a day, very well accepted practice in water scarce area. Rain water can be harvested in:

- Open pond for reuse it for process
- Recharge to ground to increase ground water level and extraction by bore well after monsoon.
- Normal practices are to harvest rain water from roof and clean area and recharge to ground in the monsoon season.

- For large water pond available in nearby area, rain water can be diverted to open pond by gravity or by pump.
- Provide piezo meter, if rain water is charged to ground to see its effectiveness.

## WMS 20: Water Audit

- Water audits are very effective way to identify water conservation opportunities as it is focused approach. Carry out first party and second party water audit once a year and third party water audit at least once in three years. Take help of experts for innovations and initiatives.

## WMS 21: Water Manager

Nominate water manager in your facility to ensure all water conservation measures, training as well as audits are regularly taking place. Also associate and involve all employees and contract work man for water conservation drive. Establish system for incentive linked suggestions scheme for water conservation.

## WMS 22: Water Dash board

Peter Drucker's famous quote, "What gets measured, gets done." It is essential to make dash board and map water balance, actual and design water consumption for each consumers as well as actual and design water quality required.

## WMS: 23 Fire water line leak

In high hazards industries, fire water lines are provided under ground. Due to internal or external corrosion, line leaks lead to very high loss of fire water and continuous operation of its Jockey pump. It is preferable to provide fire water line above ground to identify and arrest leakage. If already provided underground, ensure, it is flushed periodically and water is recovered to avoid stagnancy and subsequent corrosion.

I am sure that Professional Chemical Engineers will appreciate their role to actively take up the ideas to execution for sustainable manufacturing and becoming water neutral or water positive.

In last three articles, we discussed about energy and water conservation ideas. I shall appreciate, if you can pick up some of the ideas and send me feedback.

**# "Water is critical for sustainable development, including environmental integrity and the alleviation of poverty and hunger, and is indispensable for human health and well-being." – United Nations**

**<sup>1</sup>The author is the Founder and Chief Consultant, Innov8 ProTech Solutions, The Sustainability and Management Consultant. Formerly, he was Sr. Vice President (Head - Technical) at Reliance Industries Ltd. He was also a member of the IChE Chemical Process Safety, Energy and Environment Committee from 2018 to 2022. For the last five years, he has been consulting for Energy and Water Management, Green company advisor and branding for Sustainable Manufacturing as well as Process Safety and Risk Management.**

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## Regional Centre Activities

### Ahmedabad Regional Centre

On 16 February 2024, the **Shirish Parikh Memorial Lecture** was delivered by **Prof Parag R. Gogate**, ICT, Mumbai. The topic of Prof. Gogate's Lecture was **Process Intensification of Chemical Processing Applications Using Cavitation Reactors**. The Lecture was followed by a lively interactive session. The program was fully sponsored by Macro Polymers (Pvt) Ltd.

### Amaravati Regional Centre



The 2<sup>nd</sup> **Prof. M. Venkateswara Rao Endowment Lecture** was delivered on 16 April 2024. The lecture programme was held in association with **RVR & JC College of Engineering (A)** and all the Student Chapters under the Amaravati RC. Distinguished academic, **Prof. K. Krishnaiah**, former Professor, IITM & Dean, Academic Affairs, IIT Tirupati delivered the Lecture on the theme, **Chemical Engineering: Opportunities and Challenges in 21st Century**. **Dr. C.V.V. Satyanarayana**, Vice Chairman, Amaravati RC presided over the inaugural proceedings.

Presiding over the inaugural function, Dr. Satyanarayana warmly welcomed the senior IChE office bearers, who joined on-line, i.e., **Mr. S. Indulal Thakar**, President-IChE, the **Chief Guest** at the inauguration; **Mr. Shashikant Pokale**, Vice-president-IChE and **Prof Sunil Baran Kuila**, Honorary secretary, IChE, both of whom were the **Guests of Honour**. Other participants, who joined both on-line and off-line, were from different institutions, such as, **RVR & JC College of Engineering**, Guntur; **Vignan's Foundation for Science, Technology & Research** (Deemed University), Vadlamudi, Guntur (Dist.); **NIT AP**, Tadepalligudem; **RGUKT-Nuzvid** and **IIT-Tirupati**.

While inaugurating the programme online, the Chief Guest and President (IChE), **Mr. Thakar** congratulated **Prof. M.V. Rao** for instituting this endowment Lecture and appreciated him for taking several initiatives for the growth of the Amaravati RC. Mr. Thakar further dwelt on the widespread presence of Chemical Engineering in human life and explained the new opportunities emerging for the chemical engineers by means of digital transformation as well as through sustainable bio-processing techniques, hydrogen energy, fuel cells, advanced materials with nanotechnology, etc. While commending Prof. Rao for instituting the endowment lecture, **Mr. S. Pokale** spoke at length on some of the challenges for chemical engineers in the form of



environmental sustainability, safety in chemical industries, lower productivity, fast advancement in technology, etc. He stressed on the need to convert the challenges into opportunities. **Prof. S.B. Kuila**, the second Guest of Honour, appreciated various activities being organized by the Amaravati RC all the year round and conveyed his best wishes for the success of the event.

