



IIChE NEWSLETTER 2020

VOL. 12, JANUARY – MARCH 2020, ISSUE 1

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President's Corner



Dear Members,

Dear Fellow Chemical Engineers.

Greetings for the year 2020.

Firstly, let me convey my thanks and regards to all the Council Members of IIChE for giving me an opportunity to render my services as President of our beloved Institute. I can assure you all of my best efforts for fostering growth of the Institute with the support and cooperation of the esteemed Council Members and Chemical Engineering experts in India and abroad.

We are all aware of IIChE's glorious journey for 73 years, in course of which it has emerged as an apex body of Chemical Engineering professionals in India with over 30,000 registered members, 41 Regional Centres and 166 Student Chapters across the country. All along, IIChE has been recognizing outstanding performers in the academia, industry and R&D fields as well as the student community by bestowing upon them Awards, offering Grants and Scholarships, etc.



Amidst the unprecedented global calamity brought about by COVID-19, like the rest of the country and the world in general, the regular activities of IIChE have been seriously affected. Nonetheless, the following activities have been tentatively planned for the benefit of our Members, who are Chemical Engineering professionals as well as students. Once we are back to normalcy, our priority would be to implement these programmes.

For Student Members of IIChE

- Arranging Industry Internships in the companies, which are Life Organizational Members of IIChE.
- Providing small financial support to students under guidance of IIChE experts for innovative research projects in thrust areas.
- Offering academic support to weak students with supplementary lecture notes prepared by IIChE experts.
- Initiating coaching for GATE and other competitive examinations at discounted fees.

For the Corporate / Life Members of IIChE

- Skill development programmes and Certificate courses with AICTE approval by utilizing the services of the IIChE Members, who are authorities in their own fields.
- Certificate Courses in “Industry Safety” and “Six Sigma and Quality Management” are scheduled to be started from this May.
- Development of ‘Industrial Polyclinics’ to offer industrial consultancy services at different Regional Centres.
- Preparation of lecture materials in various courses related to Chemical Engineering Programmes in the form of online notes, videos, PPTs, etc.
- Granting small funds to publish data books, lab manuals, monographs, etc., with IIChE affiliation.

All said and done, the immediate challenge, which we should address, is financial sustenance of the Institute. For that, we are planning to organize FDPs, Workshops, Training Programmes at the IIChE, Headquarters, Kolkata, which would help generating resources to an extent. I sincerely appreciate the Honorary Secretary, Vice Presidents, other Office Bearers and Council Members, in general, for their untiring services to improve the stature of our beloved Institute.



Right now, humanity's biggest challenge is COVID-19 as it continues to spread worldwide with alarming rapidity. The Government has initiated timely action by declaring blanket lockdown in order to control the spread of the disease. At this moment of calamity, I request you all to be careful yourselves and to educate people around to keep themselves and others safe.

Finally, let's all of us utilize this period of lockdown sensibly and productively.

I wish you all to stay healthy during this period.

Prof. V. Venkata Basava Rao

OBITUARY

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

Mr. Gopinath Gajapati (LM 12037)

Mr. A. Datta Majumdar (LM 20766)

Mr. S. K. Banerjee (LM 26093)

Prof. C.R. Lahiri (LM 01069)

Mr. M. G. V. Chalapathi Rao (LM 06729)

Prof. C.D. Gopalarathnam (LF 00801)

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



CHEMCON – 2019



The 72nd Annual Session of IICChE, i.e., Indian Chemical Engineering Congress (CHEMCON 2019), was held in New Delhi during 15 – 19 December 2019, jointly organised by the Northern Regional Centre of IICChE; the Department of Chemical Engineering, IIT Delhi; Indian Oil Corporation Ltd (Industry Partner) and European Federation of Chemical Engineering (International Partner). The central theme for this CHEMCON was ‘Seamless Chemical Engineering in Service of Humanity: Innovations, Opportunities & Challenges’.

CHEMCON 2019 was inaugurated on 15 December 2019 by Shri Dharmendra Pradhan, Hon’ble Union Minister of Petroleum and Natural Gas and Ministry of Steel in the presence of distinguished guests, such as, Director, IIT Delhi, Director (Refineries), Indian Oil Corp. Ltd., President, IICChE, Head, Petrochemical Academy, Reliance Industries Ltd. The Hon’ble Minister inaugurated the function by lighting of lamp and gave Inaugural address. The highlight of Inaugural Session was Shri Dhirubhai Ambani Commemoration Lecture on “Innovation for Economic Growth with respect to Chemical Industries: Retrospect & Prospect” by Padma Vibhushan Prof. M.M. Sharma, globally renowned academic and chemical engineer.

On 16 December 2019, the CHEMCON programme commenced with the three Memorial Lectures: Dr. H.L. Roy Memorial Lecture was delivered by Prof. K. VijayRaghavan, Principal Scientific Advisor, Government of India on the topic ‘Fertilizers: Their Chemical Engineering history and Their Future’;



Prof. N.R. Kamath & Mrs. Ruzena Kamath Memorial Lecture by Dr. SSV Ramakumar, Director (R&D), Indian Oil Corporation Limited on the topic “Emerging Energy Scenario – Low Carbon Imperatives” and Prof. C.K. Murthy Memorial Lecture by Prof. Ashutosh Sharma, Secretary, Dept. of Science & Technology, Government of India on the topic “Navigating Complexity in Science”.

This was followed by presentation of IIChE Awards, including the National Awards, i.e.

i. B P Godrej Life Time Achievement Award, ii. Lata Sriram National Award, iii. Hardillia Award, iv. Prof. Shyam Kanti Sanyal Memorial Award, v. Dr. A.V. Rama Rao Award and vi. Shah-Shulman Award.

An Indo-European Symposium was held in association with the International Partner, namely, European Federation of Chemical Engineering (EFCE). Eminent speakers, such as, Prof. Flario Manenti, Milan, Italy; Prof. Anton Kiss, University of Manchester, UK; Dr. Dietmar Hueglin, Vice-President, BASF; Dr. S. Nand, Deputy Director General, FAI; Prof. G.D. Yadav, ICT Mumbai delivered lectures.

Technical Sessions on the central theme of the Congress, ‘Advances in Chemical Engineering for Industrial Applications’ were presented under five separate subjects, i.e.,

- i. Crude to Chemicals,
- ii. Process Safety
- iii. Process Intensification
- iv. Resources, Recycle and Reuse
- v. Energy and Environment.

There were 15 lectures on all these topics, delivered by eminent speakers. Parallel Sessions were held spread over two days wherein technical presentations were made. There were more than 180 presentations during these sessions. Poster Sessions had presentations by 38 participants. CHEMCON 2019 was concluded with the Valedictory Address by the President of IIChE, Prof. S.V. Satyanarayana. More than 400 delegates participated in the event spread over four days

‘CHEMCON-2019’ was sponsored by leading industries and institutions of India. The European Federation of Chemical Engineering (EFCE) was the International Partner and Indian Oil Corporation Limited was the Industry Partner for the event. Reliance Industries Limited was the ‘Platinum Sponsor’, IFFCO was the ‘Gold Sponsor’ and FAI, GAIL and HMEL were the ‘Bronze Sponsors’. Other ‘Co-Sponsors’ were Jubilant Life Sciences Ltd, Bharat Petroleum Corp. Ltd., India Glycols Ltd. and Blast Carboblocks Pvt. Ltd., actively participating by sponsoring delegates from their organisation.



CHEMCON 2020

C.P. Gurnani, Chairman, National Organising Committee



We wish to assure our Members that despite the unprecedented global crisis, arising out of 'Covid-19', preparations are underway as per plans for organising this year's CHEMCON 2020 at Bhubaneswar during 27 – 30 December 2020. As customary for every session of CHEMCON, this year also we are very fortunate to have several eminent and acclaimed personalities gracing the organising committees for hosting CHEMCON. An august group of Patrons will also be our guiding force.

