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INDIAN INSTITUTE OF CHEMICAL ENGINEERS

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

E-NEWSLETTER VOL. 18, ISSUE 3, 2026

President's Corner



Dear Members,

It gives me immense pleasure to communicate with the members of the Indian Institute of Chemical Engineers (IIChE) through this newsletter and share some of the significant developments and achievements of our Institute.

Remembering the Founder – Dr. H. L. Roy

As we approach the 137th birth anniversary of our revered founder, **Dr. Hira Lal Roy (2 November 1889)**, I pay my humble tributes to this visionary pioneer who laid the foundation for Chemical Engineering education and professional development in India. His foresight, dedication and commitment to the advancement of the profession culminated in the establishment of the IIChE at Jadavpur University, Kolkata, on 18 May 1947. From its humble beginning with just 30 members, IIChE has grown into a nationally recognized professional institution, bringing together academicians, researchers, practising engineers, industrial leaders and students. Dr. Roy's vision continues to inspire generations of chemical engineers. On this special occasion, let us reaffirm our commitment to his ideals and carry forward his legacy by strengthening the profession through knowledge, innovation, professional ethics and service to society.

SCHEMCON 2026 – Inspiring the Next Generation of Chemical Engineers

I am delighted to share the remarkable success of **SCHEMCON 2026, the 22nd Annual Session of the Students' Chemical Engineering Congress**, held on 11 and 12 September 2026 at the MIT Academy of Engineering, Alandi, Pune, in association with the IIChE Pune Regional Centre. Organized around the theme **'Chemical Engineering: A Pathway to Viksit Bharat'**, SCHEMCON 2026 provided an excellent national platform for students, research scholars,

SPOTLIGHT

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faculty members and industry professionals to exchange ideas, showcase innovations and explore emerging opportunities in chemical engineering. The conference witnessed an overwhelming response, with more than **450 abstracts and 700 individual registrations** from across the country. The academic programme featured over **240 oral presentations across 24 sessions and 60 poster presentations across two sessions**.

The inaugural function was graced by Padma Vibhushan **Prof. M. M. Sharma**, whose inspiring address encouraged young engineers to pursue excellence, think boldly and contribute meaningfully to nation-building. The conference also featured distinguished keynote addresses, an interactive panel discussion involving six industry leaders, industry expert sessions by Henkel Technologies and S-Cube Mass Transfer Limited, and an industry exhibition that strengthened academia–industry interaction.

The second day further enriched the participants through an Aspen HYSYS hands-on workshop, a DAAD orientation session on higher education and research opportunities in Germany, and the Industry Defined Problem Statement (IDPS) competition supported by Aspen Technology and Novorbis Itus. The M. P. Chary Award and various paper, poster and IDPS awards recognized the outstanding technical contributions of young participants. A total of 14 main prizes and 26 consolation prizes were presented, making the event a memorable celebration of young talents, innovation and academic excellence.

I sincerely congratulate the MIT Academy of Engineering, the IIChE Pune Regional Centre, the organizing committee, faculty members, student volunteers, industry partners and all participants for making SCHEMCON 2026 a grand success. My special appreciation goes to the students, whose enthusiasm and intellectual curiosity represent the future strength of our profession.

SCHEMCON must continue to serve as a powerful bridge between classroom learning, research innovation and industrial practice, while nurturing the next generation of responsible and competent chemical engineers.

Invitation to CHEMCON 2026 – Mumbai

As we celebrate the success of SCHEMCON 2026, I am equally delighted to extend a warm and cordial invitation to every member of IIChE, academicians, researchers, industry professionals, students and international delegates to participate in **CHEMCON 2026, the 79th Annual Session of the Indian Institute of Chemical Engineers**, scheduled to be held from **27–30 December 2026 in Mumbai**.

Organized by the **IIChE Mumbai Regional Centre and hosted by the Department of Chemical Engineering, Institute of Chemical Technology (ICT), Mumbai**, this flagship national convention will bring together distinguished experts, thought leaders, researchers, industrialists and young professionals from India and abroad.

The central theme of CHEMCON 2026, **'Chemical Engineering Frontiers for Viksit Bharat: Clean Energy, Green Chemicals and Circular Economy'**, is particularly relevant to the technological, environmental and economic priorities of our nation.

The technical programme will provide an excellent platform for deliberations on emerging frontiers, including:

- Advanced Reaction Engineering and Catalysis.
- Artificial Intelligence and Digital Transformation in Chemical Engineering.
- Green Engineering, Clean Energy and Sustainable Development.
- Hydrogen Technologies and Net-Zero Solutions.
- Carbon Capture, Utilization and Circular Economy.

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- Advanced Materials, Polymers and Nanotechnology.
- Novel Separation and Membrane Technologies.
- Biotechnology, Pharmaceuticals and Food Process Engineering.
- Process Systems Engineering, Automation and Industrial Safety.
- Environmental Engineering and Wastewater Management.

The convention will feature plenary lectures, invited technical talks, oral and poster presentations, panel discussions, industrial interactions and exhibitions. These activities will facilitate meaningful exchanges of knowledge and provide opportunities for new research collaborations and industry partnerships.

An important highlight of CHEMCON 2026 will be the **Dhirubhai Ambani Commemoration Day on 28 December 2026**, celebrating the extraordinary contribution of the late Shri Dhirubhai Ambani to Indian industry, entrepreneurship and national economic development.

I am confident that the academic excellence and rich industrial experience associated with ICT Mumbai, combined with the organizational strength of the Mumbai Regional Centre, will make CHEMCON 2026 an outstanding national and international event.

I earnestly invite all our members, particularly our young members and student community, to register and participate in large numbers. Let us make this convention a vibrant meeting ground for innovative ideas, technological advancement, professional networking and collaborative partnerships.

Moving Forward Together

As IIChE continues its journey of professional excellence, we must collectively focus on strengthening our Regional Centres and Student Chapters, promoting industry–academia collaboration, encouraging interdisciplinary research, nurturing entrepreneurship and attracting talented young minds to Chemical Engineering.

The profession is undergoing a profound transformation driven by artificial intelligence, digital technologies, advanced materials, biotechnology, clean energy and sustainability. We must proactively equip our members and students with the knowledge, competencies and innovative mindset required to address these emerging challenges.

I sincerely acknowledge the dedicated efforts of our National Council members, Regional Centre Chairmen and office-bearers, Student Chapter coordinators, faculty members, industry partners and volunteers. Their commitment and collective contribution are the driving forces behind the continued growth and vibrancy of our Institute.

Let us move forward with renewed enthusiasm, unity and a shared vision. Together, we can strengthen IIChE as a premier professional institution and make Chemical Engineering a powerful instrument of innovation, industrial progress and sustainable national development.

With my warm greetings and best wishes to all members, I look forward to meeting you at CHEMCON 2026 in Mumbai.

With warm regards,



Professor C. Karthikeyan
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Secretary Speak



Institutional Consolidation, Governance and Professional Advancement

IIChE continues its journey towards institutional consolidation, professional excellence and greater national relevance. The past few months have been significant in terms of organisational deliberations, policy initiatives and collective efforts towards strengthening the Institute's governance, academic engagement and professional outreach. These developments reflect the continued commitment of the National Council, Regional Centres, Student Chapters and members towards advancing the objectives of IIChE.

During the recent period, a number of initiatives have been planned concerning the Institute's future direction. One of the significant developments has been the renewal of IIChE's recognition as a Scientific and Industrial Research Organisation (SIRO) by the Department of Scientific and Industrial Research (DSIR), Government of India**,** for the period 1 April 2026 to 31 March 2029. Accordingly, a plan is afoot to establish a laboratory at the Headquarters in phases with an initial investment of Rs. 5 lakh and a provision for recurring annual upgradation.

Strengthening the Institute's publications remains another important priority. The IIChE journal *Indian Chemical Engineer* has been making a steady stride with improved Impact Factor, wider reach and greater acceptability. A fresh drive has been taken to further improve the Impact Factor and strengthen the editorial selection process. For improved financial governance and administrative transparency, a Centralised Auditing System (CAS) is being introduced, supported by virtual coordination with Regional Centres. The emphasis is on appropriate data protection, confidentiality and information-security practices in the functioning of the Institute. The ongoing drive for strengthening of the Headquarters infrastructure and the streamlining of administrative processes also remain important areas of institutional attention.

IIChE's flagship events, CHEMCON and SCHEMCON continue to provide important national platforms for knowledge dissemination, research exchange and the participation of young chemical engineers. With the changing priorities, there is a greater emphasis on student engagement, process safety-related competitions and stronger academic, industry, and professional interactions through Regional Centres and Student Chapters. The strength of IIChE lies in the collective participation of its members and the ability of its institutional network to respond to the changing needs of the profession.

Let us continue to uphold the legacy of our Founder, Dr. Hira Lal Roy, while building a professionally vibrant, financially sustainable and forward-looking institution



Professor Sunil Baran Kuila
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CEO's Desk



Strengthening IIChE through Institutional Transformation, Industry Engagement and New Opportunities

It is a privilege to serve the Indian Institute of Chemical Engineers at a time when the profession is witnessing unprecedented transformation driven by technological innovation, sustainability imperatives, energy transition and the emergence of new industrial value chains. As IIChE approaches its next phase of institutional development, our collective endeavour must be to strengthen its professional relevance, expand its engagement with industry and academia, and create greater value for its members across the country.

The focus at Headquarters has been on streamlining administrative processes, strengthening institutional coordination and identifying new avenues for professional engagement and revenue generation. These efforts are guided by the broader objective of making IIChE more responsive, accessible and financially sustainable while preserving its rich institutional heritage.

A key area of focus is the expansion of the **IIChE Training Institute (IIChE-TI)** as a platform for industry-oriented technical education, professional training and capacity building. Our engagement with industry partners, namely L&T Energy Hydrocarbon Offshore, is intended to develop specialised programmes in emerging areas such as offshore oil and gas technologies, renewable energy and in areas of ESG and sustainability, process safety, digitalisation and advanced manufacturing. The objective is to bridge the gap between academic learning and industrial requirements while creating opportunities for young chemical engineers and working professionals to enhance their technical competencies.

We are also working towards strengthening industry-institution partnerships through structured Industry Connect programmes, knowledge-sharing platforms and collaborative training initiatives. Such engagements can create a mutually beneficial ecosystem in which industries gain access to technical expertise and skilled human resources, while IIChE members and students benefit from practical exposure, industry interactions and professional development opportunities.

The renewed DSIR recognition of IIChE as a Scientific and Industrial Research Organisation (SIRO) provides an important opportunity to strengthen research and innovation activities. The proposed phased development of laboratory facilities at Headquarters, together with greater engagement with academic and industrial research organisations, can help create a foundation for collaborative research, technical consultancy and innovation-driven initiatives.

The recently renovated **Dr. H.L. Roy Auditorium at IIChE Headquarters** offers an additional institutional asset for hosting technical conferences, seminars, professional training programmes, industry interactions and academic events. We intend to leverage this facility more effectively to enhance the Institute's visibility, generate sustainable institutional opportunities and strengthen its engagement with the wider professional community.

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I also believe that our 50 Regional Centres and extensive network of over 200 Student Chapters represent one of IIChE's greatest strengths. Greater coordination with these units, increased student participation, membership outreach and more structured technical activities will be crucial in expanding the Institute's national footprint.