**Prof. M.V. Rao** said that the objective behind instituting the annual endowment lecture with the support of the Amaravati RC members was to motivate Chemical and Allied Engineering student community, especially in the Amaravati RC region, and to acquaint them with the emerging technological developments and practices of Chemical Engineering and Chemical Industry. Prof. Rao expressed his gratitude to all the guests for gracing the occasion.

**Dr. V. Govardhana Rao**, former professor, IIT Bombay and Immediate Past Chairman, Amaravati RC, introduced the distinguished speaker **Prof. K. Krishnaiah** to the audience in great detail and warmly welcomed him to deliver the Lecture.

**Prof. Krishnaiah** systematically narrated the evolution of Chemical Engineering from basic sciences during the period 1915 to 1990. He explained the progression of Chemical Engineering through a lag phase until 1915, then the acceleration to the growth phase from 1915 to 1960s, followed by the exponential growth phase from 1960s to 1990s and, finally, the exciting new phase that has started in the 21<sup>st</sup> century. He also listed out the major challenges in the 21<sup>st</sup> century concerning economic conversion of solar energy, energy generation from fusion, access to clean water, restoration and improvement of the urban infrastructure and advanced health informatics, nuclear terror, etc.

At the end of the lecture, **Dr. Anil Kumar Banavath**, Asst. Professor, Department of Chemical Engineering, NIT AP, Tedepalligudem and Executive Committee member of Amaravati RC proposed the vote of thanks. An impressive number of participants comprising the students, faculty members and professionals attended the lecture.

### **Ankleshwar Regional Centre**

On **6 July 2024**, a national **Conclave**, titled, **Industry Sustainability – Energy Perspective: A Mission to Viksit Bharat @ 2047** was organised. **Padmashri Prof. G.D. Yadav**, former Vice Chancellor of ICT, Mumbai and President, IChE (2001) was the **Keynote Speaker** for the event.

At the Conclave, eminent speakers from industry, academia as well as government authorities addressed the major concerns of the Chemical Industry in the context of sustainability. The speakers touched upon issues, such as, **Compliance to Zero Emission with Competitiveness, Applicability of Green Hydrogen at Consumer Level, Policy and Legislative Support to Industry for Renewable Energy Use and Changing Energy Scenario for Sustainability.**

### **Bangalore Regional Centre**

**IChE Students' Project Grant** is given annually by the Bangalore RC to encourage innovative UG students Projects. Eight Projects were sponsored during 2023-24 amounting to a total of Rs. 40,000/-.

The **Annual Best Project Award** function was conducted on **29 May 2024**.

**Best Outgoing Chemical Engineering Student 2023-24 Award** from the Bangalore Region was given to **Mr. Akshay**, M S Ramaiah Institute of Technology, Bangalore.

**Koolur Memorial Essay Competition 2023-24 Award** was jointly given to **Johar R. Athigiri**, Dayananda Sagar College of Engineering, Bangalore and **Jitin Bangera**, M S Ramaiah Institute of Technology, Bangalore.

The Department of Chemical Engineering, **Dayananda Sagar College of Engineering** in association with Bangalore RC organized **Chemovation**, a biennial national level student symposium for the year 2024 on **4 April 2024**.

### Baroda Regional Centre

*Chemical Engineers' Reference Manual, 2nd Edition* has been published by the Baroda Regional Centre. The book has been written by **Dr. R. Venugopal**, IPES, Joint Chief, Controller of Explosives, PESO, Vadodara. And **Shri. P. L. Manoj**. A large number of books have been donated to the final year students of various engineering colleges.

A National **Conference** on the theme of **Connecting Green Hydrogen 2024 (CGH 2024)** was organized by Baroda RC and **IOCL Gujarat Refinery** in technical collaboration with **Petroleum & Explosives Safety Organisation (PESO)**, Gujarat on **26 and 27 April 2024**. There were **eight (8) Technical Sessions** with **30 Session Chairs** and **Expert Speakers**. Along with **422 participants**, **110 organisations** were also present at the conference. Around **10 Exhibitors** put up their stalls.

### Bhubaneswar Regional Centre



**CACHe 2024**, a National Student Seminar, was organised in association with **CSIR-IMMT Bhubaneswar on March 23, 2024**. The esteemed guests included **Mr. Chatturmukh Pattnaik** (EC member, IChE-Bhubaneswar Regional Centre), **Mr. Hemanta Kumar Tripathy** (Senior Most Chief Scientist, CSIR-IMMT Bhubaneswar) and **Dr. D.S. Rao** (Head, HRD, CSIR-IMMT Bhubaneswar). The event featured technical presentations and quiz sessions for the undergraduate (UG) and postgraduate (PG) students of chemical engineering. The chemical engineering students from prestigious institutions, i.e., **IIT Kharagpur, BITS Pilani Hyderabad**

**Campus, Andhra University College of Engineering Vishakhapatnam, ICT-IOC Bhubaneswar, IGIT Sarang, PMEC Berhampur, CV Raman Global University Bhubaneswar, and VSSUT Burla** participated in the seminar. Prizes were distributed to the best presentations both in the UG and the PG categories.