It is, indeed, a matter of great privilege for us to have Mr. C.P. Gurnani as the Chairman of the National Organising Committee (NOC), CHEMCON 2020. Presently, the Chief Executive Officer and Managing Director of Tech Mahindra, Mr. Gurnani is a Chemical Engineering graduate from the National Institute of Technology, Rourkela. As a consummate industry leader, Mr. Gurnani has been a stellar performer throughout his professional career, spanning over three decades. In fact, under his leadership, Tech Mahindra achieved one of the biggest turnarounds in Indian Corporate History when it acquired Satyam. Mr. Gurnani has guided the company to emerge as one of the top digital IT solution providers of India.

Before joining Tech Mahindra, he held top positions in several other globally renowned companies, such as, HCL, Hewlett Packard Ltd., PerotSystems (India) Ltd. And HCL Corporation Ltd. Mr Gurnani was appointed the Chairman of Nasscom in 2016 for a one-year term.

He has won awards and accolades galore. To name a few, in 2013, Mr Gurnani was chosen as the Ernst and Young 'Entrepreneur of the Year (Manager)', CNBC Asia's 'India Business Leader of the Year' as well as Dataquest 'IT Person of the Year'. *Business Standard* conferred on him 'CEO of the Year' Award in 2014. Mr. Gurnani also received the 'Best CEO of the Year' award for three successive years from *Business Today*.



In 2016, he received Honorary Doctorate for his outstanding contribution to the field of Technology and Management from the Veer Surendra Sai University of Technology, Odisha. In 2018, he was ranked 488th in the list of the 'Best CEOs in the World' by the *CEOWORLD* magazine.

Mr. Gurnani is actively into philanthropy. He is a leading member of the Tech Mahindra Foundation. He is also the co-founder of Titliyan, a Noida-based NGO, committed to the welfare of around 140 underprivileged children.

We look forward to Mr. Gurnani's stewardship at the helm of NOC, CHEMCON 2020. His acumen, entrepreneurial skill, wide recognitions and dynamism will greatly assist his highly accomplished and enterprising colleagues at NOC and LOC (Local Organising Committee) of CHEMCON 2020 to make this year's CHEMCON a memorable experience.

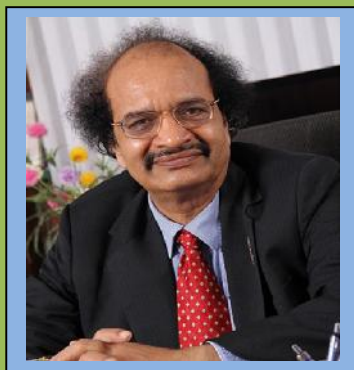
Mr. Gurnani is highly active in the social media platforms like twitter and LinkedIn and he can be connected and followed on these platforms.

His Twitter handle is: @C_P_Gurnani and his LinkedIn profile - <https://www.linkedin.com/in/cp-gurnani-b4500348/>



PROFILE

Professor G . D. Yadav



Prof. G.D. Yadav is a towering personality of myriad talents, who has excelled in every pursuit that he has ventured into during his illustrious career. It is a matter of good fortune that Prof. Yadav has been closely involved with the IIChE fraternity for nearly four decades in one way or the other and is one of the handful persons who has attended all CHEMCONs barring two in the last 32 years. His contribution towards the overall growth and development of the Institute has left an indelible mark over the years. Even presently, despite being much engaged with the Indian Chemical Society as its President, his bond with IIChE is intact and all strong.

Conferred Padma Shri in 2016, Prof. Yadav is an institution in himself, who has been uniquely playing very many roles parallel to one another and achieving tremendous success in each of these realms. He is an eminent academic, a chemical engineer of international repute, a front ranking inventor, and, last but not the least, an excellent organiser.

He is an elected Fellow of all four Indian Science and Engineering Academies, which is a rare distinction: Indian National Science Academy (INSA), Indian Academy of Sciences (IASc), National Academy of Sciences, India (NASI) and Indian National Academy of Engineering. He is also one of the few Chemical Engineers to be elected Fellow of TWAS - The World Academy of Sciences for the Developing World, Trieste. In fact, the Institution of Chemical Engineers started its activities in India by inviting him to be the Fellow in 2007 and so did The Royal Society for Chemistry in 2011.

In November 2019, Prof. Yadav retired as the Vice Chancellor of ICT, Mumbai (formerly known as UDCT), which has been his alma mater all along his academic career in Chemical Engineering. He has been internationally recognized with many prestigious and rare awards as an academician, researcher and innovator, and, also for his seminal contributions to education, research and innovation in Green Chemistry and Engineering, Catalysis, Chemical Engineering, Energy Engineering, Biotechnology, Nanotechnology, and Development of Clean and Green Technologies.



For 10 and half years, he served as the Founding Vice Chancellor and R.T. Mody Distinguished Professor, and Tata Chemicals Darbari Seth Distinguished Professor of Leadership and Innovation at the Institute of Chemical Technology (ICT), Mumbai, which is a Deemed-to-be-University having Elite Status and Centre of Excellence given by the Maharashtra State Assembly on par with IITs/IISc/IISERs. He currently holds the titles of Emeritus Professor of Eminence and J.C. Bose National Fellow in ICT. He serves as the Adjunct Professor at University of Saskatchewan, Canada, RMIT University, Melbourne, Australia and Conjoint Professor, University of New Castle, Australia. He is also a Visiting Professor Shiksha-O-Anusandhan University, Bhubaneswar. While at the helm of ICT, Prof. Yadav took this Deemed University to an exalted position as a Centre of Excellence.

Under his dynamic leadership, ICT made phenomenal progress having been declared as Category I institute, having started 23 new academic programmes, 5 new Departments and several Centres of Excellence, and establishment of two off-campus in Bhubaneswar with total support of IOCL and Marathwada with total support of the Government of Maharashtra, and collected phenomenal funds. The ICT is listed in top 100 institutes in the Developing World by Times Higher Education Ranking in 2019. He has personally won over 125 national and international honours, awards, fellowships, editorships, and several Life Time Achievement Awards by prestigious industrial organizations.

Besides the academic sphere, as a top-notch chemical engineer, Prof Yadav is deeply engaged with the Chemical and Allied Industries as a consultant and in other capacities. He has been closely involved with CII, FICCI, the Indian Chemical Council and ISCM. Besides Indian Chemical Society, presently, he is also the President of Maharashtra Academy of Sciences and the Chair of American Chemical Society, India International Chapter. Prof. Yadav also serves as an Independent Director on the Boards of Aarti Industries Ltd, Godrej Industries Ltd., Meghmani Organics Ltd, Bhageria Chemicals Ltd, and Clean Science and Technology Pvt Ltd. He is also a member of Apex Council of IndianOil R&D; Expert Advisory Committee, ONGC Energy Centre (OEC); Glaxcon India Advisory Board on Process Safety and the Governing Council DBT-IndianOil Energy Centre. He is the Chairman of DST's National Expert Advisory Committee on Innovation, Incubation and Technology Enterprise, a member of the Advisory and Screening Committee of the Common Research and Technology Development Hubs of DSIR, Chairman, PAC of International Programms in Chemical Sciences and Engineering, DST and Chairman, Expert Committee, Waste Management Technology, DST.

It is a matter of wonder that amidst all such academic as well as professional roles and responsibilities, Prof. Yadav has attained a spectacular success in fundamental research as well. He has filed for 117 national and international patents, of which 71 have so far been granted.

Along with his research team, Prof. Yadav achieved a major breakthrough in Cu-Cl water splitting cycle under a patented ICT-OEC Hydrogen Production Process, which is now working on a pilot scale. Last year, Prof. Yadav received the Most Productive Professor Award in ICT from the Murarka Trust. His researches have been documented in three books, 15 book chapters and over 451 peer reviewed papers.



As a sole guide, Prof. Yadav has supervised as many as 100 Doctoral and 115 Masters theses and 37 post-doctoral fellows. This is a record for any Engineering faculty in India and he is also the first faculty from ICT to have this distinction. He has one of the largest research groups in India with 4 PDFs, 15 Ph Ds and 14 Masters students. His h index is 57, i10 index of 257 and citations over 12,300.