The road ahead calls for collective effort, institutional discipline and a renewed commitment to innovation and professional excellence. Our endeavour should be to transform IIChE from being merely a professional membership institution into a more dynamic knowledge, training, research and industry-engagement platform.

Together, let us strengthen IIChE's institutional foundations, create new opportunities for our members and contribute meaningfully to the advancement of Chemical Engineering in India.

With Kind Regards,



Debashis Ghosh
✉: ceo@iiche.org.in

IIChE CHEMCON 2026

Date: 27 - 30 December 2026

Theme: Chemical Engineering Frontiers for Viksit Bharat - Clean Energy, Green Chemicals and Circular Economy

Organised by
IIChE Mumbai Regional Centre &

Hosted By
Institute of Chemical Technology, Mumbai

Contact: Prof. Parag R. Gogate
(chair.chemcon2026@ictmumbai.edu.in)

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SNIPPET



Dr. H.L. Roy Birth Anniversary Celebration

The **137th Birth Anniversary** of **Dr. H.L. Roy** was observed with due solemnity on **2 November 2026** at the Headquarters of IIChE in Kolkata. The programme was jointly organized by the IIChE Headquarters office and the IIChE Calcutta Regional Centre (CRC).

The commemoration programme began with the guests, including **Prof. Chiranjib Bhattacharjee**, Vice Chancellor, Jadavpur University; senior and respected members of IIChE, such as, **Prof. A.K. Mitra**, and **Prof. Basudeb Barman**; **IIChE HQ officials** and **members of the CRC** and **Jadavpur Chemical Engineering Alumni Association (JCEAA)** offering floral tributes to the bust of Dr. H.L. Roy.

The programme then shifted to the auditorium where the guests and participants were welcomed by **Mr. Debashis Ghosh**, CEO, IIChE HQ office. **Prof. C. Karthikeyan**, IIChE President's message on the occasion was read out next. A short felicitation programme followed in which **Prof. A.K. Mitra**, former President of IIChE and former HoD, Department of Chemical Engineering, Jadavpur University was honoured by **Mr. Debnath Banerjee**, EC member, Calcutta RC and President, JCEAA; **Prof. Chiranjib Bhattacharjee** was honoured by **Mr. Debashis Ghosh**, and **Dr. Siddharth G. Chatterjee**, Associate Professor Emeritus in the Department of Chemical Engineering at the SUNY College of Environmental Science and Forestry, Syracuse, New York was honoured by **Dr. Avijit Ghosh**, Chairman, CRC and Director, IIChE Training Institute.

Following a brief address for the occasion by **Prof. Bhattacharjee** and **Dr Ghosh**, **Prof. Mitra**, one of the few surviving students of Dr. H.L. Roy, remembered the legendary educationist and visionary with a lucid sketch of Dr. Roy's life, his education and work and legacy along with a few interesting anecdotes. On the occasion, the trailer of a **Documentary** on Dr. H.L. Roy, '**And Miles to Go'** was screened for the audience. The full documentary is tentatively scheduled for release on **9 January 2027** at the Dr. H.L.Roy auditorium. The final event was **Dr. H.L. Roy Memorial Lecture**, presented by **Dr. Siddharth G. Chatterjee**. The title of his lecture was 'Reminiscence of a Chemical Engineer'.

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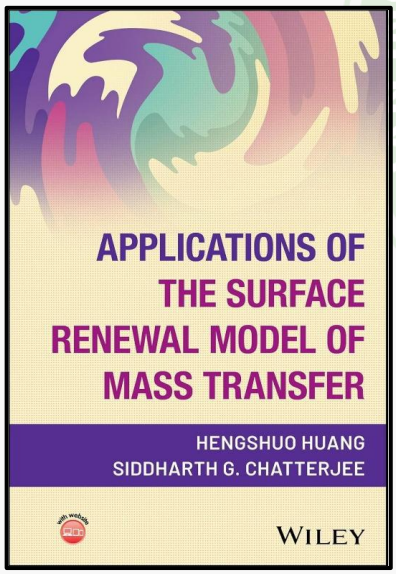
The programme came to an end with a vote of thanks by **Dr. Chandan Dutta**, Honorary Secretary, CRC. The entire event was coordinated and moderated by **Mr. Debashis Ghosh**.

SCHEMCON 2026

The **22nd Annual Session of the Students' Chemical Engineering Congress** (**SCHEMCON 2026**), was held on **11** and **12 September 2026** at the **MIT Academy of Engineering,** Alandi, Pune, in association with the IIChE **Pune Regional Centre**.

SCHEMCON 2026 was organized around the theme of '**Chemical Engineering: A Pathway to Viksit Bharat**'. The inaugural function was graced by **Padma Vibhushan Prof. M. M. Sharma**, the legendary Indian chemical engineer, academic, and former Director of the University Department of Chemical Technology, Mumbai. Prof. Sharma, in his characteristic fashion, delivered a very motivating and encouraging address, urging students and young engineers to strive for excellence and remain committed to building a self-reliant nation. Other events featuring in SCHEMCON this year included **distinguished keynote addresses**, an **interactive panel discussion involving six industry leaders, industry expert sessions by Henkel Technologies** and **S-Cube Mass Transfer Limited**, as well as an **industrial exhibition**. As many as **700 individual registrations** were made from across the country for participating in the two-day event. More than **450 abstracts** were submitted for 24 sessions, **240 oral presentations** and **60 poster presentations** were made over two sessions.

Book Publication



Dr. Siddharth G. Chatterjee, Associate Professor Emeritus in the Department of Chemical Engineering at the SUNY College of Environmental Science and Forestry, Syracuse, New York along with H. Huang has authored a book, titled, ***Applications of the Surface Renewal Model of Mass Transfer Applications of the Surface Renewal Model of Mass Transfer*** (John Wiley & Sons, Hoboken, New Jersey, USA). ISBN: 978-1-394-31282-5, December 2025.

The book offers a rigorous application of the surface renewal theory of mass transfer to describe physical and chemical gas absorption and membrane filtration. It is also an important reference for researchers and advanced students in chemical engineering, environmental engineering, bioprocess/biological engineering, paper engineering, and related programs of study.

To Purchase the book, please visit **https://www.wiley.com/en-us/shop/general-introductory-chemical-engineering/applications-of-the-surface-renewal-model-of-mass-transfer-p-9781394312825**.

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ESG & Sustainability – II

Operational Models and Economic Pathways for MSME Integration in the Circular Economy

Debashis Ghosh[1]

How Petrochemical Manufacturers Can Leverage the "Orchestrator Model" and Dual-Credit Synergies to Transform EPR Compliance into Scalable Business Value

I. Recap: Moving from Compliance-as-Cost to Compliance-as-Asset

Part I established how Extended Producer Responsibility (EPR) mandates under India's Plastic Waste Management Rules can transform from corporate balance-sheet burdens into strategic assets. By moving away from passive certificate purchases, large-scale manufacturers (LSMs) can forge collaborative partnerships with Micro, Small, and Medium Enterprises (MSMEs) engaged in waste collection and processing. Integrating these MSMEs unlocks shared commercial value, turning regulatory compliance into a proactive environmental engine. Building on this foundation, this second instalment explores the practical operational models, economic pathways, and monetization mechanisms required to operationalize this transition.

II. The Orchestrator Model: Bridging the Gap

At the heart of an effective circular value chain is the Orchestrator Model. In this framework, LSMs step beyond their traditional role as raw polymer suppliers to act as institutional and technological anchors for fragmented MSME ecosystems.

While MSMEs form the operational backbone of plastic waste recovery in India, they frequently face severe constraints regarding capital, advanced sorting technology, quality standardization, and digital traceability. By orchestrating a formalized network of MSME partners, LSMs can bridge these institutional voids through:

- Technology Transfer & Upgrading: Assisting MSMEs in adopting high-grade washing, purification, and sorting mechanisms to generate high-purity recycled resins.
- Digital Traceability & Audit Readiness: Integrating MSME collection and recycling logs into centralized monitoring systems (such as the CPCB EPR portal), ensuring complete transparency and credit integrity.
- Guaranteed Off-Take Agreements: Providing long-term commercial security to MSME recyclers, stabilizing demand, and insulating them from volatile market pricing.

Through this structured orchestration, LSMs absorb early-stage operational risks to secure reliable, certified secondary raw material streams while simultaneously elevating the operational maturity and bankability of the MSME sector.

III. Pathways to Economic Monetization

Translating compliance into a defensible business capability involves three distinct economic pathways within the petrochemical-MSME value chain:

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1. EPR Credit Arbitrage and Trading

When an LSM orchestrates an internal MSME network to process post-consumer packaging waste efficiently, it generates official plastic waste processing certificates at a cost lower than open-market purchase rates. Surplus certificates can be traded on national compliance portals to other obligated Producers, Importers, and Brand Owners (PIBOs) lacking dedicated recycling infrastructure, turning compliance overhead into an optimized operational asset.

2. Circular Premiumization (Green Branding)

Incorporating certified recycled content allows manufacturers to differentiate commodity polymer products from virgin petrochemicals. Traceable "Circular Polymers" command attractive green price premiums (estimated between 12% and 18% in domestic and export markets driven by stringent ESG disclosure standards like CSRD), enabling companies to escape commodity price wars and capture higher margins.

3. Carbon-Plastic Dual-Credit Synergies

A powerful dimension of circular integration is the decoupling of plastic waste management from greenhouse gas accounting. Every ton of post-consumer plastic successfully recycled by an MSME avoids the carbon-intensive extraction and synthesis of virgin naphtha-based polymers. By certifying these avoided emissions under established voluntary carbon standards, manufacturers can unlock a **Dual-Credit Synergy**—simultaneously satisfying statutory EPR obligations and generating tradeable carbon credits that subsidize operational decarbonisation.

IV. Strategic Roadmap for Stakeholders

Realizing the full potential of the "Compliance-as-Asset" paradigm requires coordinated action across the industrial ecosystem:

- **For Manufacturers (LSMs):** Shift commercial positioning from a mere "Commodity Seller" to an "EPR-as-a-Service Solutions Provider." Implement rigorous Monitoring, Reporting, and Verification (MRV) systems and leverage superior ESG ratings to reduce the risk-adjusted cost of capital (WACC) from institutional lenders.
- **For MSME Recyclers:** Focus on technological upgrading to meet food-grade or high-purity industrial specifications. Transition from informal operations to formalized, digitally documented enterprises to unlock institutional credit and bankability.
- **For Policymakers:** Introduce progressive regulatory incentives – such as tax offsets or credit fungibility between EPR compliance and carbon tax rebates – to reward anchor manufacturers who successfully invest in MSME capability building.

V. Conclusion

The transition toward a circular economy in India's petrochemical sector is no longer an idealistic regulatory objective; it is an emerging economic imperative. By treating EPR compliance as an asset-building mechanism rather than a sunk cost, manufacturers can secure resilient supply chains, drive high-margin product differentiation, and empower the MSME sector. Through collaborative orchestration, environmental responsibility transforms into enduring industrial competitiveness, technological innovation, and sustainable long-term growth.

[1] The author is the Chief Executive Officer, IIChE and Ph.D. Scholar (IISWBM), University of Calcutta.