A **Technical Talk** on the topic, **Luminescence from Silicon Nanostructures**, was delivered by **Prof. N.R. Bandyopadhyay**, former Professor and Head, School of Materials Science and Engineering, Indian Institute of Engineering Science and Technology, Shibpur on **5 April 2024**.

## Calcutta Regional Centre

**Professor N.K. Bose Memorial Lecture** was delivered on **16 March 2024** by **Dr. Subhadeep Das**, Postdoctoral Research Assistant, Purdue University, USA. The theme of his Lecture was ‘**Smoking Kills: A New Menace in the Form of Small Cell Lung Cancer**’. Besides **Mr. K.K. Basu**, Chairman, Calcutta RC; **Prof. S. K. Das**, Vice Chairman, Calcutta RC, **Mr. S.K. Chakraborty**, Honorary Secretary, Calcutta RC and **Prof. N.K. Brahma**, Jt. Secretary, Calcutta RC attended the Lecture. Respected guests included Prof. R.K.Saha (former Professor, IIT, Kharagpur), Prof. P. Ray (former Professor, Calcutta University) and Prof. Siddhartha Chatterjee (former Professor, SUNY University, USA).

Following a brief introductory speech by Mr. S.K. Chakraborty, the Chairman Mr. K.K. Basu narrated the life and work of the late Prof. N.K. Bose in a short speech. In his presentation, the Guest of Honour and the presenter of the Lecture, **Dr. Subhadeep Das** lucidly explained Cancer Biology, RNA Biology, Small Cell Lung Cancer, the state of research in this field and as well as the future prospects of cure from this cancer. Dr. Das’s insightful lecture evoked much interest among the audience which was evident in the interactive session following the Lecture.

A **Memorial Service** was held on **20 April 2024** to pay respect to the late **Prof. D. N. Ghosh**, who passed away recently. During the formative years of IChE, the late Prof. Ghosh played an important role as the Honorary Secretary of the Institute for several years. Floral tribute was paid to the late Prof. Ghosh at the beginning and one-minute silence was observed. A number of senior IChE members, colleagues of the late Prof. Ghosh as well as his students reminisced about him with many anecdotes. Condolences were also paid by several senior members through messages.

## Kharagpur Regional Centre

On **3 March 2024**, a **technical trip-cum-excursion** to **Mandarmani** was undertaken by 30 members of the Kharagpur RC along with their families.



The trip combined technical discussions and a get-together of the members. Those participating also discussed the future steps that could be initiated so as to increase the number of IICHE members under the Kharagpur RC.

**Fugacity-2024**, a **UG Techno-Fest**, was held in association with Chemical Engineering Association, IIT Kharagpur on **31 March 2024**. The Central Theme of the event was **Inspiring and Fostering Innovation in the Field of Chemical Engineering**. The Objective of Fugacity-2024 was to spark creativity and help turn ideas into real-world innovations.

A Talk on **Selection Metrics of an Adsorbent for CO<sub>2</sub> Capture Processes** was delivered by **Dr. Shanmuk Srinivas Ravuru**, a Post-doctoral Researcher, Department of Chemical and Materials Engineering, University of Alberta on **16 April 2024**.

### Kozhikode Regional Centre

**Kozhikode Regional Centre** was inaugurated on **16 February 2024** to contribute to the advancement of Chemical Engineering education, research, and industry collaboration. The inaugural ceremony brought together esteemed professionals, academics and industrial leaders, who celebrated this milestone.

On **15 March 2024**, **Prof. Sirshendu De**, Department of Chemical Engineering, IIT Kharagpur delivered a Lecture on the theme of **Indigenous Spinning of Hollow Fibre Membrane and their Applications**.

A **Faculty and Staff Development Programme**, titled, **Soft Skills for Professional Excellence** was held during **10 – 14 June 2024**.

### Northern Regional Centre

On **28 February 2024**, **Lectures** were arranged for college and school students on Climate Change in association with **Climate Change Research Institute (CCRI)**. **Prof. Anil Verma**, Vice-Chairman, IChE (Northern RC) and Professor, Department of Chemical Engineering, IIT Delhi, presented a paper, titled, **A Journey towards a Greener Tomorrow**.

Under the ‘**Learning with the Leaders**’ Lecture Series on **6 April 2024**, **Dr. Ramesh Kumar Jalan**, Advisor, UN Office for Information and Communication Technology, New Delhi, presented a paper, titled, **The Need for Global Water Resource Management and Its Impact on Climate Change**. **Mr. K.K. Sharma**, Whole Time Director - EHS, DCM Shriram Ltd., presented a second paper, titled, **Low Carbon Emission Technologies**. At the beginning, **Dr. S. Nand**, Chairman, IChE (Northern RC) welcomed the eminent speakers, members and participants and gave a brief introduction of the speakers.