In recognition of his invaluable contribution to the academic pursuits, Prof. Yadav received two honorary Doctorates – D.Sc from D Y Patil University, Kolhapur and D. Eng. From NIT, Agartala. Awards have, indeed, come abundantly his way. Only a selective few can be named here due to space constraints. Prof. Yadav the Best Engineering College Teacher Award of the International Society for Technology in Education (ISTE) in 1994; IIEE Award for Development of Eco-friendly Technologies in 1997; the Distinguished Alumnus Award of the UDCT in 2006; Best Teacher Award of the Government of Maharashtra in 2007; Eminent Engineer Award of the Institution of Engineers (India) in 2009; the D.M. Trivedi Life Time Achievement Award in 2012; the 15th NES Jagadguru Sankaracharya National Eminent Scientist Award in 2015; and the Life Time Achievement Award of the Indian Council of Chemists in 2013.

IIChE has been privileged by conferring several of its prestigious awards on Prof. Yadav. Awards from IIChE include Hindustan Lever Biennial Award for the Most Outstanding Chemical Engineer of the Year (1994), Herdillia Award for Excellence in Basic Research (1999), DOST Prof. S.K. Sharma Medal and Chemcon Distinguished Speaker (CDS) Award (2005), K. Anji Reddy Innovator of the Year Award (2006), Hercules Padma Vibhushan Prof. C.N.R. Rao Medal and CDS Award (2009), RPG Life Sciences Padma Vibhushan Prof. M.M. Sharma Medal and CDS Award (2010), Dr. B.P. Godrej Life Time Achievement Award (2013), Asian Paints Padma Vibhushan Dr. R. A. Mashelkar Medal and CDS Award (2015), Deepak Nitrite Padma Bhushan L.K. Doraiswamy CDS Award (2016), Hetero Drugs Prof. G.S. Laddha CDS Award (2017), UPL Smt. Sandra Shroff CDS Award (2018) and Bharat Ratna Prof. C.N.R. Rao Medal and CDS Award (2019).

No feature on Prof. G.D. Yadav can be complete without referring to his close attachment with IIChE and deep commitment to its prosperity and advancement. He infused a unique momentum and vigour to the Institute when he became President of IIChE in 2001. During his tenure as President, Prof. Yadav was instrumental in instituting 51 awards and several endowments from leading national and international organisations, enhancing IIChE's stature in the national and international arena many notches above. For this year's CHEMCON (Annual Session of IIChE) at Bhubaneswar in December 2020, Prof. Yadav has joined the august band of Patrons, who will be guiding and counselling the organisers at the national and local levels

For IIChE, Prof. Yadav will continue to be one of the most respected vanguards whose advices and inputs will always help the Institute steer ahead through many ups and downs. On his personal front, Prof. Yadav has already touched the zenith of accomplishments. He will indeed continue adding many more feathers to his cap and attain even greater triumphs during his journey forward. He is fond of literature, etymology and Sanskrit. The ICT's University song is written by him. There are 46 video clips, including documentaries, on his life on YouTube.



SCHEMCON 2019



The 15th Annual Session of Students' CHEMCON (SCHEMCON) 2019 was organised by the IICChE Student Chapter at the Department of Chemical Engineering, Shroff S R Rotary Chemical Institute of Technology (SRICT), Balia, Ankleshwar under the aegis of the Ankleshwar Regional Centre, IICChE on 17 and 18 October 2019. The Chief Guest for the inaugural programme on 17 October was Padam Vibhushan Prof M M Sharma, renowned chemical engineer and academic as well as former Director of ICT, Mumbai. Other dignitaries on the dais were Prof Stayanarayan, President (2019), IICChE; Mrs Sandra R Shroff, Chairman, Ankleshwar Rotary Education Society (ARES); Mr Ashok Panjwani, Vice Chairman, Ankleshwar Rotary Education Society; Dr Snehal Lokhandwala, Principal, SRICT; Prof Alok Gautam, HoD, Chemical Engineering, SRICT; Mr S I Thakar, Chairman of Ankleshwar Regional Centre, IICChE; Mr A I Shaikh, Hony Secretary, Ankleshwar Regional Centre, IICChE; Dr Shina Gautam, Organizing Secretary; and; Mr Krunal Suthar, Joint Organizing Secretary.

Introduction about the Institute and the Welcome Address were delivered by Principal of SRICT. The inauguration ceremony was concluded with a Plenary Lecture by Prof M M Sharma. Prof. Sharma delivered the lecture on 'Chemical Engineering for the Changing Scenario of Chemical Industry'. On the second day (18 October), the second Plenary Lecture was delivered by Padma Bhushan Prof J B Joshi on 'Innovate to transform'.

A total of 534 students from 124 educational institutes, including IITs, NITs, universities and colleges, from all across India participated in SCHMCON. As many as 215 papers were presented. A total 11 Oral sessions and 5 poster sessions were organized. Forty-two eminent persons from industries and academia as well as IICChE Council Members chaired Oral and Poster sessions.



On 18 October, an Institute-Industry interaction session was organised where more than 200 students participated in the session. Industry was represented by Mr Praveen Saxena and Mr Dhawal Saxena from Blast Carboblocks Ltd.; Dr P N Parmeswaran from UPL; Mr Rilesh Mehta from Solvay industries, etc. Industry Visit was also undertaken by 243 students. A group of 45-50 students each visited Sajjan India, Ankleshwar; Godrej Industries; Valia, Ankleshwar; Lupin, Ankleshwar; BEIL Infrastructure Ltd., Ankleshwar and Enviro Tech Ltd, Ankleshwar.

A cultural evening was also organised at the venue in which students presented various renditions, which was highly enjoyed by the audience.

SCHEMCON 2019 came to a conclusion with the valedictory function, in which several IIChE awards under various categories were presented to students.

TO OUR MEMBERS

IIChE is considering opening an 'Educational Portal' on the Institute's website for the under-graduate students of Chemical Engineering at different engineering colleges/ institutions across the country. Our objective would be to offer the students such concepts, information, ideas and perspectives in the domain of Chemical Engineering, which are not available in typical text books but which would widen the students' understanding of the subject and greatly benefit them in their academic and future professional career.

With this consideration, we are keen on presenting Concept Papers, Brief Notes, Guidance Documents, etc., on Chemical Process, Equipment Design, Process Optimization/ Process Intensification, Safety & Environment, Thermal & Bio Energy, Nanotechnology, etc., which the chemical engineering professionals develop primarily from long years of their practical experience.

We invite such Concept Papers, Brief Notes, etc., (in pdf format) from our valued Members, who are experts and authorities in their respective field. Such materials would be uploaded on the ensuing Educational Portal with due acknowledgement to the author/s.

The Student Community has always been a priority for IIChE. In fact, in recent years, the Institute has launched several initiatives for career advancement of students in a meaningful way. Keeping in view the primary mission of IIChE, i.e., advancement of the Chemical Engineering education and profession, we are very hopeful that this latest drive would pay the students rich dividends, particularly in a long term perspective of their future career.

Please mail your Notes / Documents to:

Honorary Secretary, Indian Institute of Chemical Engineers. Email: iichehq@gmail.com



PROCESS SAFETY AND RISK MANAGEMENT VI

Investigation of Process Safety Incidents

Joy M Shah



Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted. - Albert Einstein#

This is the last paper in this series of Process Safety and Risk Management. I have addressed the most critical areas of Process Safety and Risk Management in a series of six articles for achieving safe and sustainable operation. Chemical and Hydrocarbon manufacturing facilities are high-hazard locations, and, in short, every activity carries risk. The risk can be limited to the boundary of the organisation or may extend beyond boundaries and can not only damage assets and reputation but can wipe off organisation, e.g., recent incidents of explosion in Phillips 66 Refinery at Texas and Philadelphia Energy Solutions at South Philadelphia.

The author is Founder and Chief Consultant, Innov8 ProTech Solutions, Sustainability and Management Consultant. Formerly, he was Senior Vice President - Technical at Reliance Industries Ltd. Mr. Shah is also a member of the Chemical Process Safety Committee of IIChE.