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Climate Change and Sustainable Manufacturing –X

Hydrogen: A Fuel of Future for Achieving Target of Net-Zero Green House Gas Emissions

Joy M. Shah[1]

"Hydrogen flow, let the future grow. Clean and bright, hydrogen is right."

1. Introduction:

Achieving net-zero greenhouse-gas emissions requires a fundamental transformation of the global energy system. Electrification based on renewable energy is expected to play a central role, but electricity alone cannot easily address every energy and industrial application. Industries requiring high-temperature heat, chemical feed stocks, reducing agents, long-duration energy storage and high-energy-density fuels present particular challenges. Hydrogen can contribute to these applications because it can function as a fuel, chemical feedstock, energy carrier and means of storing renewable energy.

At present global hydrogen market of approximately 97 million tonnes per year and more than 95% of hydrogen currently in use is produced from coal, oil or natural gas, with associated greenhouse-gas emissions exceeding 800 million tonnes per year. Consequently, one of the most immediate opportunities for clean hydrogen is not necessarily the creation of an entirely new market but the replacement of existing fossil-based hydrogen in established industrial applications.

Hydrogen can also facilitate the integration of renewable electricity. Renewable electricity from solar, wind and other sources can be converted into hydrogen through electrolysis, stored and subsequently used in industrial processes, fuel cells, power generation or converted into other energy carriers. Hydrogen as an energy carrier capable of storing and distributing intermittent renewable electricity and highlights its potential role in energy security and grid balancing.

The importance of hydrogen is increasingly reflected in national and regional policy. India's National Green Hydrogen Mission, launched in 2023, seeks to establish a large-scale green hydrogen ecosystem and targets 5 MMTPA of green hydrogen production by 2030. The programme also envisages substantial electrolyser and renewable-energy capacity, investment, employment and emissions abatement.

The objective of this article is therefore to examine whether hydrogen can realistically become a major fuel and energy carrier for achieving net-zero emissions, while considering its production pathways, applications, economics, infrastructure, environmental implications and safety hazards.

2. Hydrogen as an Energy Carrier

Hydrogen is fundamentally different from primary energy resources such as coal, natural gas, solar radiation or wind. It is primarily an **energy carrier**, because usable hydrogen must normally be produced by supplying energy to a feedstock such as water, natural gas or biomass.

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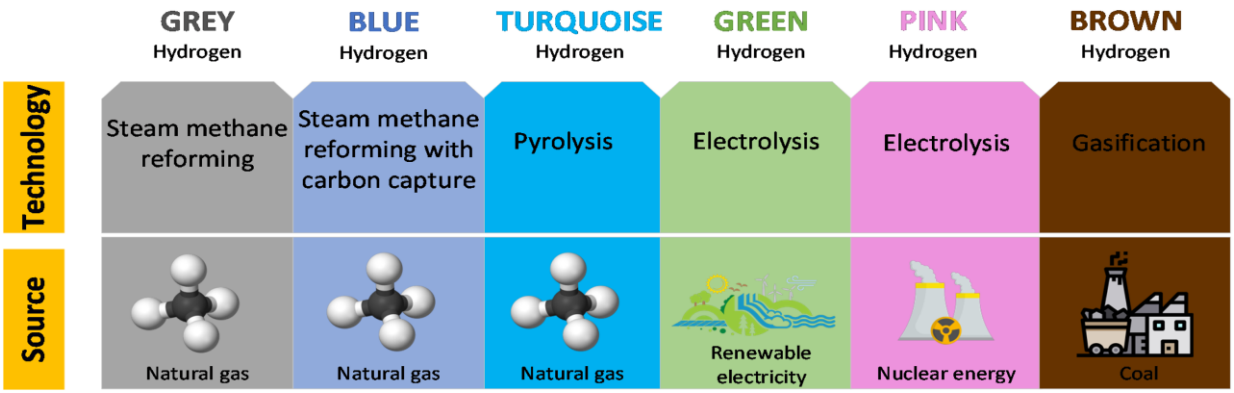
Hydrogen's principal attraction is its flexibility. It can be converted into electricity using fuel cells, burned to produce heat, used directly as a chemical reducing agent, combined with nitrogen to produce ammonia, or combined with captured carbon to produce synthetic fuels. The Hydrogen identifies applications extending from heavy transport and power generation to e-fuels and industrial processes. Hydrogen has high energy content per unit mass, but its low density means that a relatively large volume is required when it is stored as a gas. Consequently, hydrogen is commonly compressed to high pressure or converted to a liquid at cryogenic temperature.

This difference between gravimetric and volumetric energy density is important when comparing hydrogen with conventional liquid fuels. Hydrogen can be advantageous where low mass is important, but its storage and transportation systems can be substantially more demanding.

3. Carbon Emissions by Hydrogen Colour

Hydrogen is colourless and odourless gas, however the hydrogen is given colour based on source of its production as given below. Carbon emission per kg of Hydrogen depends on the process and its efficiency.



- **Grey Hydrogen:** Produced from natural gas without carbon capture; emits **9 to 14 kg** of CO_2 per kg of hydrogen.
- **Blue Hydrogen:** Produced from natural gas with carbon capture and storage (CCS); emits roughly **3.5 to 9 kg** of CO_2 per kg of hydrogen, depending on capture efficiency.
- **Turquoise Hydrogen:** Produced via methane pyrolysis (splitting gas into solid carbon and hydrogen); emits low levels or about **6 to 8 kg** of CO_2 equivalent if powered conventionally, but can be very low if run on renewables.
- **Green Hydrogen:** Produced via water electrolysis using renewable electricity; emits near-zero or **0 to 1 kg** of CO_2 per kg of hydrogen.
- **Pink Hydrogen:** Produced via water electrolysis using nuclear electricity; emits near-zero or **0 to 0.5** kg of CO_2 per kg of hydrogen.
- **Black and Brown Hydrogen:** Produced using black or brown coal; emits the highest amount, often exceeding **14 to 20 kg** of CO_2 per kg of hydrogen.

As per National Green Hydrogen Mission policy, CO2 emission below **2 kg/ kg** of Hydrogen comes under definition of clean or green Hydrogen.

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4. Hazards and Safety of Gaseous and Liquid Hydrogen

Hydrogen is an important low-carbon energy carrier, but its physical properties create distinctive safety challenges. Safety must therefore be incorporated into the design of hydrogen production plants, storage facilities, pipelines, refuelling stations, transportation systems and end-use equipment.

4.1 Hazards of Compressed Gaseous Hydrogen

4.1.1 Fire and Explosion Hazard

Hydrogen is highly combustible. Its flammability limit in air is 4%M to 75%M where as in Oxygen is 4%M to 95%M. Accidental release from a pressurized system can create a flammable hydrogen-air mixture if sufficient ventilation is not available. Consequently, leaks must be rapidly detected and dispersed, and ignition sources must be controlled.

Hydrogen's low molecular weight allows it to move rapidly through small openings and to rise when released into an open atmosphere. In enclosed or poorly ventilated spaces, however, accumulation can create a serious fire or explosion hazard.

4.1.2 High-Pressure Hazard

Compressed hydrogen is commonly stored at pressures of 350 to 700 bar as the high-pressure storage range.

Failure of a high-pressure vessel, valve, fitting or pipeline can result in rapid release of stored energy. Therefore, pressure-rated materials, appropriate pressure-relief devices, inspection procedures and protection against mechanical damage are essential.

4.1.3 Leakage

Hydrogen molecules are very small and can leak through seals, joints, valves and other components if systems are not appropriately designed. Leak detection is therefore a critical part of hydrogen installations.

Hydrogen should not be managed using assumptions developed exclusively for conventional liquid fuels. Detection systems, ventilation, equipment selection and emergency procedures must reflect the particular physical properties of hydrogen.

4.1.4 Ignition Sources

Hydrogen can be ignited by relatively small ignition sources. Minimum ignition energy required for fire is 0.017 MJ, 17 times lower than Natural gas. Electrical equipment in hydrogen-handling areas therefore needs to be appropriately selected and protected. Static electricity, electrical sparks, hot surfaces and other potential ignition sources should be controlled.

4.1.5 Materials and Hydrogen Embrittlement

Hydrogen can interact with certain metallic materials and contribute to degradation or embrittlement under appropriate conditions. Material compatibility is therefore important in pipelines, pressure vessels, valves and other components.

As hydrogen infrastructure expands, materials selection and integrity management will become increasingly important, particularly for high-pressure systems and the conversion of existing gas infrastructure.

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4.1.6 Invisible or Difficult-to-See Flames

Hydrogen fires can be difficult to recognize visually because the flame may have low visibility under some conditions. This makes specialized detection and emergency-response systems important.

4.1.7 Ventilation and Dispersion

Because hydrogen is very light, released hydrogen tends to rise. This can be advantageous outdoors but can create accumulation risks below roofs, ceilings or other confined spaces. Hydrogen facilities therefore require appropriate ventilation and safe vent locations.

4.2 Hazards of Liquid Hydrogen

Liquid hydrogen presents all of the fundamental combustion hazards of hydrogen gas while adding severe cryogenic hazards.

4.2.1 Extreme Cryogenic Temperature

Liquid hydrogen is maintained at approximately **−253°C**. Contact with liquid hydrogen or sufficiently cold surfaces can cause severe cold injury and cryogenic burns. Personnel therefore require appropriate protection and operating procedures.

4.2.2 Boil-Off

Liquid hydrogen continuously receives heat from its surroundings. This causes some of the liquid to vaporize, producing boil-off gas. The high rate of boil-off and potential product loss as important challenges associated with liquid-hydrogen storage.

Boil-off can also increase pressure within a storage vessel if the generated gas cannot be safely managed.

4.2.3 Pressure Build-Up

Cryogenic storage vessels must be designed to control pressure generated by heat ingress and vaporization. Pressure relief systems are therefore fundamental safety components.

4.2.4 Rapid Vaporization

When liquid hydrogen is released, it rapidly absorbs heat from the surroundings and changes into gas. The resulting gas cloud may subsequently mix with air and create a flammable mixture.

4.2.5 Oxygen Condensation

Extremely cold surfaces can cause oxygen from the surrounding atmosphere to condense. This can create additional fire risks because oxygen-enriched environments can greatly increase combustion intensity. Proper insulation, equipment design and control of air ingress are therefore important.

4.2.6 Material and Thermal-Stress Problems

Cryogenic temperatures can alter the mechanical properties of materials. Tanks, valves, pipelines, seals and instrumentation must therefore be specifically selected and qualified for liquid-hydrogen service.

4.2.7 Energy Requirement for Liquefaction

Liquid hydrogen has a high volumetric density, but its production requires significant additional energy. The supplied material estimates approximately 10–13 kWh/kg for liquefaction.

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Thus, liquid hydrogen has an inherent energy penalty compared with compressed gaseous storage and must be used where its high volumetric density provides sufficient system-level benefits.

4.3 Safety Management across the Hydrogen Value Chain

Hydrogen safety should be addressed through a **whole-life-cycle approach**, covering:

1. Production;
2. Purification;
3. Compression;
4. Liquefaction;
5. Storage;
6. Transportation;
7. Refuelling;
8. Industrial use;
9. Fuel-cell systems;
10. Emergency response and maintenance.

Important engineering measures include hydrogen leak detection, ventilation, pressure-relief systems, appropriate material selection, electrical-area classification, fire detection and suppression strategies, controlled venting, equipment isolation and worker training.