Under the same series, on **27 April 2024**, **Dr. Sachchida Nand**, Former Additional DG, Fertiliser Association of India and Chairman, IChE (Northern RC), presented a paper, titled, **Greening of Fertilizer Production**. This was followed by a second presentation by **Dr. Siddhartha Mukherjee**, Former Director (Technology), Air Liquide Global E&C Solutions India Pvt. Ltd, who presented a paper, titled. **Tray Column Design – From a Practicing Engineer’s Desk**. **Mr. C.P. Srivastava**, Honorary Secretary, IChE (NRC) welcomed the



eminent speakers, members and participants and gave a brief introduction of the speakers. **Dr. Dhiraj Kumar Garg**, Honorary Joint-Secretary, IChE (NRC) offered the vote of thanks at the end of the event.

On **24 April, 2024**, on the occasion of the **World Earth Day**, a **Lecture**, titled, **Plastics - A Sustainability Paradox** was delivered by **Mr. Swapan Kumar**, Secretary, Indian Centre for Plastics in the Environment (ICPE). The programme was held in association with **Climate Change Research Institute (CCRI)** and **India International Centre**.

**Lovraj Kumar Memorial Trust (LKMT) Conclave – 2024** was organised on **21 June 2024** with **Northern RC** being one of the associates along with **Federation of Indian Petroleum Industry (FIPI)**. The theme of the conclave was **Integration of Petroleum Refineries with Bio-refineries for enhancement of Sustainable Fuel Production**. **Mr. Alok Perti**, Former Secretary, Ministry of Coal, Govt. of India and Chairman, Conclave Technical Committee, LKMT gave the welcome address, which was followed by Chairman's address by **Mr. B.K. Chaturvedi**, Former Cabinet Secretary, Govt. of India and Chairman, LKMT. The Chief Guest, **Ms. Vartika Shukla**, Chairman & Managing Director, Engineers India Limited (EIL) presented the keynote address.

Speakers in the Technical Session were **Dr. S. Venkata Mohan**, CSIR-IICT, Hyderabad; **Dr. Ravindra Utgikar**, Vice President - Corporate Strategy, Praj Industries; **Dr. C.S. Laxminarasimhan**, Adjunct Professor, CSIR-IICT, Hyderabad; **Mr. Vineet Bakshi**, Director- Business Development, **Mr. Vineet Bakshi**, Director-Business Development, LanzaTech; **Mr. Satheesh M. Pillai**, Managing Director, Fluor Daniel India Pvt. Ltd.; together **Ms. Amarjeet Kaur**, **Mr. Ravikant Gupta**, both from Engineers India Ltd., & **Dr. Amarjit Rajbongshi**, Assam Bio Refinery Pvt. Ltd. and **Mr. Ravi P. Gupta**, Indian Oil Corporation R&D.

**Prof. K.K. Pant**, Director, Indian Institute of Technology Roorkee & Trustee, LKMT offered the vote of thanks.

## Pune Regional Centre

A refresher course was conducted in **Chemical Engineering for Practising Chemical Engineers** on **16 March 2024**. The courses was basically designed to refresh the basics of the Pumps, Heat exchangers, Distillation, Water Treatment, Material and Energy Balance, etc. There were more than 40 participants from industry, academia and research. Organisations participating included **National Chemical Laboratory**, **Lupin Research Park**, **Cipla**, **Alkyl Amine Chemical Ltd.**, **National Chemical Laboratory**, **Sutzer India** and many others.



A **Workshop**, titled, **Process Safety Management, Added Advantage with Demo of AI Tools for PSM** was conducted on **7 June 2024** to provide the participants with a comprehensive understanding of the Process Safety Management (PSM). Elaborate discussions on 14 elements of OSAH's PSM, including, hands-on experience of doing HAZOP study was carried out during the workshop. The demo of various AI tools was also carried out. Industries and organisations, such as, CSIR- NCL, Lupin Ltd., Emcure Pharmaceutical Ltd., Arofine Polymers Pvt.Ltd., etc., participated.

## Trivandrum Regional Centre



The **IChE-CGG Panicker** and **IChE-MR Kurup Gold Medal award ceremony** and the **annual family get-together 2023-24** were held on **10 February 2024**. **Dr. C. Anandharamakrishnan**, Director, CSIR-NIIST, Trivandrum conferred the Gold Medals to the topper students in Chemical and Biochemical Engineering. **Ms. Vismaya** from Sree Chitra Tirunal College of Engineering and Technology, Trivandrum was the topper in the Department of Biochemical Engineering. **Mr. Ajith. P. Mangottil** and **Mr. Joseph Sabu**, both from Department of Chemical Engineering, TKM College of Engineering, were also awarded with gold medals because for

the first time two students secured the same highest marks from the same department. The award ceremony was followed by a lively family get-together with the Trivandrum RC members and their families coming together and enjoying the occasion whole heartedly.