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In order to assess Business risk and reduce it to tolerable level, one of the board members of any such organisation has to be a Risk expert who would chair the Business Risk and Assurance Committee to discuss assess risks, assign owners to the risk as well as facilitate to reduce risk to tolerable level. The committee has to be linked to various site subcommittees for ease of communication and execution of action plan. One of the legs of this committee has to be safety and operational risk which shall be addressed in this article. Risk Management is very vast subject and I shall try to give brief outline of the same.

Definition of Risk

In a simple term, Risk is an **uncertain future event**. If it occurs, it will impact the sustainability of operation and safety of people. It is defined as a function of Probability of occurrence of any incident and consequence of the incident. Every organisation has the criteria of classifying the risk into acceptable and non-acceptable level. The risk can be reduced by providing safeguards. Therefore, by additional safeguards, non-acceptable risk can be brought to acceptable level. We have discussed many methods of hazards and risk analysis in article no.4 on Process Hazards Analysis and Facility Siting.

Risk assessment

Risk taking is fundamental to business, and exposure to risk is essential to gain economic profit. The challenge is to **recognize** which risks differentially impact the safe and sustainable operation. For sustainable operations of any high-hazard plant, the following 7 elements are considered for Risk assessment of manufacturing operations. viz.

1. Personal safety
2. Process Safety
3. Health and industrial Hygiene
4. Security



5. Environment and
6. Transportation
7. Natural calamities

It is essential that workforce at all levels of the organization understands, assesses and manages **operating risk** to prevent accidents and harm to people, to reduce damage to the environment and to achieve competitive performance.

Following are the methodology for Risk assessment.

1. Define potential sequences of events based on hazard identification. Following diagram can be used to source hazards identification.
2. Evaluate incident outcomes, based on energy released, material released, downwind vapour concentration, radiant heat flux, or, explosion overpressure. Assess requirement of dispersion analysis or simulation of incident to identify area of impact.

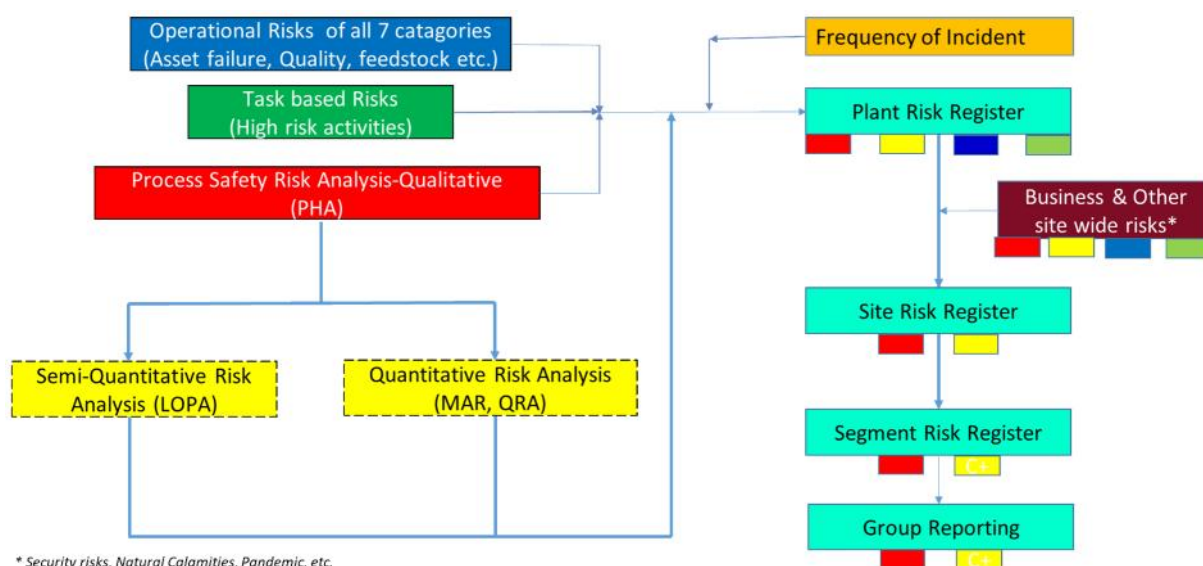


Fig 1: Risk identification and Risk flow

3. Estimate impact of incident on plant, people and profit as well as environment and number of individuals affected within site and beyond site.
4. Estimate the potential incident frequencies based on generic data within site or similar incidents that happened at other locations and other countries.
5. Estimate the risk by combining consequence with event frequency.
6. Identify sources of risk, analyse the system and determine if there are cost-effective addition of barrier in terms of process or modifications, which can reduce risk.
7. Re-evaluate risk against required risk criteria.
8. If the risk is considered to be excessive, identify and prioritise risk reduction measures and inform site and board level committee.



Criteria for acceptability of Risk

We are concerned with loss prevention sustainability of operation and safety of plant personnel and of the general public. Criteria of acceptability of risk are clearly required for each main area of risk, viz:

1. Loss to plant equipment
2. Loss to employees' life
3. Loss to environment
4. Loss to general public
- 5.

Convert all these to overall business loss for each risk criteria and define it as a tolerable or intolerable risk. Consider both direct and indirect losses.

Alternatively, prepare Risk assessment matrix (RAM) as given below and position incident in the right block. Benefits and drawbacks of RAM are as follows:

1. RAM enables consistent approach to qualitative risk assessment.
2. It establishes a common terminology to support communication about Risk.
3. RAM shall be used in accordance with certain fundamental principles:
 - a. RAM assessment refers only to the specific risks to determine how to categorise.
 - b. RAM assessment does not generate decision about action that should be taken.

No two companies have the same risk tolerance. Every company has to develop its own, based on their business tolerance. **Experts can help to develop such matrix, based on risk tolerance capabilities.** Typical RAM matrix is given below:

	F1 Never heard of in the industry <10 ⁻⁴ /year	F2 Heard of in the industry 10 ⁻³ to 10 ⁻⁴ /year	F3 Has happened in the organisation 10 ⁻³ to 10 ⁻² /year	F4 Has happened in the location >10 ⁻² /year	F5 Has happened more than once per year in the location
Co No injury or health effect	IV	IV	IV	IV	IV
C1 FAC	IV	IV	III	III	III
C2 MTC	IV	III	III	II	II
C3 LWC	III	III	II	I	I
C4 Multiple LWC	III	II	I	I	I
C5 Fatality	II	II	I	I	I



Here,

I. Green – Tolerable as is; Consider an improvement opportunity.

II. Blue – Manage for continuous improvement.

III. Yellow – Incorporate risk reduction measures. Control to reduce to tolerable level.

IV. Red – incorporate risk reduction measures. Control to reduce. Tolerability of Risk to be endorsed by the line manager, directly accountable for the site.

For instance, if a similar incident is heard in industry and leads to single LWC is blue (F2C3-Tolerable with improvement proposals) but if it is repeated at the same location, it becomes Red (F4C3) and Intolerable risk. It is to be reported to line manager directly accountable for that site. Organisations have to find action plan to reduce it to tolerable level, i.e., to avoid such incidence.

The above mentioned narrative is a very basic matrix. Now more and more complex matrix with different types of consequences, e.g., environment, financial loss and reputation has been developed.

Risk Management: Risk Management is the present day buzz word for safe and sustainable operation. For effective risk management, organisations need to make team from Board level to execution level, train all team members, carry out risk assessment, prepare risk and control register, establish assessment and audit protocol as well as create culture of risk-based decision making process. These elements are briefly described below:

Team formation: Plant level Risk assessment team is always cross-functional, including Risk experts, Design, Process, Operation, Maintenance (Mech, Ele, Inst, Civil, etc), safety and business experts. They report to site level management team and all site level risk management teams report to corporate / board level team. Plant level team is responsible not only for execution but also for creating culture amongst staff members for risk-based decision making processes. All team members are trained by external experts and the rest of the staff members are trained by the site level risk management team.