At present there is no uniform standards across the globe. The expansion of hydrogen infrastructure should therefore proceed simultaneously with development of standards, codes, regulations, inspection procedures and specialized emergency-response capabilities.

5. Clean Hydrogen Production Pathways

Hydrogen can be produced through several technological pathways. The environmental significance of hydrogen therefore depends on **how it is produced**, rather than on hydrogen itself.

5.1 Green Hydrogen through Water Electrolysis

Water electrolysis is one of the principal pathways for green hydrogen production. In the process, electricity is used to split water into hydrogen and oxygen:

$$2H_2O \rightarrow 2H_2 + O_2$$

When the electricity originates from renewable sources such as solar or wind, or the nuclear source, the resulting hydrogen can have very low greenhouse-gas emissions associated with its production.

Water electrolysis is a process in which water is dissociated into hydrogen and oxygen using electricity. It identifies alkaline, solid oxide, microbial and proton-exchange membrane (PEM) electrolysis technologies.

The economic competitiveness of water electrolysis remains an important challenge because of its relatively high energy requirement and capital cost.

New technology is being evolved to reduce capital and operating cost by reducing use of critical material as well as increasing efficiency. After electrolysis, hydrogen generally requires drying, purification, cooling and potentially compression to make it usable

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5.1.1 Alkaline Electrolysis

Alkaline water electrolysis is a mature technology that uses an alkaline electrolyte. It has been commercially deployed at significant scale and remains an important option for large hydrogen-production plants.

5.1.2 PEM Electrolysis

PEM electrolysis uses a proton-conducting membrane and offers several attractive characteristics, including compact design, high current density, rapid response and high-purity hydrogen. It can be particularly suitable for integration with variable renewable electricity. However, the use of critical -metal catalysts contributes to its cost.

5.1.3 Solid Oxide Electrolysis

Solid Oxide electrolysis is very promising technology for improving efficiency and reduce operating cost. However, it is still used on pilot scale and not matured enough to produce large scale Hydrogen.

5.2 Hydrogen from Natural Gas with Carbon Capture

Hydrogen can also be produced from natural gas through reforming while capturing a portion of the resulting carbon dioxide. This is commonly referred to as blue hydrogen.

Its advantage is the maturity and scalability of natural-gas reforming. However, its overall climate performance depends on the efficiency of carbon capture, upstream methane emissions, energy requirements and the transport and storage of carbon dioxide. Different clean-hydrogen pathways have different greenhouse-gas intensities and infrastructure requirements.

5.3 Methane Splitting

Methane splitting, or methane pyrolysis, thermally decomposes methane into hydrogen and solid carbon rather than producing carbon dioxide as the principal carbon-containing product. The process is endothermic, and its climate performance depends on the origin of the natural gas and the electricity or heat used. The solid-carbon management and valorisation can be important to the economics of the process.

5.4 Bio-waste and Other Waste-to-Hydrogen Pathways

Hydrogen can also be produced from bio-waste through gasification and/or pyrolysis. Such pathways can potentially utilize waste resources while contributing to waste management. However, their emissions and scalability depend strongly on the feedstock, process configuration, transportation requirements and management of by-products.

Thus, the future hydrogen economy is likely to contain several production pathways rather than a single universal technology. It can be concluded that multiple clean-hydrogen technologies will be required to provide sufficient volumes for net-zero objectives.

6. Use of Hydrogen and the Net-Zero Transition

The greatest contribution of hydrogen to net-zero emissions may arise in applications where direct electrification is difficult.

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6.1 Industrial Applications

Hydrogen is already an important industrial feedstock. Existing demand is concentrated particularly in ammonia production and petroleum refining. Replacing fossil-based hydrogen with green hydrogen can therefore provide emissions reductions without requiring a completely new end-use technology.

Replacement of existing grey hydrogen as a major source of clean-hydrogen demand.

Hydrogen can also play an important role in low-carbon steelmaking, where it can act as a reducing agent instead of carbon-based reducing materials. This could substantially alter the emissions profile of primary steel production.

6.2 Fertilizer and Ammonia

Ammonia production is one of the most established hydrogen-consuming industries. Green hydrogen can be combined with nitrogen to produce green ammonia, potentially reducing the carbon intensity of fertilizer production.

Ammonia is also being considered as a hydrogen carrier because it can be liquefied at substantially less severe conditions than hydrogen. Ammonia requires cooling to approximately −33°C, whereas hydrogen requires temperatures near −253°C.

6.3 Heavy Transport

Hydrogen fuel cells may have advantages in selected heavy-transport applications where long range, high payload requirements and rapid refuelling are important. The buses, trucks and trains among potential applications, while recognizing that battery-electric technologies will remain strong competitors, particularly in lighter vehicles.

6.4 Shipping and Aviation

Hydrogen can contribute to transport decarbonization either directly or indirectly. Direct hydrogen use may be difficult in long-distance aviation because of the volume and mass of cryogenic storage systems. Hydrogen can instead be combined with captured carbon to produce synthetic aviation fuels.

For shipping, hydrogen may also be converted into ammonia or other hydrogen carriers, potentially allowing easier storage and transportation.

6.5 Energy Storage and Power Generation

Hydrogen provides a pathway for storing renewable electricity over periods when direct battery storage may not be optimal. Hydrogen can be stored in tanks or geological formations and subsequently converted into electricity.

Salt caverns as an emerging large-scale storage option for hydrogen and grid balancing.

7. Hydrogen Storage and Transportation

Hydrogen storage is one of the most important technical components of the hydrogen economy.

7.1 Compressed Gaseous Hydrogen

Compressed gaseous hydrogen is currently the most mature storage approach. Typical storage pressures of approximately **350–700 bar** and the compression to 700 bar requires approximately **6 kWh/kg** of hydrogen. At 700 bar, the reported volumetric density is approximately 42 kg/m³.

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This approach is particularly relevant for hydrogen refuelling stations and vehicle storage.

7.2 Liquid Hydrogen

Liquefaction significantly increases volumetric density. Liquid-hydrogen density is approximately **70.8 kg/m³**. However, liquefaction requires substantial energy—reported as approximately **10–13 kWh/kg of liquid hydrogen**—and boil-off can cause product losses during storage.

Liquid hydrogen therefore offers a high-density storage option but introduces additional energy and safety requirements.

7.3 Hydrogen Carriers

Hydrogen may also be transported in chemically bound forms. Ammonia, methanol and liquid organic hydrogen carriers are among the possible approaches.

The supplied material identifies ammonia as particularly attractive because of its relatively high hydrogen content and less demanding liquefaction conditions compared with hydrogen.

8. Hydrogen Economics and Technological Challenges

The economic competitiveness of hydrogen remains a major barrier to large-scale deployment.

Clean-hydrogen production costs in a broad range of approximately **US$ 2 - 12/ kg**, depending on technology and assumptions. Renewable electricity and capital expenditure as major cost drivers for electrolysis.

For green hydrogen, electricity is particularly important because electrolysis requires substantial electrical input. Consequently, regions with abundant and inexpensive renewable electricity have a major potential advantage.

Substantial capital investment is in Electrolyser and future capital cost-reduction potential is by manufacturing scales up and replacement of critical material by conventional materials. Substantial operating cost can be reduced by improving efficiency of electrolysers and decline in renewable electricity costs.

Other challenges include:

- High initial capital expenditure;
- Renewable-electricity availability;
- Electrolyser durability;
- Availability and cost of critical materials;
- Hydrogen storage;
- Pipeline and transportation infrastructure;
- Uncertain long-term offtake;
- Need for standards and certification;
- Water availability in some regions;
- Safety and public acceptance.

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Today it is "chicken-and-egg" problem in which potential hydrogen customers may hesitate to sign long-term offtake agreements until regulations and greenhouse-gas incentives are established, while investors require firm demand to finance projects.

9. Environmental Considerations

Green hydrogen has the potential to make an important contribution to decarbonization, but it should not automatically be considered zero-impact.

9.1 Renewable Electricity Requirement

The climate benefit of electrolytic hydrogen depends heavily on the carbon intensity of the electricity used. The greenhouse-gas intensity of electrolytic hydrogen depends on the emissions intensity of the supplied electricity. Renewable electricity can produce very low emissions, whereas carbon-intensive electricity can result in substantially higher Greenhouse gas emissions.

Therefore, the expansion of green hydrogen must occur alongside substantial renewable-energy deployment.

9.2 Water Requirement

Water is a fundamental feedstock for electrolysis. Approximately 9–10 kg of water is required per kilogram of hydrogen in an electrolyser system, depending on the system boundary and operating conditions. It also emphasizes the importance of considering local water availability when selecting project locations.

Consequently, water availability should be evaluated at the project level, particularly in water-stressed regions. Desalination may provide an alternative for coastal hydrogen projects, although it introduces additional energy and infrastructure requirements.

10. India's National Green Hydrogen Mission

India has placed green hydrogen at the centre of its emerging clean-energy strategy.

The National Green Hydrogen Mission was launched in 2023 with the objective of developing a robust green hydrogen ecosystem. Its principal target is approximately **5 MMTPA of green hydrogen production by 2030**. The supplied mission report also identifies approximately **60–100 GW of electrolyser installation**, **125 GW of renewable energy**, approximately **600,000 jobs**, investment of around **INR 8 lakh crore**, and potential emissions abatement of approximately **50 million tonnes**.

The Mission has two major components: electrolyser manufacturing and green hydrogen production. The production component includes auction-based mechanisms and industry-specific applications, particularly refineries and fertilizer industries.

It was estimated that hydrogen consumption in India could reach approximately **10–14 MMTPA by 2030**, with ammonia and refineries accounting for a substantial share.

These existing industrial demands provide an important foundation for the development of India's green hydrogen economy.

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11. Gujarat Green Hydrogen Opportunity

Gujarat is particularly well positioned to participate in India's hydrogen transition because of its industrial base, renewable-energy potential, ports, existing hydrogen-consuming industries and chemical and petrochemical infrastructure.

The **Gujarat Green Hydrogen Policy–2025** states a state-level mission of achieving approximately **3 MMTPA of green hydrogen production capacity by 2035**. It identifies approximately **30 GW of electrolyser capacity** and **75 GW of renewable-energy capacity**, together with an investment objective of approximately INR 5 lakh crore and creation of around 600,000 direct and indirect jobs.

The policy adopts a value-chain approach encompassing upstream, midstream and downstream capabilities, infrastructure, export of hydrogen and derivatives, research and development, and skill development.

The policy also recognizes green-hydrogen projects involving production, derivatives, storage and transportation.

Gujarat therefore has the potential to become an important integrated hydrogen hub in India, particularly by connecting renewable-energy generation with hydrogen production, industrial consumption, derivatives such as ammonia and methanol, port infrastructure and export markets.

12. Research and Development Priorities

For hydrogen to become a cost-effective component of a net-zero energy system, technological development must continue across the complete value chain.

Major priorities include:

12.1 Electrolyser Development

Research is required to improve efficiency, durability, current density and manufacturability while reducing dependence on expensive critical materials.

12.2 Renewable-Hydrogen Integration

Electrolysers must increasingly operate in combination with variable renewable electricity. Improved control systems, energy management and hybrid renewable configurations will be important.

