



10 THE TENTH ANNUAL INDIA CHEMICAL INDUSTRY OUTLOOK CONFERENCE

Innovation & Disruption: Chemical Industry in Transition | 13-14 February 2017 | Hotel The Lalit, Mumbai, India

The 10th Annual India Chemical Industry Outlook Conference, the signature event of Indian Chemical Council (ICC) was held on the 13th and 14th of February 2017 at Hotel The Lalit, Mumbai. The event was organized in collaboration with

the **North East Process Industry Cluster (NEPIC)**, United Kingdom and with the support of Department of Chemicals and Petrochemicals, Ministry of Chemicals and Fertilizers, Government of India. There were close to 300 participants who attended the two-day event with

the theme called as “**Innovation & Disruption – Chemical Industry in Transition**”.

NEPIC is a leading cluster of chemical industries in the UK, and their role is “Provide industry leadership to define and prioritize what is needed to sustain existing

MR. RAVI KAPOOR, PRESIDENT-ICC DELIVERING THE WELCOME ADDRESS. SEATED ARE: MR. H.S. KARANGLE, DIRECTOR GENERAL-ICC, MR. NOSHIR KAKA SR.PARTNER, MCKINSEY & COMPANY, MR. KEVIN FOGARTY, CEO – KRATON CORPORATION, USA AND MR. VIJAY SANKAR, VICE PRESIDENT, ICC.





innovation. In business, innovation often results when the company applies ideas in order to further satisfy the expectations of the customers.

In general, Disruption is defined as a disturbance or a set of problems that interrupt an event, activity, or process. But in business it is looked at in a different manner. Innovation and disruption are similar

in that they are both makers and builders. Disruption takes a sudden turn by literally uprooting and changing how we think, behave, do business, learn and go about our day-to-day. According to Harvard Business School professor and disruption guru Clayton Christensen, disruption displaces an existing market, industry, or technology and produces something new and more efficient and worthwhile. It is at once destructive and creative.

The problem with conflating a disruptive innovation with any breakthrough that changes an industry's competitive patterns is that different types of innovation require different strategic approaches. "Disruption" describes a process whereby a smaller company with fewer resources is able to successfully challenge established incumbent businesses. Entrants that prove disruptive begin by successfully targeting those overlooked segments, gaining a foothold by delivering more-suitable functionality frequently at a lower price. Incumbents, chasing higher profitability in more-demanding segments, tend



MR. RAVI KAPOOR PRESENTING A BOUQUET OF FLOWERS TO MR. KEVIN FOGARTY.

and attract new process industry".

McKinsey & Company, the management consulting firm which makes sure that the firm's primary objective to serve as an organisation's most trusted external advisor on critical issues over the past eight decades, was the knowledge partner of the program. These years of trustworthiness clearly shows what is the basic mantra of Sustainability.

Innovation is important in all walks of life. To achieve any kind of growth innovation is important. Innovation is a classical way of bringing a new creative idea into a business. The process of translating an idea or invention into a product or service that creates is called



MR. NOSHIR KAKA RECEIVING A BOUQUET OF FLOWERS FROM MR. VIJAY SANKAR.



A PART VIEW OF THE DELEGATES

not to respond vigorously. They then move upmarket, delivering the performance that incumbents' mainstream customers require, while preserving the advantages that drove their early success.

This conference focused mainly on how Innovation & Disruption would impact the growth of the Chemical Industry. Innovation as we know has many facets – this conference brought to the fore, all aspects of innovation and how it would help us create the best in class environment to take our industry to the next level. The conference covered experience brought in by the European nations. Collaboration would enable organisations to bring out the best. Open innovation centers often help in speeding up work.

The conference paved way to many new ideas and opened doors for new ventures. The global experiences were shared and views were clearly heard. The conference highlighted the opportunities and the threats. The lessons learnt were revelations and clearly showed what should be the focus for the future.

Digitization cloud computing advanced analytics and cyber security have become key elements of the growth engine of the chemical industry. The conference covered all topical subjects and aims to bring out the latest in the industry.