Risk and control register preparation: Risk and control register is prepared for every unit, plant, site as well as organisation as a whole. It consists of name of the unit, purpose of risk register, type and name of risk, risk owner, risk category, risk source, causes and their category as well as consequences and their category, worst possible scenario, Risk response and mitigation plan, details of loss, control attributes of risk as well as details of residual risk, its remediation measures and its future impact. From various criteria, it will pop up whether it is controllable or uncontrollable risk as well as tolerable or intolerable risk. Based on risk register, residual risk heat map can be prepared for visualisation of risk tolerance of the site or organisation.

Establishing Assessment and Audit process: There are three levels of assessment, viz.,

1. Self-verification by executor or his/her peers. It is line verification.
2. Functional assurance by subject matter expert, and,
3. Third party audit by external party not conversant with the people.

It is essential that all three levels are aligned for integrated assurance.



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Creating culture for risk-based decision making process:

As the story of ‘blind men and elephant’ goes, each employee perceives risk management differently. When every employee perceives it similarly, it becomes their belief and, thereby, a culture. It becomes deeply held assumptions, beliefs and values with respect to risk management, shared by an organisation’s employees. Risk culture is required to nudge employees towards right behaviour, prevent bad things from happening as well as fulfil regulatory obligations.

Development of this culture starts with policy, procedure and systems. Proper training and association of right team members make it smooth sailing. Risk assessment and risk-based decisions by the authority will make employees to think in that direction. Once all such elements are in place, we can say that Risk Management process is evolving.

To achieve maturity in Risk management framework, following parameters are evaluated for its status in organisation, viz, Basic, Developing, Established, Advanced and Optimised:

1. Risk Governance
2. Risk management capability and competency
3. Risk Integration
4. Risk Identification and Assessment

5. Risk Responses
6. Risk response – Compliances
7. Risk Monitoring – Self verification
8. Risk monitoring- Functional assurance
9. Risk Monitoring – Independent assurance

The criteria for each parameter are well defined and gap analysis can be done for continuous improvement. Once Risk management and Risk-based decision making culture is matured, it is expected to achieve safe and sustainable operation.

Safety is not expensive but it is priceless. Always ask, when in doubt – Unknown

Completed

Feedbacks from our readers will be welcome.



Note on UV-Disinfection Cabinet: A Preventive Measure against COVID-19

Biswajit Mandal, Professor, Haldia Institute of Technology, Haldia &
Avijit Ghosh, Professor, Heritage Institute of Technology, Kolkata

It is not only the change in the global weather pattern that is responsible for the alarming extent of natural calamities all across the globe. Evolving microorganisms of different characters have also become a global threat to human lives. It has, therefore, become the first priority in the field of scientific research and development to formulate bio-defence strategies and innovative devices or appliances to tackle life threatening viruses, including, Influenza, Cholera, Ebola, Nipah, Japanese encephalitis, Chikungunya, Swine flu, SARS-COV 2 and the recent COVID-19, causing pandemic.

These viruses are a tremendous threat to human lives due to their capacity for surface transmission through day-to-day human activities. So far, almost every other virus has been dealt with suitable antidotes, developed in course of around six month after the outbreak of a viral disease. However, we are still waiting for the development of reliable antidote against Covid-19 by the scientific community. One of the toughest jobs is to fix the composition of antidotes due to variable mutants of the respective virus.

Social distancing is a widely accepted practice to tackle such aggressive transmission of the respective mutants of the viruses. Another strategy is to protect and shield our body by special kit or to kill the viruses by using different bio-defence devices/appliances, including masks, along with using quality disinfectants, for our daily needs, including, currency handling, touching food materials, water, clothes, electronics appliances, etc. Hence, it has become a fast-track job to design and formulate suitable bio-defence kits for each and every item of our daily use.

It is well established that UV-C irradiation is an effective way to disinfect non-porous items, such as, currency, food materials, PPE, N95 masks, phones, keys, etc., by a specific period of exposure. However, one has to be careful about the leakages and exposure of UV lights to the users. It is now a priority to develop the bio-defence portable devices for currency disinfection, disinfection of the grocery/kitchen items as well as refrigeration.

Physical exchange of currency is one primary medium for transmission of deadly viruses, which is unavoidable nevertheless. This problem could be resolved with proper disinfection strategies, including, using currency disinfector, i.e., UV smart iOS cabinet. The UV disinfection cabinet would have to be equipped with specified timers for exposure of UV-C light under controlled environment.

Kitchen disinfection cabinet is another essential appliance to restrict transmission of the deadly virus from market to kitchen. **The present authors have designed an appliance equipped with UV-C light along with air purifier to ensure disinfection of deadly viruses that are spread through groceries, vegetables and other kitchen items. The appliance is well equipped with composite timer and iOS. It is compatible with android, iOS, Windows Mobile and even BlackBerry. Still at a conceptual stage, we will provide further details once the fabricated device comes out in near future.**



REGIONAL CENTRE ACTIVITIES

Ankleshwar Regional Centre

A **Talk** was presented by personnel from **Excelsource International Pvt. Ltd. (EIPL)** on **IOT Technology** on **4 February 2020**.

Annamalai Regional Centre

National Safety Day was observed on **4 March 2020** with a half-day programme, held in association with Department of Chemical Engineering at the Faculty of Engineering and Technology (FEAT) Campus, Annamalai University, Annamalai Nagar.



Guwahati Regional Centre

A **talk** on '**Engineering Particle Shape and Interactions to Explore about Disordered and Ordered Colloidal Materials**' was presented by **Dr. Chandan K Mishra**, Post-doctoral Researcher, Department of Physics and Astronomy, University of Pennsylvania on **7 January 2020**.

A **talk** on '**3D Concrete Printing – Challenges and Achievements So Far**' was presented by **Dr. Biranchi Panda**, IIT Guwahati, Department of Mechanical Engineering on **21 February 2020**.

A **talk** on '**Selective Dye Adsorption Using Hydrothermally Synthesis of Metal Organic Frameworks**' was presented by **Dr. Sharad Sontakke**, Assistant Professor, Department of Chemical Engineering, BITS, Pilani, Goa on **9 March 2020**.



Hyderabad Regional Centre

An International **Conference** on ‘**Recent Advances in Chemical Engineering (RACE) – 2020**’ was organized by Department of Chemical Engineering, OUCT, Hyderabad and Hyderabad RC (IIChE – HRC) on **8 and 9 January 2020** on the eve of Golden Jubilee Celebrations (1969-2019) of OUCT. The conference was supported by Rashtriya Uchchatar Shiksha Abhiyan (RUSA) Scheme 2.0, an initiative of MHRD, Government of India. **Dr. S.S.V. Ramakumar**, Director (R&D) and Board Members, Indian Oil Corporation Ltd. (IOCL) was the Chief Guest. In his key-note address, he discussed the relevance of chemical engineering and technology in petroleum industry. **Prof. S. Basu**, Director, CSIR-IMMT Bhubaneswar was the Guest of Honour. He exhorted the students to take up entrepreneurship as one of the career options. **Prof. R. Shyamsunder**, Principal of OUCT presided over the inaugural function. **Prof. V.V.Basava Rao**, Convenor of the conference and President of IIChE for 2020, gave an overview of the conference and urged the participants to deliberate on emerging trends in chemical engineering and its allied areas. **Dr. Sanjay Bhardwaj**, Chairman, Hyderabad RC offered the vote of thanks in the inaugural session.

Distinguished Speakers included **Prof. S. Basu**, **Dr. Anand Mohan**, IIT, Hyderabad; **Prof. Sriram Devanathan**, Amrita University, Coimbatore; **Prof. Ravindra Gudi**, IIT Bombay; **Dr. Tata Narasinga Rao**, ARCI, Hyderabad; and **Mr. Rajender Brahman**, Merck USA.



A **lecture** programme was organised in association with OUCT, Hyderabad on **31 January 2020**. **Shri Vimukta Chaitanya**, Spiritual Teacher, Chinmaya Mission, who is also a B. Tech. (Chemical Engineering) from OUCT and M.Tech (Computer Science) from USA, delivered the lecture, titled, ‘**Science and Spirituality**’.