12.3 Hydrogen Storage

Research is required into high-pressure vessels, cryogenic systems, geological storage, metal hydrides and chemical carriers.

12.4 Hydrogen Transportation

Pipelines, compressed hydrogen transport, liquid hydrogen shipping and hydrogen derivatives such as ammonia require further infrastructure development.

12.5 Safety

Safety research should cover leakage, ignition, material compatibility, hydrogen embrittlement, cryogenic systems, emergency response, sensors and risk assessment.

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12.6 Hydrogen Derivatives

Green ammonia, methanol and synthetic fuels may provide important pathways for transporting and utilizing renewable hydrogen where direct hydrogen use is difficult.

13. Future Prospects

The future hydrogen economy is likely to be characterized by technological diversity rather than a single dominant production and storage technology.

There are several clean-hydrogen production pathways may be required to provide the volumes necessary for net-zero objectives.

At the same time, green hydrogen is likely to remain strategically important because it can directly connect renewable electricity with industrial and transport applications.

However, hydrogen should not be viewed as a universal replacement for batteries or direct electrification. Where electricity can be used directly with high efficiency, direct electrification will often be preferable. Hydrogen becomes especially valuable where energy must be stored chemically, transported over long distances, used as a feedstock or supplied to processes that are difficult to electrify.

14. Conclusions

Hydrogen has significant potential to become an important component of the transition towards net-zero emissions. Its principal strength is its versatility: it can function as an industrial feedstock, chemical reducing agent, fuel, energy-storage medium and precursor for synthetic fuels and ammonia.

Green hydrogen produced by water electrolysis using renewable electricity is particularly attractive because it can provide a route to substantially lower-carbon hydrogen production. Nevertheless, large-scale deployment faces challenges associated with renewable-electricity availability, electrolyser cost, efficiency, water resources, storage, transportation, infrastructure, and market development.

The replacement of existing grey hydrogen should represent one of the earliest and most compelling applications because the hydrogen is already required by established industrial processes. Additional opportunities exist in green steel, fertilizer production, heavy transport, shipping, long-duration energy storage and selected power-generation applications.

India has recognized these opportunities through the National Green Hydrogen Mission. Safety must be treated as a fundamental requirement rather than an afterthought. Compressed gaseous hydrogen involves high-pressure and flammability hazards, while liquid hydrogen adds severe cryogenic-temperature, boil-off and pressure-management hazards. Appropriate engineering design, monitoring, standards, training and emergency-response systems are therefore essential.

The most realistic vision is not a future in which hydrogen replaces all other fuels, but a **diversified net-zero energy system in which renewable electricity and hydrogen complement each other**. Direct electrification should be preferred wherever practical, while hydrogen should be strategically deployed in applications where its chemical and energy-storage characteristics provide advantages. Under these conditions, hydrogen can become an important enabling technology for industrial decarbonization, energy security and the achievement of long-term net-zero objectives.

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I am sure this article will inspire chemical engineers to pursue carrier with Hydrogen Infrastructures and make it techno-economically feasible.

"No smoke, no fear, hydrogen is here. Stay green, stay clean, hydrogen scene"

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Regional Centre Activities

Bangalore Regional Centre





The Second **International Conference** on '**Emerging Trends in Catalysis Sustainable Chemical Processes' (ETCSCP–2026**) was organised on **13** and **14 May 2026** by the Department of Chemical Engineering, M. S. Ramaiah Institute of Technology (MSRIT) in association with the IIChE Bangalore Regional Centre (BRC) and Catalysis Society of India (CSI). The conference was conducted in hybrid mode under the guidance of **Dr. G. M. Madhu**, Head, Department of Chemical Engineering MSRIT, and **Dr. Anand B. Halgeri**, Former Director, Poornaprajna Institute of Scientific Research (PPISR), and Former Vice President & Head of R&D, Indian Petrochemicals Corporation Limited (IPCL).

The conference was inaugurated on **13 May 2026** in presence of **Dr. Virendra K. Gupta**, R&D Head – Polymer & Senior Vice President, Reliance Industries Limited, Navi Mumbai as the Chief Guest. He delivered a lecture on '**Sustainability in Polyolefin Process through Precision Catalysis and Circular Solutions**.' During the inaugural function, **Dr. Anand Halageri** (Former Director, Poornaprajna Institute of Scientific Research, and Former Vice President & Head of R&D, IPCL**), Dr. K. S. Rajanandam** (Former Principal, MSRIT and Former Vice President, IIChE), **Prof. Y. J. Rao** (Former Head of Chemical Engineering, RVCE and SIT Tumakuru), and **Prof. G. A. Sharieff** (Former Head, Department of Chemical Engineering, MSRIT) were felicitated for their contribution to IIChE and the Catalysis Society of India (BRC).
Dr. Amol A. Kulkarni, Chief Scientist and Head, Chemical Engineering & Process Development Division, CSIR–National Chemical Laboratory (NCL), Pune, delivered a lecture on '**Sustainability in Chemical Manufacturing: Problems and the Solutions**.' **Dr. Shiju N. Raveendran**, Associate Professor, Van 't Hoff Institute for Molecular Sciences, University of Amsterdam, Netherlands,

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delivered an online lecture on '**Sustainable Technologies in Development: The Case of Circular Plastics and Beyond**.'

On **14 May 2026**, **Dr. Ajay K. Dalai**, Professor and former Canada Research Chair (2001 –2024) in Bioenergy and Environmentally Friendly Chemical Processing, University of Saskatchewan, Canada, delivered a lecture on '**Biocrude Production from Co-hydrothermal Liquefaction of Microalgae and Spent Coffee Grounds**'. **Dr. K. Seshan**, Professor Emeritus, University of Twente, Netherlands, delivered a lecture on '**Refinery of the Future**,' and **Dr. R. Ravishankar**, General Manager – Corporate R&D, HPCL Green R&D Centre, Bengaluru, spoke on the '**Introduction to Nanotechnology and Application of Nanomaterials**.'



In addition to the plenary and invited talks, **technical presentations** were held across eight sessions on both days with every session judged by two session chairs. Over two days, the conference featured **keynote lectures, invited talks** and **technical presentations** by eminent speakers from leading academic institutions, research organisations and industries in India and abroad. **Eight technical sessions** covered emerging areas in **catalysis, including Energy & Environment, Catalysts for Future Technologies, Process Intensification, Green Synthesis and Catalysis / Photochemistry and Photocatalysis**. A total of **107** research papers were received, of which **88** were accepted for presentation and publication in the conference proceedings. The conference recorded **160** participants, both online and offline.

Bhubaneswar Regional Centre

The **Er. D. P. Misra Distinguished Oration - 2026**, jointly organised by the Bhubaneswar RC and CSIR–Institute of Minerals & Materials Technology (IMMT), Bhubaneswar, was delivered on **12 October 2026** by **Padma Bhushan Prof. Jyeshtharaj B. Joshi**, Chancellor and Emeritus Professor of Eminence, Institute of Chemical Technology, Mumbai on hybrid mode. An **eminent chemical engineer, academic and technology leader** whose pioneering contributions have significantly shaped chemical engineering education, research and technological advancement in India, Prof. Joshi delivered the lecture under the title, '**Prosperity through Science and Technology**'.

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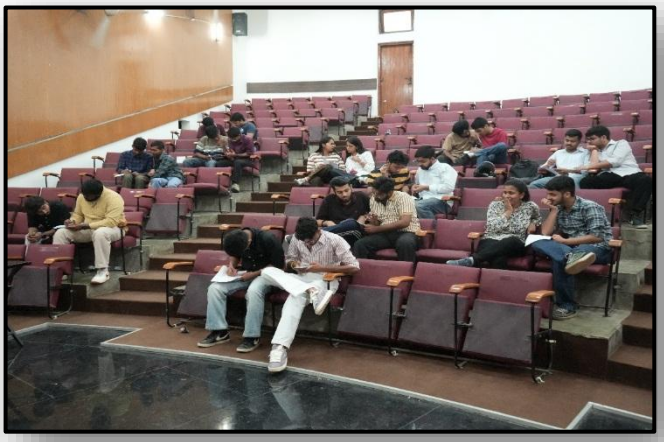
Chandigarh Regional Centre



Chem-E-Search, a **technical crossword competition** on chemical engineering concepts, was successfully organized on **10 March 2026** during the annual techno-cultural fest ***Cyanide*** at Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology Panjab University, Chandigarh. The event was conducted under the sponsorship of the Indian Institute of Chemical Engineers (IIChE), Chandigarh Regional Chapter with the objective of fostering analytical thinking, conceptual clarity, and teamwork among participants. Around **12** teams, each comprising two members, participated in the competition.

The teams were required to solve crossword grids containing technical clues within a limited timeframe. The evaluation criteria were based on the correctness of responses as well as the time taken to complete the puzzles. This competitive format ensured a dynamic and intellectually stimulating environment throughout the event. At the end, **awards** (**first, second and third prizes**) were given away to the winner teams.

Chennai Regional Centre

The IIChE Chennai RC conducted an online **Certificate Course on "Process Safety and Risk Analysis** from **17 – 29 August 2026**, the objective of which was to enhance the participants' knowledge and competence in **process safety, hazard identification, risk assessment**, and **functional safety**, with particular emphasis on the **chemical and process industries**.

The inaugural ceremony commenced on **17 August 2026** with a welcome address by **Prof. N. Balasubramanian**, Training Coordinator, followed by special addresses by senior office bearers of IIChE, including **Prof. Sunil Baran Kuila**, **Mr. Praveen Saxena**, **Prof. M. Venkateswara Rao** and **Dr. Avijit Ghosh**. **Prof. C. Karthikeyan**, President, IIChE delivered the Presidential Address. **Mr. Dinesh Butala**, former President of IIChE, delivered the inaugural address. The ceremony concluded with a vote of thanks by **Mr. Vijay Samuel**, Joint Secretary, Chennai RC.

The areas, highlighted in the course, included **Process Hazard Analysis (PHA), Hazard and Operability (HAZOP) Studies, Design and Operating Limits, Layer of Protection Analysis (LOPA), Safety Integrity Level (SIL) Assessment,** and **Process Safety Management and Risk Reduction Strategies**. The training sessions were conducted by experienced professionals and subject experts from industry and academia, including representatives and former senior executives associated with IIChE, Reliance Industries Limited, Saudi Aramco, GVS Cibatech Pvt. Ltd., Zuriel Consulting Engineers, FIDES Global Pte Ltd., and Chemsys Innovative Solutions Ltd.

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The programme concluded on **29 August 2026** with participants sharing feedback, followed by a valedictory session. On the whole, the virtual training programme provided a structured platform for knowledge sharing and professional development in process safety and risk analysis. It emphasized the importance of **proactive risk management, effective safety systems, and the application of established hazard analysis techniques to prevent industrial accidents, protect personnel and equipment**, and **promote safer and more sustainable chemical process operations**.

Erode Regional Centre

On **17 July 2026**, the **IIChE Kongu Engineering College Student Chapter** was inaugurated at the Dept. of Chemical Engineering, Kongu Engineering College, Perundurai, which will operate under the aegis of the Erode RC. The programme was inaugurated by **Mr. Jeyamuruga Prakash Manoharan**, Managing Director & CEO, Fleming Laboratories Limited, Hyderabad.