On **4 March 2024**, a Webinar was held, titled, **Creating an Order in Disorder: A Lecture on Crystallization of Glass**. The lecture was delivered by **Dr. Venkateswaran C.**, Scientist & Section Head, Glass and Electronic Materials Division, Vikram Sarabhai Space Centre, Trivandrum. Dr. Venkateswaran explained the function of glass and ceramics in various electronic and space applications.

## Vapi Regional Centre

An **Industry Visit** was organised for the students of **Government Polytechnic Daman** on **6 January 2024** to **Fine Hydrochem Pvt. Ltd**, GIDC Vapi. Besides 27 final year students and two faculty members. Mr.

Shashikant Pokale, Chairman Vapi RC and Vice President, IChE and Mr. J. R. Shah, EC member VRC accompanied the students during the visit.

A **Student Chapter** was inaugurated at the Chemical Engineering Department, **Government Polytechnic, Valsad** on **21 March 2024** under the aegis of the Vapi RC. Mr Shashikant Pokale was the Chief Guest for the event. Eight other EC members of Vapi RC also attended the inauguration programme.

A seminar on **(a) Process Improvements in Multiphase Reactions and Reactors, and, (b) Advances in Waste Water Treatment** was organised by Vapi RC jointly with UDCT Alumni Association Vapi; Vapi Industries Association, Vapi and Vapi Green Enviro Ltd., Vapi on **23 March 2024**. **Prof. Parag Gogate**, ICT Mumbai was the key speaker at the seminar.

### **Guwahati Regional Centre**

The following two **Lecture programmes** were organised for the members.

On **Clean Transportation Fuels Production from Algal Biomass** was delivered on **7 February 2024** by **Prof Ajay Dalai**, Distinguished Professor and Canada Research Chair in Bioenergy and Environment-Friendly Chemical Processes, College of Engineering, Department of Chemical and Biological Engineering, University of Saskatchewan, Canada.

On **Mechanistic Insights into Nanoscale Separation and Catalytic Phenomena Using Multi-Scale Simulations of Nanomaterials** was delivered on **19 March 2024** by **Dr. Ananth Govind Rajan**, Infosys Young Investigator from the Department of Chemical Engineering, Indian Institute of Science (IISc), Bengaluru.



## Student Chapter Activities



### Harcourt Butler Technical University, Kanpur

The Student Chapter of IChE at the Department of Chemical Engineering, HBTU along with the Department of Biochemical Engineering, HBTU organised **CHEM-TECHNOVA**, an international event on the central theme of **Sustainable Green Chemical Technologies** during **21 – 23 March 2024**. The American Chemical Society was the co-sponsor. CHEM-TECHNOVA included lectures, parallel sessions of oral and poster presentation and Indo-US as well as Indo-Canadian Joint Symposiums. Awards were given away for best oral presentations and best poster presentations.

Speakers for the Plenary Session were **Mr. Biswanath Chattopadhyay**, CEO, IVL Dhunseri Petrochemicals and **Mr. Mahendra Pingle**, GM, Tata Bluescope Steel. Speakers for the Keynote sessions included **Prof. Raghuraj Pandiyan** (NIT Warangal); **Prof. B.K.Dubey** (IIT Kharagpur) and **Prof. Anil Verma** (IIT Delhi). Speakers at the Indo-US Symposium were **Dr. Veera M. Boddu** (Environmental Protection Agency, US); **Prof. Debasish Kuila** (North Carolina A&T State University, US), **Dr. Amit Arora** (NIT Hamirpur) and **Dr. Ritesh Mittal** (GM, Engineers India Limited, New Delhi). Speakers at the Indo-US Symposium included **Prof. Ajay Dalai** (University of Saskatchewan, Canada), **Prof. S.P. Chaurasia** (MNIT, Jaipur), **Prof. M.K. Jha** (Muzaffarpur Institute of Technology, Muzaffarpur) and **Prof. Prasenjit Mondal** (IIT Roorkee).

Around 450 participants (Faculty Members, Research Scholars, PG /UG Students and Industrialists) from various institutions across the world took part in the event.

### Jawaharlal Nehru Technological College of Engineering, Hyderabad

**GENOS 24**, a national level technical symposium, was organised on **22 and 23 April 2024** by the Department of Chemical Engineering. Events included **paper and poster presentation, promotion of innovational projects, industrial problem solving and crossword puzzles**.

Papers and posters were presented on a wide array of subjects in Chemical Engineering and allied fields, such as, Transport Phenomena, Reaction Engineering, Plastic Waste Management, E-Waste Management, Environmental Engineering, Reaction Engineering, Green Technology, Process Control, etc.

### Madan Mohan Malavya University of Technology, Gorakhpur

The following **Workshops** were organised during the period under focus:

A workshop on '**Insight into Analytical Instruments for Research**' was held from **29 January – 2 February 2024** for the 3rd year students of Department of Chemical Engineering. Speakers included **Dr. Vitthal L.**



**Gole, Dr. Prateek Khare, Dr. Jyoti and Dr. Ravi Shankar.** Topics, such as, **HPLC, UV-Visible Spectroscopy and FTIR Spectroscopy** were covered. The workshop was guided by **Dr. Prateek Khare**. During **3 – 6 March 2024**, a workshop, titled, ‘**Fundamentals of Simulation Tool in Design and Analysis of Chemical Engineering**’ was held. The resource persons included Dr. Vivek Kumar Gupta, Assistant Professor, Rajiv Gandhi Institute of Petroleum Technology, Jais and Dr. Deepshikha Singh, former Assistant Professor, Global University.