A **Design Thinking Workshop (DTW)** was held on **25 February 2020** in association with IITB Alumni Association (IITBAA) - Hyderabad Chapter and Anurag Group of Institutions (AGI), Hyderabad. **Dr. Sanjay Bhardwaj**, Chairman, Hyderabad RC and President, IITBAA - Hyderabad Chapter, highlighted the relevance of DTW in scientific model making. **Dr. Ajay Kohlatkar**, Founder, Trizinbiz Advisory, Pune, was the key-note speaker. **Mr. V.V.S. Rao**, CEO, Sowbal Aerothermics, Secunderabad also addressed the participants, comprising engineering students, academicians, scientists and industry professionals.



An **inter-College Competitions** on Scientific Model Making, Technical quiz, Essay writing and Elocution was organized by Hyderabad RC on **25 February 2020**, participated by Student Chapters of IIChE from different colleges and universities, which are under the aegis of the Hyderabad RC. Student of Chemical Engineering from Osmania University College of Technology, Chaitanya Bharathi Institute of Technology, Jawaharlal Nehru Technological University, Anantapur, Anurag Group of Institutions B.V. Raju Institute of Technology and Birla Institute of Technology & Science (BITS)-Pilani, Hyderabad Campus participated under different categories of the contest.

Kochi Regional Centre

The 2nd '**Inter Industry HSE Quiz Completion 2019**' was organised by Kochi RC in association with Petroleum and Explosives Safety Organisation (PESO) and oil companies, i.e., BPCL, HPCL and IOCL. While three zonal finals (covering three zones of Kerala) at Kozhikkode, Thiruvananthapuram and Ernakulam were held in November 2019, the final round of the Quiz programme was held on **7 December 2019** at Ernakulam.

The participating teams represented VSSC Trivandrum, Cochin Shipyard, IOCL Kozhikode Depot, SHV Energy, Palakkad, BPCL-KRL, BPCL LPG Bottling Thiruvananthapuram, BPCL Cross Country Pipeline and BPCL Petrochemicals. BPCL-Kochi refinery team emerged as the winner. **Dr. R.Venugopal** IPCESS, Dy Chief Controller, PESO was the Quiz Master. The Chief Guest for the finals was **Mr. Babu Joseph**, Chief General Manager, BPCL, Kochi Refinery.



A **Technical Conclave on Air Separation** was conducted in association with Air Products on **16 January 2020**. **Dr. R. Venugopal**, Deputy Chief Controller of Explosives inaugurated the programme. Mr Richard Boocock, Senior Vice President, Chief Information Officer and Special Advisor of the Chairman, Air Products was the guest of honour. Mr. K.F. Sajo, Chairman, Kochi RC, IIChE presided over the inaugural function. While Mr Venugopal and Mr. Sajo addressed the participants comprising industry personnel and the student community, Mr Richard Boocock; Prasanth Kashyap, Air Products; and; Mr. Izzam Jaffar, Process Engineering Specialist (formerly) with SABIC, Saudi Arabia presided over the technical sessions. Mr Koya Venkata Reddy, Hony Secretary, Koch RC, IIChE also spoke at the concluding session.



The 11th UnniKrishnan Memorial Lecture was delivered by **Mr. P. Murali Madhavan**, Executive Director, BPCL-Kochi Refinery on **24 January 2020**. The topic was '**Future Energy**'. Mr. Madhavan, was also the Chief Guest on the occasion. Mr. T.P. Ajith Kumar, General Manager, FACT; Mr. Chandrasekharan N., General Manager, BPCL-Kochi Refinery; Mrs. Usha UnniKrishnan, Mr. K.F. Sajo, Chairman, Kochi RC; Mr. Koya Venkata Reddy, Hony. Secretary, Kochi RC; Mr. Chandra Mohan, Hony Joint Secretary, Kochi RC; and Mr. Immanuel Thampi as well as Mr. Manoj N., Asst. Professor, Trichur Engineering College, spoke on the occasion.

Mumbai Regional Centre

The **13th Outstanding Young Chemical Engineer's contest (OYCE 2020)** was organized by Mumbai RC and hosted by Institute of Chemical Technology on **15 February 2020**. As many as 35 teams of UG students and working professionals from various Institutes and corporate houses, such as, IIT Bombay, ICT Mumbai, RCFL, HWB-DAE, Thyssenkrupp, etc., took part.



In his address at the beginning, **Dr. U Kamachi Mudali**, Chairman, Mumbai RC and also the Chairman & Chief Executive, Heavy Water Board defined the role of chemical engineers and talked about the future prospects. Several industry bigwigs and reputed academics, such as, **Mr. Vinayak Marathe** (Sr. VP, R&D, Reliance Industries Limited), **Prof. A B Pandit** (Vice Chancellor, ICT Mumbai), **Mr. V.K. Joshi** (Thyssen Krupp), **Mr. A. K. Saxena** (Blast Carboblocks), **Mr. Thomas Mathews** (RIL Mumbai), **Mr. Umang Shah** (Clariant), **Mr. Thomas Mathew** (RIL), **Dr. Rahul Nabar** (Harmony Organics), **Mr. Rajesh Kumar Gera** (RIL), **Mr. JP Soni** (Thyssenkrupp), and **Mr. Praveen Kumar Saxena**, (Blast Carboblocks) also graced the event and spoke on the occasion.

In the Working Professional Category, **Mr. Vidyan** and **R. Kudtarkar** (RCF, Mumbai) and **Mr. Priyam Nayak** (FOSSEE, IIT Bombay) were jointly given the first prize. In the Undergraduate Category, the first prize jointly went to **Ashlesha Tiple** (ICT Mumbai) and **Arjav Shah** (IIT Bombay).

Prof. N R Kamath ChEQ 2020 was organised by Mumbai RC in association with D J Sangvi College of Engineering (DJSCE), Mumbai on 7 March 2020. Mr. Praveen Saxena, Vice President, IICChE and CEO, Blast Carbo Blocks Pvt. Ltd., was the Chief Guest on the occasion. Prof. Aparna Tamasker, Convenor, DJSCE; Prof. Alpana Mahapatra, HOD, Dept. of Chemical Engineering, DJSCE; Prof. Sanjay Mahajani, IIT, Bombay; and Prof. A. Daptardar, Vice Principal of the College, graced the occasion. Students from IIT Bombay emerged victorious followed by Institute of Chemical Technology and Bharti Vidyapeeth College of Engineering.





An **Industry Visit** to **BPCL, Mahul unit** was conducted on **7 February 2020**. MRC Members, Mr. RK Mehra, Dr. Anita Kumari, Dr. Aparna M. Tamaskar, Dr. Bibhash Chakravorty, Mr. Jayesh Master, Dr. MP Jain, and Mr. Jagdish Nageshri were in the visiting team.

Northern Regional Centre

A **visit** to the **Indian Oil Refinery and Petrochemical Complex, Panipat, Haryana** was arranged on **14 March, 2020**.

Trivandrum Regional Centre

A Talk was presented by **Dr. R Venugopal**, Deputy Chief Controller of Explosives, PESO, Kerala on **24 January 2020**. The topic was '**Controlled Explosive Demolition of High Rise Buildings**'.

A second programme of **Talk** was held on **28 February 2020**, where **Mr. V. Rajasekar**, Scientist, Vikram Sarabhai Space Centre, Thiruvananthapuram spoke on the '**Mysteries of the Cosmos**'.

On both occasions, the talks were followed by interactive sessions.

The **IChE-CGG Panicker Gold Medal** and **IChE-MR Kurup Gold Medal Award** presentation function was held on **25 January 2020**. These prestigious awards are given away for academic brilliance to the Toppers, selected from Student Chapters under the Trivandrum RC. The medals were awarded by Dr. R Venugopal, Dy. CCOE, PESO, Southern Region and the Past Chairman, IChE Kochi Chapter. He also delivered an enlightening lecture.



STUDENT CHAPTER ACTIVITIES

Anil Neerukonda Institute of Technology and Science, Visakhapatnam

CHEMFLARE – 2020, a National Students' Conference, was organised on **19, 20 February 2020**. Events included Paper and Poster presentations, Innovative Idea Competition, Technical treasure hunt, Model exhibition, Spot events, etc.