Dr. R. Parameshwaran, Principal, and **Dr.V.Sangeetha**, Head, Department of Chemical Engineering were present at the event. The Chief Guest delivered an inaugural lecture on the theme '**Blueprints to Billionaire Dollar Ideas: From Chemical Engineering to Enterprise Excellence,**' highlighting material safety, industrial innovation, and entrepreneurial opportunities for chemical engineers. The lecture was followed by an interactive session with the students.

A one-day **Workshop**, titled, '**Aspen HYSYS: Process Simulation and Industrial Applications**', was conducted by **Dr. A.S. Periasamy Manikandan**, Associate Professor, and **Mr. S. Yuvaraj**, Assistant Professor, Department of Chemical Engineering, Kongu Engineering College. The workshop provided participants from various institutes with practical insights into **process simulation using Aspen HYSYS and its industrial applications** in chemical process design and optimization.



A **Lecture**, titled, '**Industry 5.0: Bridging the Gap between Academic Learning and Industrial Practice**' was delivered by **Mr. P. R. Prajwal Gowda**, Executive at Yokogawa India Limited, Bangalore on **28 September, 2026**. The programme was held in active collaboration with Kongu Engineering College.

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Hyderabad Regional Centre



The **19th M. P. Chary Memorial Lecture** was organised by Hyderabad RC in association with CSIR–Indian Institute of Chemical Technology (CSIR-IICT) on **30 May 2026**. **Padma Vibhushan Prof. M. M. Sharma** delivered the memorial lecture on '**Innovations in Chemical Industries**'. The Chief Guest for the event was **Dr. Komal Kapoor**, Chairman & Chief Executive, Nuclear Fuel Complex and the Guest of Honour was **Dr. D Srivivas Reddy**, Director CSIR-IICT.

The programme also provided a **platform for interaction on contemporary developments in chemical engineering and industrial innovation**. An industry interaction session associated with the programme covered areas such as **effluent treatment, disposal, process sustainability and industry–academia collaboration**. More than **210** participants, including **industrial professionals, scientists and colleagues from NFC and CSIR-IICT, faculty members, student chapter coordinators and students** from reputed engineering and science colleges across Telangana, attended the programme.



The Hyderabad RC hosted the **4th Council Meeting** (2026) of IIChE on **18 July 2026** which was followed by a **Technical Lecture** on '**Process Safety and HAZOP**'. The programme brought together members of the IIChE Council, senior professionals, officers from Nuclear Fuel Complex,

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academicians, IIChE members and students. **Prof. N Balasubramanian**, Hony. Treasurer, IIChE and Prof. & Director, Centre for Energy Storage Technology (CEST), Anna University delivered the lecture, focusing on **process safety and the systematic application of HAZOP for identification and mitigation of process hazards**. **Prof. C. Karthikeyan**, President of IIChE, addressed the gathering and highlighted the various activities of IIChE and its significant contributions to the chemical engineering fraternity. The programme concluded with the felicitation of the invited speaker and formal closing remarks. A total of **75** esteemed members, NFC officers and students attended the lecture.

The event also provided an opportunity for **interaction between the Council members of IIChE and the members of Hyderabad Regional Centre**. **Prof. Basav Rao**, Past President, IIChE & **Mr. G V Sethuraman**, Past President, IIChE also participated in the interaction. Several questions of HRC members were gracefully clarified by the Council Members. At the end all, the Council Members were facilitated by chairman and the EC members of Hyderabad RC.



The Council Members also had an opportunity to visit the campus of the prestigious **Nuclear Fuel Complex** (NFC), under the Department of Atomic Energy, where they witnessed the state-of-the-art technology and processes involved in the manufacturing of nuclear fuel for PHWR reactors.

On **2 September 2026**, an **Industry Visit** to **Nuclear Fuel Complex (NFC), Hyderabad**, was organised for the second and third-year Chemical Engineering students of the **BVRIT** IIChE Student Chapter. The students observed an operating industrial environment and connected academic concepts to practical engineering applications. Such exposure enables students to appreciate the application of chemical engineering principles in large-scale process operations, equipment, safety practices, quality requirements and industrial work culture.

Lote Parshuram Regional Centre

The IIChE Lote Parshuram RC organised a **Webinar** on **28 August 2026**, the theme of which was '**Process Safety in Batch Reaction'**. It was organized to create awareness and enhance understanding regarding the importance of process safety in batch chemical operations. The chief speaker was an **industry professional,** having extensive experience in the chemical manufacturing sector, particularly in chemical process development, scale-up, commissioning, commercial manufacturing, process design, plant debottlenecking and technical troubleshooting.

Some of the important aspects covered in the webinar included **Batch Reaction Hazards, the Importance of Identifying Potential Deviations from Normal Operating Conditions, Exothermic Reactions and Thermal Runaway, Reaction Kinetics and Heat Generation, Process Hazard Identification and Risk Assessment, Systematic Hazard Identification and Assessment Techniques for Identifying Potential Failure Scenarios, Temperature and Pressure Control, Safe**

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Operating Procedures, and **Lessons from Industrial Experience**. The webinar received a positive response from participants. The interactive nature of the webinar enabled participants to understand the practical challenges associated with batch reaction safety. Participants also had the opportunity to raise questions and discuss process safety-related issues with the speaker.

Northern Regional Centre



On the occasion of the Annual General Meeting of the Northern RC on **11 July 2026**, **Prof. Anil K. Saroha**, Department of Chemical Engineering, IIT Delhi and Chairman, Northern RC delivered a **Lecture,** titled, '**Application of Safety Aspects in Various Stages of Project Implementation**'. The programme was attended by over **52** participants, including Northern RC Members, Invitees and students from Indian Institute of Technology Delhi and University School of Chemical Technology-Guru Gobind Singh Indraprastha University-Delhi.

Under its **'Learning with the Leaders' Lecture Series,** three lectures were delivered on **22 August, 2026**.

i. **Mr. Sameer Vashisht,** Group Manager, Tech Proposal Leads and Specialists;
ii. M**r. Nitin Sharma,** Proposal Specialist - Decarbonization, Blue hydrogen, Steam-methane reforming, Ammonia, Topsoe India Private Ltd. **Title of the Lecture**: '**Production of Renewable Fuels from Renewable Feedstock Using Topsoe Hydroflex Technology Integrated with H2bridge Technology**'.
iii. **Mr. P. P. Srivastava,** Director (Admn.), IIChE-NRC; Former Joint Industrial Adviser, Government of India, Ministry of Chemicals and Fertilizers, Department of Chemicals & Petrochemicals, New Delhi and Former Inspector (CPT), Organisation for the Prohibition of Chemical Weapons (OPCW), The Hague, Netherlands. **Title of the Lecture**: '**Chemical Weapons Convention - Declaration and Verification of Chemical Facilities**'.
The programme was attended by more than **90** participants, including NRC Members, Invitees and students from IIT Delhi, Delhi Technological University, University School of Chemical Technology-Guru Gobind Singh Indraprastha University-Delhi, Raja Balwant Singh College Agra and Bhaskaracharya College of Applied Sciences, etc.

A **Seminar** on '**The Ethanol Value Chain - Technologies, Innovations and Policies**' is scheduled to be held on **21 November 2026**.

Trivandrum Regional Centre

A **Technical Talk** was delivered by **Dr. Srinivasa Reddy**, Director, IICT, titled, '**The Role of Chemistry in Human Well-Being: A Few Case Studies**' on **8 July 2026**.

The **Annual Gold Medal Award** function **for toppers in Chemical Engineering and Biochemical Engineering** was held on **11 October 2026**.

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Student Chapter Activities

Anil Neerukonda Institute of Technology & Sciences

The Department of Chemical Engineering, Anil Neerukonda Institute of Technology & Sciences (ANITS), successfully organized **Student Technical Fest, CHEMFLARE 2026** on **8** and **9 January 2026.** CHEMFLARE 2026 served as an effective platform for students to apply theoretical innovation, and develop professional competencies essential for chemical engineers. A total of **208** participants took part in the fest, comprising **150** internal participants from ANITS and **58** external participants from reputed institutions. Students participated in various events, including, **Paper Presentation, Poster Presentation, Model Expo, Treasure Hunt,** and **Spot Events**. The strong participation reflected the academic relevance, outreach, and reputation of the fest.



A **Lecture cum Interactive Session** on the theme of '**Chemical Industrial Safety**' was organised on **8 July 2026**. The lecture was delivered by **Mr. A. Surendra**, Assistant Manager, Shreas Industries Ltd. The session focused on **the importance of maintaining a safe working environment in chemical industries through safety practices, hazard identification, and risk assessment**. Mr. Surendra also explained about various industrial hazards, including, chemical spills, fire and explosion risks, toxic gas leaks, and equipment failures. He also highlighted the significance of using Personal Protective Equipment (PPE), following Standard Operating Procedures (SOPs), emergency preparedness, and adhering to safety regulations such as OSHA guidelines. **Real-life industrial case studies** were discussed to help students understand the consequences of unsafe practices and the importance of a strong safety culture.



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The **World Nature Conservation Day** was celebrated on **28 July 2026** by conducting a **Technical Quiz** and an **Art Drawing Competition** to promote environmental awareness and sustainable living among students. The events witnessed an enthusiastic response of **95** registered students from all departments. The programme was conducted under the guidance of **Prof. V. Rajya Lakshmi**, Principal and **Prof. R. Srikanth,** HoD, Chemical Engineering, with the support of faculty members, judges, and final-year student coordinators. Winners of both competitions were felicitated with **cash prizes** in recognition of their performance. The programme inspired students to embrace environmental responsibility and reaffirmed the institution's commitment to promoting nature conservation through education and student engagement.

Kongu Engineering College, Erode

ChemQuest'26, a 24-Hour **International Hardware Hackathon** will be organised in association with Chemical Engineering Association (ChEA) on **10** and **11 December 2026**. The central theme for the event was '**Trending Tech, Real Impact**'. ChemQuest'26 aims to bring together innovative minds to design bold, technology-driven solutions for real-world chemical engineering and industrial challenges. The hackathon will feature **14 industry-inspired problem statements** spanning areas such as **sustainability, artificial intelligence, carbon capture, green hydrogen, automation, and smart manufacturing. Adani Cement** will join this premier event as the Industrial Partner, and **Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA), Malaysia**, will be the Academic Partner.

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Sri Venkateswara College of Engineering, Sriperumbudur



A **Lecture**, titled, '**Energy Sectors in India: Opportunities and Challenges**' was delivered by **Mr. R. Senthilkumar,** Managing Director, Crevac Tech Pvt. Ltd., Chennai and **Mrs. Gayathree Krishna,** Deputy General Manager, CORI Engineers Pvt. Ltd., Chennai on **28 July 2026**. The programme was held in association with the Department of Chemical Engineering, SVCE, AIChE, BIS-SVCE Students' Chapters, and the Association of Chemical Technologists.

The welcome address was delivered by **Dr. R. Govindarasu**, Head, Department of Chemical Engineering, SVCE. **Dr M. Srividhya**, Assistant Professor, followed next. **Mr. Senthilkumar**, in his lecture, spoke on the **need for green hydrogen and its significance**. The second speaker, **Mrs. Gayathree Krishna** narrated her career experience and motivated the students to achieve success by making use of the opportunities they get. In a nutshell, the expert talks provided valuable industry perspectives on the opportunities and challenges in India's energy sector, while stressing the importance of innovation, lifelong learning, and professional excellence in the field of chemical engineering.