The following **Talks** were organised for the students:

On **20 February 2024** a Talk was presented on ‘**Introduction to Chemical Engineering**’ by Mr. Rahul Srivastava, Principal, Infosys Consulting. His presentation highlighted advantages, disadvantages and future prospects of Chemical Engineering vis-a-vis non-technical industry.

On **23 February 2024**, another Talk was presented by **Mr. Shankar Dutt Paliwal**, a Senior Process Engineer in the Abu Dhabi Petrochemical sector, on the topic of ‘**Career Opportunities in the Petrochemical Sector**’. Paliwal talked about the career opportunities, advantages and disadvantages in the petrochemical sector. On **16 March 2024**, **Dr. Akshay Modi**, Assistant Professor, IISER, Bhopal presented a talk titled, ‘**Tailoring Polymeric Membranes for Separation Applications**’.

On **19 March 2024**, **Dr. Sarjerao Doltade**, Founder and CTO, Ligsure, presented a talk on ‘**Technology and Entrepreneurship in Chemical Engineering**’.

Each of the talk session was followed by interaction with the students.

The following **Industry Visits** were undertaken:

On **9 March 2024**, 4<sup>th</sup> year students of the Chemical Engineering Department visited **Harinagar Sugar Mills Ltd.**, at West Champaran, Bihar under the guidance of Prof. Vitthal L. Gole and Dr. Ravi Shankar.

Another plant visit followed on **12 March 2024** to **Hindustan Urvarak and Rasayan Ltd.**, Gorakhpur, Uttar Pradesh by a group of 3<sup>rd</sup> year students of the department.

On **13 and 14 March 2024**, students visited **Avadh Sugar and Energy Ltd.** at New India Sugar Mills, Hata, Kushinagar.

A **Seminar** was held on **6 April 2024** for the 3<sup>rd</sup> year students and a **Project Poster Presentation competition** was held on **30 April 2024** for the final year students. Both the events were aimed at providing a platform for showcasing the students’ creativity.

On the same day (**30 April 2024**), the **Annual Debate Competition** was also held to cultivate critical thinking ability and communication skill among students.

## **Maulana Azad National Institute of Technology, Bhopal**

Annual Students’ Symposium, titled, **Recent Advancement of Chemical Technology and Research (REACTOR- 2024)**, was organised on **6 and 7 April 2024** in association with **Chemical Engineering Students Association (ChESA)**. REACTOR-2024 focussed the latest advancements in the field of Chemical Technology and Research. It also comprised events, such as, paper/poster presentation, open house, Quiz, ElePvate EDU, SCILAB workshop, Award presentation, etc. **Prof. Anil Verma**, IIT Delhi, delivered a Lecture,

titled, **Electric Vehicles: The role of Chemical Engineers**. Chief Guest for the event was **Mr. Praveen Saxena**, Life Fellow of IChE and one of its former office bearers. The Guest of Honour was **Prof. K.R. Ahirwal**, Dean (SW) and **Dr. Vijay Kumar Bulasara**, HoD (Chemical Engineering).

### **Pravara Rural Engineering College, Ahmednagar**

**CHEMSTORM 2K24**, a national level technical symposium was held on **18 and 19 April 2024**, organised by the Students Chapter and **Chemical Engineering Students Association**. The symposium comprised events such as, Paper Presentation, Poster Presentation and Fun Games like Treasure Hunt and Mini Militia. The topic for Paper and Poster Presentation was ‘Recent Trends in Science and Technology’.

Winners of the first, second and third prize in paper and poster presentation as well as the first and second prize winners in Fun Games received cash amount.

### **Kongu Engineering College, Perundurai**

**SYLLOGIC-2K24**, a National level **Technical Symposium**, was organized on **1 March 2024**. **Mr. Sujan Saha**, Managing Director, BASF Catalyst India Pvt, Ltd and Head of South East Asia, Chennai was the Chief Guest.

The following **Workshops** were organised in the recent period:

On **13 March 2024** on the topic of ‘**Emotional Intelligence in Adolescents**’. **Mrs. G. S. Krithik**, a psychologist from Manathin Maiyam, Erode was the chief resource person.

On **16 March 2024** on the topic of **Opportunities for Chemical Engineers in Space Industry**. **Dr. A.Suresh Kumar**, Scientist, Vikram Sarabhai Space Centre, ISRO Tiruvananthapuram was the main speaker.



The following Lecture programmes were organized:

**Ms. Mythili Thangavel**, Process Design and Technical Safety Engineer, iFLUIDS Engineering Chennai, delivered a **Lecture**, titled, **Rethink your career pathway with Higher Education Abroad** on **21 March 2024**.