Gayatri Vidya Parishad College of Engineering, Visakhapatnam

PROCHEM – 2020, a **workshop** on Process Simulation, was organised on **27, 28 January 2020**. The objective of the workshop on Process Simulation (PRO/II and CFD Software COMSOL Multiphysics) was to provide a basic background and hands on experience on the software. This workshop was specially meant for the UG Students, who wish to pursue their projects and research on respective foundations. **Prof. V.S.R.K. Prasad**, Chairman, IChE Waltair Regional Centre and Director IIPE, was the Chief Guest, who delivered the keynote address



Gathering at the inauguration in the auditorium

Prof. V. Dharma Rao, Dept. of Mechanical Engineering; **Prof. B. Srinivas**, Dept. of Chemical Engineering; **Dr. B. Sreenivasulu**, Dept. of Chemical Engineering and **Dr. C.V. Nageswara Rao**, Dept. of Chemical Engineering were the resource persons who enlightened the participants on various aspects of Process Simulation.

A magazine, **Ozone**, was released on the occasion. Certificate of participation was given away to the students at the Valedictory function.

Rajiv Gandhi College of Engineering, Sriperumbudur

A National Conference on **Recent Trends in Petroleum Industry** was organised by the Students Chapter at the Department of Petroleum Engineering on **5, 6 March 2020**. Speakers included established authorities from different discipline. Various technical and non-technical technical and non-technical events were held under the umbrella of the conference.



RVR & JC College of Engineering, Guntur

The Student Chapter of the college in association with Amaravati Regional Centre of IIChE organized **Chemical Engineering Contest for Knockout 2020 (ChECK 2020)** on **26, 27 February 2020**. Events included Chem Quest (Treasure Hunt), Illustrata (Technical Paper Presentations), Chem Buzz (Technical Quiz), Group Discussion and Elocution. ChECK is being organised since 1999 at least once in two years to encourage interaction and enhance competency among the students of the Chemical Engineering fraternity.

University of Petroleum and Energy Studies, Dehradun

An international **Conference** on '**Advances in Chemical Engineering**' was organised during **5 - 7 February 2020**. The meet brought together renowned scientists, academics and industry representatives from a number of countries under one roof to interact and discuss recent advances in the domain of Chemical Engineering. The topic extensively, covered during the 3-day conference, included Alternative Energy Resources, Bio-molecular and Bio Chemical Engineering, Chemical Reaction and Reactor Engineering, Computational Fluid Dynamics, Environmental Science, Gas Engineering, etc.

Madan Mohan Malaviya University of Technology, Gorakhpur

On **24 February 2020**, a **Student Chapter** was inaugurated at the Department of Chemical Engineering of the University by **Prof. I.M. Mishra**, IIT-Dhandbad and **Dr. R. R. Sonde**, Vice President, Thermax Ltd. Prof. Mishra gave a brief introduction of IIChE and presented a vision for the newly established Student Chapter. He also presented a talk on '**Carbon Cycle Closer-Climate Change and Sustainability**'. Besides commending the initiative to open the Student Chapter at the University and stressing its relevance, Dr. R.R. Sonde presented a talk, '**More from less**'.



Dr. Sonde touched upon issues like development of new technologies and new age entrepreneurship. Dr. V. L. Gole, Head of the Department, chalked out plans of activities by the Student Chapter. A wall magazine was introduced as well.



The Student Chapter organised an **Industry Visit** to New India Sugar Mill, Hata Kushinagar, Uttar Pradesh was arranged on **26 February 2020**.

The team comprised 60 students, Dr. Vithhal L. Gole, HoD, and Dr. Ravi Shankar. The students received hands-on knowledge of sugar manufacturing process.



An **Industry Readiness Workshop** was organised in association with Yash Papers Mill, Faizabad on **5 March 2020** for final B. Tech. Chemical Engineering students. Two experts from Yash Papers Mill, namely, Ms. Zubay Ahmed, Learning and Development Head, Yash Papers Mill, Faizabad and Mr. Kajal, Head of Fibre, Yash Papers Mill, Faizabad, were the resource persons. The purpose of this workshop was to guide the Final Year students in placements and skills development.

Thangal Kunju Musaliar College of Engineering, Kollam

JAM (Just a Minute) was organised on **29 January 2020** with participation by 29 students. The topics were general and the programme was held in two stages, namely, Table Topics and Picture Jam.

Chemtalks (Webinar) was held on **11 February 2020**, in which the final year and pre-final year students of the Chemical Engineering department participated in the Webinar. The session was judged by experts from W L Gore & Associates, Honeywell Process Solutions and Honeywell UOP.

A **Lecture** on '**How to Become Successful in the Life**' was delivered on **11 February 2020** by **Mr. Wahid**, a Chemical Engineer and an eminent businessman.

Energy Quest-2020, a quiz competition, was conducted on **22 February 2020**. The theme was 'Save Environment by Judicious Use of Fuel'.



SRM Institute of Science Technology, Kancheepuram

A talk on ‘**The awareness of the National Innovation and Start-up Policy**’ was presented on **6 January 2020** by **Dr. Ashish Kapoor**, Associate Professor, SRM and a Council Member of the SRM Innovation and Incubation Centre.

Mr. Ashish Abhinit, an SRM alumni, is working for Dow Chemical Int. Pvt. Ltd, Chennai delivered a lecture, titled ‘**Applied Fundamentals in Chemical Engineering**’ on **31 January 2020**.

A talk was presented on **7 February 2020** by **Ms. Shivashree Mohandas**, Business Executive, Saint Gobain Ltd., Chennai.

A talk was presented by **Prof. Kingsly Ambrose**, Assistant Professor of Agricultural & Biological Engineering, Purdue University, USA, titled ‘**Agricultural Particulates**’ on **12 February 2020**.

A talk was presented by **Santiago Robin Joseph**, Toshniwal Hyvac Ltd., Chennai, titled ‘**Vacuum Technology and its Applications in Industry**’ on **13 February 2020**.

A lecture was delivered by **Prof. Radhakant Padhi**, Indian Institute of Science, Bengaluru, titled ‘**Artificial Pancreas for Indian Diabetic Patients**’ on **20 February 2020**.

A talk was presented on **24 February 2020** by **Mr. Ragav Siddharth Parthasarathy**, Dept. of Chemical and Biological Engineering, Tufts University, USA, and **Ms. Vibha Narayanan**, Dept. of Chemical and Biological Engineering, Rensselaer Polytechnic Institute, NY, USA, titled ‘**Planning for Graduate Studies Abroad Leading to a Career at the Interface of Life Science and Engineering**’.

A talk was presented on **4 March 2020** by **Prof. L. Iyappan**, Head of Civil Engineering, Chennai Institute of Technology, titled, ‘**GIS Application in Engineering Sciences**’.

A talk was presented on **5 March 2020** by **Dr. Muralidhara Anandamurthy**, Academic Ambassador, SAS India Ltd., Mumbai, titled ‘**Statistical Thinking for Industrial Problem Solving**’.

A **National Conference**, titled ‘**Innovative and Integrated Approaches towards Pollution Abatement (IIAPA 2020)**’ was organised on **12, 13 March 2020**.



MIT, Pune

An **Alumni Meet** was held on **15 February 2020**.

In this gathering, alumni of this Institute from different batches interacted with the present students. The topic of deliberation in general was the current job scenario in industries.

A **talk** was presented by **Mr. Shubham Chopade**, an alumnus of the Institute, on **25 February 2020**. The subject was '**Guidelines for Placement by Companies**'.



Heritage Institute of Technology, Kolkata

ICABET-2020, International Conference on Advances in Bio-process Engineering and Technology (ICABET-2020) during January 20-22, 2020, Organized by Department of Chemical Engineering and Department of Biotechnology, Heritage institute of Technology.

National Symposium on Renewable Energy for Sustainable Future: Materials & Technology Development on **27th February, 2020**. **Padma Shree Prof. G. D. Yadav** was the **Chief Guest in the inaugural Program**.