CHEMiNNOTHON'26, a **National level Hackathon**, was organised on **17 September 2026** under the theme of '**React, Transform, Create**'. The 24-hour hackathon brought together students together from various streams, like Chemical Engineering, Biotechnology, AI&ML technology, etc. under one roof, to create and present engineering innovations. Thrust areas included **Chemical Engineering kinetics, Process Equipment design, Process Control and Automation, Computational Fluid Dynamics, AI & ML in Chemical Engineering, CO2 Reduction and Carbon Capture, Energy Generation and Storage, Renewable Energy, Wastewater Treatment**, and **Air Pollution Control**.

Ms Annapoorani S, Technical Manager, Saipem India Projects Pvt. Ltd., Perungudi was the Chief Guest at the inaugural event while **Prof. R. Govindarasu**, HoD - Chemical Engineering, SVCE presided over.

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Vishwakarma Government Engineering College, Ahmedabad



A **Seminar** was organised on **23 April 2026** for undergraduate students of Chemical Engineering on '**Cleaner Production and Sustainable Practice in Chemical Industries**' in collaboration with **Gujarat Cleaner Production Centre** (GCPC).

Various sessions were conducted by **Mr. Abhi Patel** and **Mr. Vishal Raval**, Senior Project Engineers, from GCPC.

A total of **90** Student Members attended this seminar to understand the concepts of cleaner production as applied in chemical and allied industries. The event also highlighted issues such as the **principle and importance of cleaner production in the context of environmental sustainability and protection of ecology**. The seminar was coordinated by **Dr. Ujvala P. Christian**, Faculty Coordinator of IIChE Student Chapter of VGEC.

Chaitanya Bharathi Institute of Technology, Hyderabad

The second **International Conference on Sustainable Engineering, Environment and Development (ICSEED 2026)** was organised on **9** and **10 October 2026**. Around **150 - 200** delegates, including, researchers, academics, research scholars, students, and industry professionals from India and abroad participated in the conference. It provided a platform for presenting original research in **sustainable energy systems, environmental engineering, sustainable process technologies, AI-integrated engineering,** and **allied areas**.

Calcutta Institute of Technology, Uluberia



An **Industrial Summer Training Programme** for Chemical Engineering students was organised from **25 May – 8 June 2026** at the **Rishra** (Hooghly, West Bengal) factory of **Berger Paints India Ltd**.

The Kolkata-based Berger is one of India's leading paint manufacturers with a global base and widely divergent paint products.

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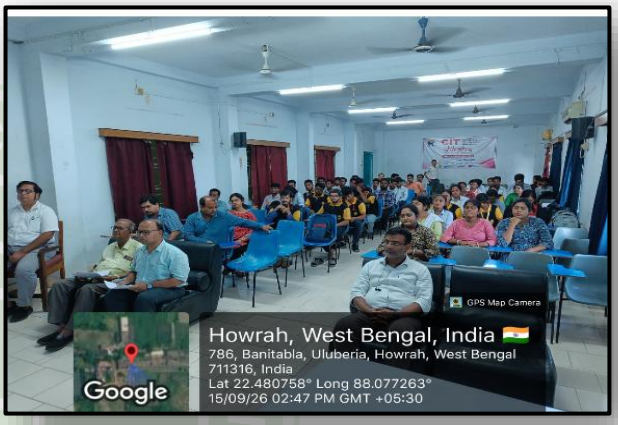
A **CGCRI-Skill Development Training Programme** under **Integrated Skill Initiative** was conducted from **11 – 13 August 2026** on the topics of **Central Membrane Technology, Water Analysis & Advanced Instrumental Techniques, and Calibration Techniques**. Students learnt **physical chemical and biological analysis of water**. They were also familiarized with different instruments such as Polarimeter, HPLC, and Spectrophotometer.

A **Competition of Flash Talks** by students was organized on **15 September 2026**. The theme for the presentation was '**Smart Engineering for a Sustainable Future through Innovation and Digitization**'. Groups of students from different departments of CIT participated in the event and presented posters. Their performances were evaluated by a panel of judges.



Deenbandhu Chhotu Ram University of Science and Technology, Murthal



'CodeTheChem', a **National Level Virtual Lab Hackathon**, was held to promote innovation and encourage programming skills as well as digital learning in Chemical Engineering education. The hackathon provided students with a platform to develop **interactive Virtual Laboratory modules and Chemical Engineering process simulators, integrating Chemical Engineering knowledge with programming and computational tools**. Participants were encouraged to use technologies such as **Python, MATLAB, HTML/CSS/JavaScript, Java and other suitable platforms**.

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As many as **35 teams (each comprising two members)** participated from various reputed institutions, including, IITs, Panjab University (PU), IPU, DCRUST and other institutions. The final presentation and evaluation were conducted on **1 September 2026**.

The overall winner of the event was **Team Dynamics** from **DCRUST Murthal**, represented by **Ms. Suhani** and **Ms. Rajani**, for their outstanding performance and innovative virtual laboratory project. The competition also recognized teams securing one **First Position**, two **Second Positions** and three **Third Positions**.

Madan Mohan Malaviya University of Technology, Gorakhpur

A **Canva and Photoshop Workshop** was organized on **29 July 2026** for introducing students to the **fundamentals of graphic designing and poster making**. It aimed to help them build practical design skills using industry-relevant tools and encouraged student development beyond regular academics. The workshop was conducted by **Mr. Aryan Singh**, Joint Secretary, IIChE Student Chapter. A total of **13** participants took part in the session. The students learnt poster designing by using Photoshop and Canva. They also explored the key features of both applications. They were also introduced to the use of **AI tools for design work.**



Crack N Conquer, a **Quiz Contest**, was held on **3 August 2026.** The quiz covered subjects such as **chemical elements and fundamental chemistry concepts**, encouraging participants to test their knowledge, think critically, and compete in an engaging academic environment. The event promoted active participation of students, encouraged quick thinking and enthusiasm for learning, making it an engaging and successful initiative.

An online **Alumni Interaction** was organized on **9 August 2026** in which **Mr. Aditya Chaurasiya**, Senior Engineer, IFFCO, Kandla, (alumnus of the 2023 batch) as well as **Mr. Gaurishankar Nishad**, Scientific Officer, Department of Atomic Energy (DAE), Kalpakkam, Tamilnadu, (alumuns of the 2020 batch) participated. Their interaction with the students focused on **bridging the gap between college life and industrial expectations**. Mr. Chaurasiya and Mr. Nishad offered valuable insights into **skill development, internships, project work, leadership, communication skills**, and **the importance of learning tools such as Aspen and MATLAB**. They also discussed industrial practices, job opportunities, corporate vs. industry work culture, and the importance of continuous learning as well as issues like competitive exam preparation, managing academics with extracurricular activities, and reading research papers.

A **Python Workshop** was conducted during **17 - 20 August 2026** for introducing students to the fundamentals of Python programing and teaching its applications in engineering and academic work. The workshop was conducted by **Arpita Dev** and **Omjee Tiwari**, Members of the IIChE Student Chapter, MMMUT. A total of 15 participants took part in the session which included **an introduction**

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to **Python programing and basic problem-solving techniques**. Participants were also introduced to commonly used **Python libraries and their applications in engineering and data analysis**. The session focused on **hands-on learning**, allowing students to practice programming concepts and solve simple problems. The workshop was informative, interactive, and beneficial for the participating students.

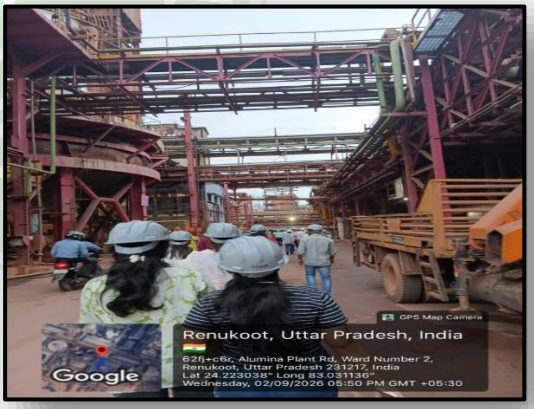
A **Debate and Speech Competition,** titled, '**Clash of Minds**' on **25 August 2026** to provide students with a platform for expressing their ideas, enhance their communication skills, and engage in meaningful discussions on contemporary issues.



The event encouraged participants to present their perspectives with confidence, clarity, and logic. It was divided into two rounds, of which **Round 1** was the **Speech Competition**. The other round consisted of a **one-on-one debate**. The enthusiastic participation and engaging discussions made the event a meaningful platform for **learning, interaction, and healthy competition.** At the end of the competition, the names of the **Winner (Pragya Panday), 1st Runner Ups (Khushi Srivastava, Tarun Gupta)** and **2nd Runner Up (Sejal Verma)** were declared.

Industry Visits were organised to i. **Hindalco Industries Limited**, Renukoot on **2 September 2026**, and, to ii. **Yash Pakka Limited,** Ayodhya on **4 September 2026**.

At the **Hindalco** plant, the students were explained about the **process of aluminium manufacturing, plant utilities,** and **industrial safety practices**. The experience allowed students to observe the **functioning of large-scale equipment, understand process flow systems. They also gained insights into industrial practices, safety measures, and sustainability approaches followed in the modern process industries**. They received valuable hands-on exposure to a large-scale, integrated paper and pulp manufacturing process which helped them bridge the gap between theoretical knowledge and practical application.



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At the **Yash Pakka, Ayodhya factory**, students received **hands-on exposure to a large-scale, integrated paper and pulp manufacturing facility which helped bridge the gap between theoretical knowledge and practical application**. The visit allowed students to observe the **pulping process and separation of cellulose fibres from other compounds**, learnt about the **working of major process equipment and utility systems**, observed the **paper making process, including sheet formation, pressing and drying**, and **how chemical engineering concepts are applied in real world pulp and paper manufacturing**.

Over **50** students took part accompanied by faculty members.

A **MATLAB Workshop** was organized from **11 – 17 September 2026** for introducing students to the fundamentals of **MATLAB programing and its applications in engineering and academic work**. A total of **25** participants took part in the session with an **introduction to MATLAB programing, including basic syntax, variables, operators, conditional statements, functions, and basic problem-solving techniques**. On the occasion, an **MoU was signed with LCB Fertilizers Ltd**. with a view to enhancing industry–academia collaboration and creating future opportunities for students.

A **Lecture** on '**Lab to Commercial Scale Process Development Focusing on Reaction Engineering & Innovative Reactor Design Concept**' was delivered by **Prof. Parag R Gogate**, Dept. of Chemical Engineering, ICT, Mumbai on **18 September 2026**.

Parul University, Vadodara

A **Workshop** on '**Thermal Design of Heat Exchangers Using HTRI Software**' was conducted on **9** and **10 July 2026**. It was designed to **enhance the knowledge and practical skills** of students, faculty members, research scholars, and industry professionals in the field of thermal system design.

The workshop was structured to provide a **balanced combination of theoretical learning and practical training**. It began with an **introduction to the fundamentals of heat transfer, including conduction, convection, overall heat transfer coefficient, fouling factors, Log Mean Temperature Difference (LMTD), the effectiveness–NTU method, and pressure drop analysis**. The participants gained an overview of **shell-side and tube-side heat transfer mechanisms, fluid flow characteristics, and key thermal design considerations**.