**Mr. Ramesh Babu Subbraman**, Chemical Engineering Consultant, DyneCraft, California, USA delivered a **Lecture**, on **Sustainable Product Development** on **2 May 2024**.

**Rajiv Gandhi Institute of Petroleum Technology, Jais**

Under CHEMSPHERE, the following Webinars were held online:

On 21 January 2024 on the theme, **From Oil and Gas to Tech Industry, Pathway and Challenges of Different Industries'**. **Mr. Kushagra Saxena**, Senior Data Analyst C3 AI and an alumni of the college was the resource person.

On 25 February 2024 on the theme of **Blueprint for Success: Design Your Chemical Engineering Career**. **Mr Vanshaj Nehra**, DGM, Reliance Industries Ltd. was the resource person.

**Atomica**, a **Quiz Competition**, was held on **1 March 2024** in collaboration with the IChE Student Chapter of **Indian Institute of Petroleum and Energy (IPE)**. Students from different academic institutes across the country participated in the competition in which they had to answer core chemical engineering questions from Thermodynamics, Fluid Mechanics, Mass Transfer Operations, etc. The team from **IPE** own the first prize.

### Sri Sivasubramaniya Nadar College of Engineering, Chennai

**STEER 2024**, the **10<sup>th</sup> National Conference on Sustainable Trends in Energy and Environmental Resources** was organised at the Chemical Engineering Department of the college in collaboration with IChE Chennai RC on **25 and 26 March 2024**.

**Mr. S. Krishnan**, the former Director of Operations at Chennai Petroleum Corporation Limited, Chennai inaugurated STEER 2024. The event also included paper presentation, poster presentation and mock placement session.



### Vellore Institute of Technology, Vellore

A **Lecture on Industrial Process Safety** was delivered on **22 June 2024** by **Mr. P Balasubramaniam**, Retired Senior Manager, Safety Department, BHEL Tiruchirapalli, Tamil Nadu. Mr. Balasubramaniam spoke on prevention of accidents and mitigation of risks in industries that handle hazardous materials and complex processes.

### Government Engineering College, Bharuch

Students attended a **Summit**, titled, **VIBRANT GUJARAT '24** on **12 January 2024**, organized by the Government of Gujarat in collaboration with Confederation of Indian Industry (CII) and iNDEXTb. The summit focussed on the theme, **Gateway to the Future**. The meet brought together global leaders, policy makers and industry experts to discuss and explore opportunities for sustainable development.

An **Industry Visit** was undertaken to **Ganesh Khand Udyog Sahakari Mandli Ltd.** on **27 February 2024**. This organization is engaged in the manufacturing, supplying and exporting of Ethyl Alcohol, Denatured spirit, raw sugar, white crystal sugar, Bagasse, Molasses, Phosphocompost, etc.



**Extempore'24** was organized on **28 February 2024** to celebrate the **National Science Day**. The main objectives of this programme was to help the students gain confidence for expressing themselves and also to help them articulating their thoughts.



The topics for the extempore presentation included **Green Hydrogen, Zero Liquid Discharge, Advanced Farming Methods for 21<sup>st</sup> century, Education and Career opportunities in India and Abroad and Wealth from Waste.**

A social-awareness **Skit on Solid Waste Management** was presented on **5 March 2024** by the members of the Student Chapter in the annual cultural fest, **Goonj**. The students explained the **Effect of Plastic, Paper and Electronic Waste on the Environment** through skits and suggested sustainable alternatives.



**Stage of Idea** was organized on **21 March 2024** in which students made presentations through Power Point / Poster on the topic **Green Hydrogen as Fuel**. Seven teams, each comprising three students, participated in it.

As part of the technical festival, **TECHTONIC 2K24**, a **Lecture on the Role of Chemical Engineer in the Fertilizer Industry** was delivered by **Ms. Dhruvi Mehta**, a senior chemical engineer, Technical Services Department, GNFC Ltd., Bharuch on **4 April 2024**.

On the same day, **Titration Battle** was also organized. Participating students had to analyze the concentration of unknown solutions via titration process.

## **Dr. D. Y. Patil Institute of Engineering, Pimpri**

**Idea Ignition 2k224** and **Chemquik 2K24** were organised on **8 February 2024**. During the first programme, students presented papers with their original ideas. Around 42 students participated. **Chemquik 2K24** was a quiz contest, in which 54 students participated.

**Green Tech 2k24**, a poster presentation event, was organised on **9 February 2024**.





The following **Educational Visits** were undertaken:

To the **MSME Defense Expo 2024** on **26 February 2024**.

To **S-Cube Mass Transfer** on **4 March 2024**.

To **Shri Sant Tukaram Sahakari Sakhar Karkhana Ltd.** on **5 March 2024**.

To the **Laboratory of Dr. D. Y. Patil College of Pharmacy** on **7 March 2024**.