ChEMSPARK-2020, the 2nd annual Technical Event of the Student Chapter at the Department of Chemical Engineering, was organised on **27-28 February 2020**. Dignitaries present: Prof. V. V. Basava Rao, President IChE, Dr. S.P.Gon Chaudhuri, President, NBIRT, Dr. Nabarun Bhattacharya, Director, CDAC, Kolkata and Mr. Praveen Saxena, Vice President IChE, Prof. N. Balasubramanian, Council Member IChE, Dr. M. P. Jain, Council Member, IChE, Dr. T. L. Prasad, Council Member. Other major programmes comprised **Technical Talks** by industry experts, **Technical Model Presentation (Innovate)**, **IN-QUIZ-ITION**, **Workshop on CFD & HySIS**. More than 300 students participated from the different institute/university.

Panel Discussion (Theme: Renewable Energy- Progress in the Industry and Skill Development) on **28th February 2020**.

Mr. Subham Das, Co-Founder Amuktika Industries, delivered a presentation on **ChEMSTART-UP** on **28th February, 2020**.





Jawaharlal Nehru Engineering College, Aurangabad

A visit to an Effluent Treatment Plant in Aurangabad was organised on 12 March 2020 for the students.

The students were explained about plant operation, MPCB Norms, the required standard, sample analysis, etc.



Students and faculty members of the Department of Chemical Engineering participated in an **Interaction** on 25 February 2020 with **Dr. Vivek Rathod** (ICT, Mumbai), **Dr. Wasewar** (VNIT, Nagpur) and Industrialist **Mr. Vasant Hignikar** on 'Opportunities for chemical Engineers in Process industries'.

IIChE UPDATES

We present a brief account of major activities and important policy decisions concerning the IIChE Headquarters and the Regional Centres taken during the recent period.

◆ **Donation to PM Cares Fund (Covid-19):** The **IIChE Council Members** have made a collective contribution of Rs. 1,00,000/-, the **Northern Regional Centre** has donated Rs. 10,000,00/-, **Trivandrum Regional Centre** has donated Rs. 10,000/- and **Pilani Regional Centre** has donated Rs. 5,000/- to the Fund.

◆ **8 February 2020:** Prof. V.V. Basava Rao, President, IIChE; Prof. M.V. Rao, Vice-President, IIChE; and Prof. M.K. Jha, Hony. Treasurer, IIChE visited the Institute headquarters. They interacted with the HQ staff members and met a few Senior Members of the Institute, who were past Office Bearers, to discuss how to streamline functioning of the Institute and how to enhance its activities and impact.

◆ **29 February 2020:** The 2nd meeting of the IIChE Council was held in Kolkata. Major decisions taken at the meeting include:

- i. Henceforth, students, who intend to become Member of IIChE, would require to pay GST @ 18% on top of the Student Membership fee of Rs. 500 (Rs 500/- + 18% GST).



- ii. For other Categories of IIChE Membership, i.e., Life Associate and Life Membership, the GST amount of 18% would be considered to be included in the consolidated Membership fee till 31 December 2020. However, those transferring their membership from one category to another during the current year would require to pay the specified GST amount of 18% on and above their Membership Transfer fee amount. (Details in IIChE website).
- iii. Effective from the current year (2020), Organizers of SCHEMCON and CHEMCON would have to make a contribution of Rs 2,00,000/- and Rs 8,00,000/- , respectively, to the IIChE headquarters.
- iv. For generation of revenue, a part of the IIChE HQ building would be put on rent to established academic institution/s.

◆ **IIChE Website has been updated with important information:**

- i. Revised guidelines for organizing CHEMCON & SCHEMCON have been uploaded.
- ii. Websites of CHEMCON 2020 & SCHEMCON 2020 have been linked with the IIChE website.
- iii. Self-assessment tax liabilities of RCs for the FY 2018-19 have been uploaded.
- iv. A Face Book account has been opened for the Members.

◆ Amidst the unprecedented national and global crisis arising out of Covid-19 and the consequent lockdown, IIChE has been functioning spiritedly with the Council Members, several RC Office Bearers and many Student Chapter Coordinators as well as the Headquarter staff members, working from home. The following two major initiatives have been undertaken during this period:

- i. An online Essay competition was launched for the Student Members of IIChE on the topic '**Role of Chemical Engineers to combat COVID-19 Pandemic**'. More than 150 students have participated from various student chapters.
- ii. A **Summer Internship Program** has been initiated by Dr. Avijit Ghosh, Chief Training Coordinator, for the students of Chemical Engineering / Technology and Allied Engineering / Technology. Around 1500 pre-final years students have registered for the internship program for the seven different subjects from across the country including IITs/NITs/Central Universities.



NEW/UPGRADED MEMBERS OF IIChE

In this Section, we are publishing name of the Members, who have joined IIChE during 1 January - 17 April 2020 or whose Membership has been upgraded during this period.

Name & Membership Number	Name & Membership Number
Prof. S. V. Satyanarayana [LF-13584]	Kalpana Rewatkar Yeole [LM-69359]
T. K. Mukherjee [LM-20298]	Jagdish Nageshri [LM-69360]
Thomas Jitha P. [LM-18171]	Girish Dhanjibhai Vegad [LM-69361]
Rahul Kumar Srivastava [LM-23182]	Musunuru Srinagesh Babu [LM-69362]
Suantak Kamsonlian [LM-24833]	Divya Kosale [LAM-69363]
Jacob Jesmi M [LAM-55630]	Bhaskar Bhaduri [LAM-69364]
Smita Shivraj Dasari [LAM-63838]	Shahnawaz Alam [LAM-69365]
Basudev Bandyopadhyay [LM-69318]	Renjith P. A. [LAM-69564]
Sathyanarayana N. Gummadi [LM-69319]	Arun N. [LAM-69565]
Navneeta Lal [LM-69320]	T. Anil Kumar [LAM-69566]
Ritesh Patidar [LM-69321]	S. Shilpa [LAM-69567]
Larmorti Wright Khongwir [LM-69356]	K. Seshatri Iyagriv [LM-69568]
P T R Gupta [LM-69357]	Dinesh Chopra [LAM-69569]
Chandra Bhushan Triveni Prasad Pal [LAM-69358]	Dr. Monal Dutta [LM-69688]
	Dr. Prashant Kumar [LAM-69728 L]



Upcoming Events

ICBEM 2020: International Conference on Biochemical Engineering & Materials

Date: 16, 17 July 2020

Venue: Stockholm, Sweden

Organiser: World Academy of Science, Engineering and Technology

Website: <https://waset.org/biochemical-engineering-and-materials-conference>

ICCC 2020 International Conference on Chemistry and Catalysis 2020

Date: 10 – 12 August 2020

Venue: Prague, Czech Republic

Email: chemistrycongress@deligon.org

Website: <https://chemistry.deligoninternational.com/>

Renewable Energy and Resources

Date: 24, 25 August 2020

Venue: Vancouver, Canada

Email: renewableenergy@eventcontact.org

Website: <https://renewableenergy.enggconferences.com/>

ISCRE 26: International Symposium on Chemical Reaction Engineering

Date: 6 - 9 December 2020

Venue: New Delhi, India

Organiser: Chemical Engineering Dept., IIT Delhi

Website: <https://www.iscre26.co.in/contact.html>

- **SCHEMCON 2020** will be held on **11 and 12 September 2020** at **Perundurai**, to be organised by the IChE Students Chapter, Dept. of Chemical Engineering, **Kongu Engineering College**, Perundurai, Tamil Nadu. **Email:** schemcon2020@gmail.com
- **CHEMCON 2020** will be held during **27 – 30 December 2020** at **Bhubaneswar**, to be organised by **Bhubaneswar Regional Centre, IChE**. **Email:** chemcon2020@gmail.com



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We invite from our Members:

- i. Brief notes (approx. 100 words) about their outstanding achievements in recent period. (News about receipt of awards, fellowships, honour, major promotions, etc.), accompanied with a coloured PP photograph of the concerned Member, will be welcome.
- ii. Industry News (approx. 100 words).
- iii. Concept note on newer areas of R&D (approx. 500 words).

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