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A Freshmen Welcome 2026 and **Orientation Programme** was organized on **5 August 2026**. The programme began with a traditional lamp-lighting ceremony, attended by the **Principal, Vice Principal, Academic Director**, the **Head of Department, Chemical Engineering**, and other **faculty members**. The Principal delivered an academic welcome address, the Academic Director spoke on **staying focused and being open to new opportunities**, and the HOD introduced the Department of Chemical Engineering and its academic environment. The session also focused on the **role and activities of the IIChE and its Student Chapter**. A dedicated segment introduced the newly elected IIChE PU Student Chapter committee to the freshmen and faculty, followed by a **Musical Chair** competition. The event closed with a **Certificate Distribution**, honouring the outgoing committee members.



Teachers' Day was celebrated on **3 September 2026,** marking the day with gratitude. The celebration opened with a **welcome speech,** a **Tilak ceremony** and ***Saraswati Vandana*****,** These were followed by **two classical dance performances.** The faculty members then took part in **'Guess the Teacher',** picking cards with personality descriptions. The morning programme closed with **Garba dance session.**

Engineers Day was observed on **16** and **17 September 2026** with two days of programmes, **Rasayan Sangam 3.0** comprising panel discussion, technical competitions, a fitness challenge, and, a felicitation ceremony. The Panel Discussion, titled, '**Can AI Fix the Crisis It is Creating? Rethinking the Future of Chemical Engineering'** was moderated by **Ms. Monica Sachdeva**, President of the Student Chapter. It explored the growing role of AI in chemical engineering and the challenges and opportunities it presents for the future of the field. The panelists were **Jesha Soni** (Director, Chemisight Technologies Pvt. Ltd); **Dhruval Thakkar** (Execution Head, Chemisight Technologies Pvt. Ltd.); **Alpesh Rana** (Assistant Professor, Chemical Engineering, GEC Bharuch), and **Manisha Pathak** (Academic Director, Parul Institute of Technology). Ms. Pathak also spoke on **industry expectations, career opportunities,** and the **transition from academics to industry**. The afternoon session belonged to **Chemopedia**, a technical

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quiz on chemistry and chemical engineering concepts, alongside **Chem-O-Rocket**, a hands-on rocket design, construction, and launch challenge open to students across Chemical Engineering, CSE, Biomedical, and Civil Engineering. On the second day, **HY-ROX** was held to endure a high-energy fitness event combining running and functional exercises that drew participants from across disciplines and academic years.

The celebration closed with a **Felicitation Ceremony,** recognising winners and participants for their dedication, creativity, and teamwork.

Siddaganga Institute of Technology, Tumakuru

Lectures on i. '**Career Guidance for Freshers, Beyond the Refinery, what a Chemical Engineering Degree Actually Opens Up?**' and ii. '**From Lab Beaker to Retail Shelf: Scale-up, Quality and Global Careers in the Consumer Products Industry**' were delivered on **17 September 2026** by **Mr. Nawazulla Sharif** (Alumnus 2020), Head of Operations & Senior Manager, Vivere GmbH, Hamburg, Germany.

Students **Akshata, Deepak Gowda L S**, **Bhuvana Teja H S**, and **Hamsa S Gowda**, won the **Best Poster Presentation Award** at **SCHEMCON 2026**, organized by the Students Chapter of MIT Academy of Engineering, Pune on **11** and **12 September 2026**. The subject of the poster was '**Design and Development of a Biodegradable Sanitary Pad**'.

University Institute of Chemical Technology, Jalgaon

An **Alumni–Student Interaction Session** was held with distinguished alumnus **Dr. Muzammilanwar Khan (2019 Batch)** on the theme '**My Career Progression after Bachelor's at UICT & Insights into Notable Research***'* on **20 July 2026**. Dr. Khan shared his academic and research journey from UICT to AcSIR–CSIR-NCL, IIT Madras, and his current research at the University of Limerick, Ireland. He also introduced students to emerging areas of Chemical Engineering, including **multiphase flow, hydrodynamics, heat and mass transfer, CFD, process intensification, interfacial phenomena, continuous manufacturing, and reactor design**. A highlight of his presentation was his discussion on **Confined Impinging Jet Reactors (CIJRs)** and their applications in continuous processing and process intensification. The session provided students with valuable insights into higher education, research opportunities, and diverse career pathways in Chemical Engineering, while also strengthening the institute–alumni connect.



A **Student–Industry Interaction Session** was held on 1 September 2026 with **B.Y.K. India Pvt. Ltd.** under the theme '**Bridging Classroom Learning with Industry Insights***'*. The session aimed to provide students with **practical exposure to industrial practices** and **help them understand the application of classroom concepts in real-world chemical engineering environments**. Industry representatives shared valuable insights into

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industrial operations, professional skills, career opportunities, workplace expectations, and the competencies required by the chemical process industry.



Teachers' Day was observed on **5 September 2026** with great enthusiasm and respect. **Dr. A. K. Goswami, Director, UICT**, presided over the function as the Chairman. Heads of Departments, faculty members, and students were present on the occasion. The programme was thoughtfully planned and successfully conducted by the students, who expressed their gratitude and appreciation towards their teachers for their guidance, support, and contribution to their academic and personal development. The celebration provided a warm and meaningful platform for strengthening the bond between teachers and students and recognizing the valuable role of teachers in shaping future professionals.

The **Engineers' Day** was observed on **15 September 2026** with great enthusiasm to commemorate the birth anniversary of **Sir Mokshagundam Visvesvaraya** and to recognize the contribution of engineers towards technological advancement and nation building. **Er. R. I. Patil**, Executive Engineer, KBCNMU, Jalgaon, graced the occasion as the **Chief Guest**. The programme was attended by the **Director, Heads of Departments, faculty members, and students of UICT**.



The Chief Guest shared valuable insights on professional responsibility, innovation, ethics, and the evolving role of engineers in addressing contemporary challenges. The event concluded with a renewed spirit among the students to pursue engineering with 'knowledge in the mind, innovation in the hands, and responsibility towards society.'

Vel Tech Rangarajan Dr. Sagunthala R&D Engineering College, Chennai

On **8 August 2026**, a trip was organised to the plant of **Patanjali Foods Limited** at Periyapalayam,Tiruvallur. This high-capacity industrial plant processes up to 700 TPD of vegetable oil and 650 TPD of fractionated products. It produces specialized fats like vanaspati and margarine, supported by an on-site acid-oil recovery unit and steam boilers. The students observed the steps involved in the **refining of edible oils and the machinery and equipment used in oil processing**. They were explained about the **processes of fractionation and inter-esterification used to modify**

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the physical and functional properties of vegetable oils and fats for different applications. They also learnt about the importance of **quality control and food safety measures** implemented during the production and processing of edible oils and fats.

Another **Industry Visit** was arranged to **Chennai Petroleum Corporation Limited (CPCL)** refinery where the students were enlightened about different aspects of crude refining as well as about the key products manufactured by CPCL, such as LPG, aviation turbine fuel, high speed diesel, naphtha, etc.

An international **Seminar** was organised on **17 September 2026.** The theme of the seminar was '**Renewable Energy to Prevent Climate Change**'. The resource person for the seminar was **Prof. Dr. Suichi Torri, Kurumey,** Institute of Technology, Japan. Prof. Dr. Torii is a renowned engineer and researcher with extensive contributions to **thermal and fluid engineering, renewable energy, and nanotechnology, recognized internationally for both scientific research** and **practical technological innovations**.

An **Interaction programme** was held on **18 September 2026** between the students and an alumnus of the college, **Mr. A. Dhanush Kumar,** Senior Engineer, Linear Alkyl Benzene (Lab) Plant, Tamilnadu Petroproducts Limited, Manali, Chennai. The interaction centred around issues like **Transition from campus to industry, career opportunities for Chemical Engineers, industry expectations and essential skills, industrial safety and professional practices**, etc.

Students visited the **CIPET** (Central Institute of Petrochemical Engineering and Technology) campus on **18 September 2026** to have an **interactive session** there. It provided the students with an opportunity to learn directly from industry experts. The session focused on **plastics and polymer technologies, industrial applications, academic programmes,** and **research & development activities**. Students gained insights into the latest developments in **polymer materials, processing techniques, career opportunities, and industry requirements**. The exercise helped them connect their academic knowledge with practical applications.

RVRJC College of Engineering, Guntur





Chemical Engineering Contest for Knockout 2026 (ChECK 2026) was organised on **9 October 2026** in association with the IIChE Amaravati Regional Centre (ARC). The central theme of ChECK 2026 was '**ChemInnovate: Fueling the Next Industrial Revolution**'. The umbrella event consisted

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of **Technical Paper presentations, Elocution, Group discussion** and **Technical Quiz Competition**. With a total of **249** participants from various colleges and institutes, the objective of this students' meet was to provide a forum for interaction and enhance competency among the students of Chemical and allied engineering fraternity.

During the inauguration of ChECK2026, **Dr. K. Ramesh Chandra**, Professor & Head, Department of Chemical Engineering read out the welcome message in the presence of the judges of various events, Convener **Mr. K. Siva Prasada Rao**, all the faculty of the Chemical Engineering Department and the student participants.

The inaugural session was followed by presentation of **parallel Technical Papers** in **panel I & II**. As many as **58** papers were presented. **Dr. M. Ramesh Naidu**, Professor, VFSTR, Deemed to be University, Vadlamudi, Guntur and **Dr. Mindi Ramakrishna**, Asst. Professor, RGUKT, Nuzvid were the respective judges during the sessions.

The next item was a **Group Discussion** in which **60** students took part. **Ms. M. Swathi,** Asst. Prof., M & H department, RVR&JC CE was the judge. An **Elocution competition** followed, attended by **34** participants with **Dr. K. Sudhakar**, Asst. Prof., M & H department, RVR&JC CE, being present as the judge.

A **Technical Quiz Competition** was the last item under ChECK 2026. An impressive number of **42** teams from different colleges took part in the contest.

For the prize distribution ceremony, the Principal, **Dr. Kolla Srinivas**; Director - R&D, **Dr. K. Ravindra**; Director - Finance & Administration, **Dr. N. V. Srinivasa Rao**; Head, Department of Chemical Engineering, **Dr. K. Ramesh Chandra**; and, Convener, ChECK 2026, **Mr. K. Siva Prasada Rao**, were present besides other faculty members of Chemical Engineering Department. For each of the four events, **first (Rs. 3,000), second (Rs. 2,000), third (Rs. 1,000) prizes** and **one consolation prize** were given away to the winners. **Certificates** were distributed as well.

Closing the proceedings, the Convener **Mr. Prasada Rao** thanked the Management of RVR&JC College of Engineering (A) and the Principal **Dr. Kolla Srinivas.** He also expressed his gratitude to the Organizing Committee members, especially, Chairman, IIChE ARC - **Prof. V. Govardhana Rao,** Vice President, RVR&JCE and immediate past Chairman, IIChE ARC - **Mr. Jagarlamudi Murali Mohan,** and Honorary Secretary, IIChE ARC - **Prof. M. Venkateswara Rao**, for their invaluable support.

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