## Amrita Vishwa Vidyapeetham, Coimbatore



**Connect-Ed-Careers 2** was conducted on **24 January 2024**. **Prof. V. Shankar**, IIT Kanpur delivered a **Lecture** to students of Chemical Engineering, highlighting the applications of chemical engineering in our daily activities. He also counselled the students about research work and also the positive and negative factors of doing masters in India and abroad.



**Website** of the IChE Student Chapter was launched on **31 January 2024** by **Dr. Nikhil Kothurkar**, Chairperson of the CEMS Department to cover all of the Student Chapter events and activities undertaken.

A **Photography Competition** under the title of **Engineering Elegance: Unveiling the Beauty of Engineering Surrounding Us** was organised in which 26 students participated. Cash prize was given away to the first three winners.

The following **Webinars** were organised:

**30 May 2024**: The theme was **Emerging Contaminants: Toxicity Analysis and Remediation Using Nanostructured and Green Hybrid Materials**, which was conducted by **Dr. Nithya K.** from the Department of Chemical Engineering and Materials Science.

**6 June 2024**: The theme was **Water-Energy Nexus: Sustainable Technologies for Real-Time Sensors and Hydrogen Production**, which was conducted by **Prof. Murali Rangarajan**, Chairperson of the Centre of Excellence in Advanced Materials and Green Technologies.

**19 June 2024:** The theme was **Synergistic Integration and Emerging Trends in Multiscale Filler Reinforcement for Smart Hybrid Polymer Composites**, which was conducted by **Dr. K Jayanarayanan** and **Dr. Rasana Nanoth**, both Faculty Members of Amrita Vishwa Vidyapeetham.

**22 June 2024:** The theme was **Materials for Solid State Hydrogen Storage**. The theme was **Dr. Thirugnasambandam G.M.**, an Associate Professor and a key member of the Centre of Excellence in Advanced Materials and Green Technologies

## **Anil Neerukonda Institute of Technology & Sciences, Visakhapatnam**

**CHEMFLARE 2024**, a **Tech-fest**, was organized on **1 and 2 March 2024**. Events held under **CHEMFLARE 2024** included Resonate, Re-vibe, Reflux, Reminiscence. Activities, such as, treasure hunt, wheel reel and create a meme were conducted. Around 132 students from various institutes and colleges participated in the programme.



## **Sri Venkateswara College of Engineering, Sriperumbudur**

The following Lectures were delivered:

On **9 February 2024**, **Prof. Mahesh Ganesapillai**, School of Chemical Engineering, Vellore Institute of Technology, Vellore, spoke on the topic, **Are We Truly Transitioning from a Linear to Circular Economy, Global Perspective on MSW Management**.

On **20 February 2024**, **Mr Dhanush Kodi S.**; Engineer; Thirumalai Chemicals Limited, Ranipet spoke on the topic **Opportunities in Production/ Operations at Chemical Process Industries**.

On **29 February 2024**, **Dr. Kallarpiran A**, Proprietor and **Mrs Rajalakshmi**; Director; SEED for Safety, Chennai spoke on the topic, **Laboratory Safety Awareness** for Staff and Students.

On **24 April 2024**, **Ms. Spoorthi Sagar M**; Director, Admissions, WALK International, spoke on the topic, **Insights on Overseas Education**.

On **30 April 2024**, **Mr. Manivannan Dasarathi**, Founder & CEO, Septcon Ventures, Chennai, spoke on the topic, **Emotional Intelligence & NLP**.



A **Technical Symposium, TECHNOWAYS – PANSOPHY'24**, was conducted on **15 and 16 March 2024**, in which students from 13 engineering colleges participated.

The following **Training Programmes** were organised:

A Training Programme on **ESG – Assessor Certification**, which was sponsored by industry, was conducted in association with **Tamil Nadu Safety Professional Welfare Association** during **22 to 27 April 2024**. Around 150 participants, including, faculty members, students and industry persons, joined the programme.

One Short Term Programme on **Process Modeling, Simulation and Control**, was conducted during **23 to 29 May 2024**, which benefited the participating student and faculty members of around 15 nearby engineering colleges.

One national level conference on **Technological Innovations in Chemical Engineering towards Sustainability** was organised during **29 to 30 April 2024** to celebrate being adjudged the winner of the **Ambuja IChE – Best Student Chapter Award-2023** by the Indian Institute of Chemical Engineers, Kolkata.

## Sarvajanik College of Engineering & Technology, Surat



Plant Visit to **Shree Sayan Vibhag Sahkari** was undertaken on **22 March 2024** for the 2<sup>nd</sup> year students. The students were taken around various sections of the sugar plant and explained about various aspects of unit process, unit operation and production of Sugar.

The plant personnel showed them the crystallization and whitening processes for sugar as well as its packaging and storage in different storage domes.

## Government Engineering College, Kozhikode

A **Seminar** on the topic of **Automation in Chemical Plant** was held on **27 February 2024**. The session was handled by **Mrs. Nishida**, Regional Technical Head, IPCS Global, Kozhikode.



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<b>- Below Rs. 10 crores</b>	1,000/-	25,000/- + 4,680 GST	30,680/-
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