The program started with the Welcome address by **Mr. Ravi Kapoor**, President, ICC (Chairman & MD, Heubach India). He talked about the importance of the event and how it has grown by leaps and bounds over a period of time with the help of ICC's members and other partners. Mr. Kapoor thanked the knowledge partner **McKinsey & Company** and **NEPIC** (UK) for bringing a big team of delegation to the conference. He thanked all the other supporters and explained about the theme of the event. He talked about the Disruptive Innovation (DI) and the role played by DI in the growth of the Chemical Industry. He talked about the recently happened global events and the expected ones, which are going to happen all around the world in the near future. The US Presidential elections were held at end of the year 2016 and marked a turning point in the US politics which has a big impact in the rest of the world. The year 2017 is going to be even more eventful with the forthcoming elections in France, Netherlands, Germany, Iran and a few other countries.

The disruption continues in India as well. Demonetization which was implemented in India in 2016 has also made an impact in the country and its business partners all around the world. Its effect on the GDP is yet to be seen. In 2017, elections are going to be held in the states of Uttar

Pradesh and Punjab. The results are going to have a huge influence in the industry.

Mr. Kapoor added that the Indian Chemical Industry (ICI) which is the 3rd largest in the world, contributed to 9% of the total export of goods from India. The expected growth potential is tremendous and it will touch \$400 bn in 2025 as per the forecast. The growth is going to be in automobiles, mobiles, oil & refineries, textiles etc. There is going to be a huge investment in infrastructure, which includes highways and railways apart from other sectors. There are going to be 65 million new houses in 2025. The optimists think that "Thorns have roses" and the pessimists think that "Roses have thorns". Though the recent events have their own impact in the Global business, the optimists believe that there is light at the end of the tunnel. The disruptive innovation will lead the way with cautious optimism for a sustainable growth in the current Global Economic Scenario.

Mr. Noshir Kaka, Director (Senior Partner) at McKinsey & Company delivered the first Keynote address on the topic of "Digital Matters". He talked briefly about the proud association of ICC with McKinsey and informed that this year the 19th year of association of McKinsey with NASSCOM. He explained about the



be the global cumulative tech capital investment. Technology will be the leader in India. Digital innovators will disrupt the existing model. Companies like Amazon, Alibaba, eBay, Newegg.com etc. have grown multifold after they started as Digital attackers a few years before.

The Digitization creates value through the phases of “connect, automate, decide, and innovate”. This cycle is helped by data using advanced analytics. He said that potential of digitalization to transform industries is going to be

fertilizers, logistics etc. He concluded his address mentioning that Digital solutions will overcome the traditional barriers to create large-scale impact in India and already a large number of innovative start-ups have begun to create a digital ecosystem.

Mr. Kevin Fogarty, CEO, Kraton Corporation, USA, delivered the second Keynote address on “Global Trends in Chemical Industry: Instances of Innovation and Disruption”. He started with the Global scenario and the growth potential of chemical industry. He cautioned how the world business going to change in the near future based on the impact factors like Trumponomics - pace and magnitude of new Government policies in the USA, situation in China, uncertainties in Europe, emerging markets and potential unwind of globalization. He termed them all together as “world of unknowns”. Mr. Fogarty said that the volatile oil industry is still at a long way to the estimated \$75bn reinvestment level. He was optimistic that the Petrochemical Industry is expected to do well in 2017. While talking about the Global Economy he said that as per the current trend,



MR. NOSHIR KAKA DELIVERING THE KEYNOTE ADDRESS.

future role of Data Analytics is going to be useful and how it will affect the Capex, Top-line, Bottom-line and the Management. He said that in the future all aspects of the business like market research, procurement etc would be without human involvement. Mr. Kaka explained with an example of how the 4 factors viz., Cost, Speed, Power Consumption and Compactness lead to the improvements in the semi-conductor industry and lead to the creation of the platform for digital expansion. He added that by changing the way we work a sustainable platform could be created for technological innovation. While talking about the role of technology, Mr. Kaka said that in the future 40% tech spending will be on capital investment and \$6 trillion will



MR. KEVIN FOGARTY ADDRESSING THE GATHERING.

at an unprecedented scale and pace and gave emerging business models with examples in the sectors like

Asia would continue to grow and reach 53% of global GDP by 2050. India is poised to rise as the third

largest economy with an average growth of around 5% with the growth drivers in emerging markets focusing on innovation.

With the objective of having 100 smart cities and urbanization, the consumerism is going to boom with the expected growth in all the sectors. He added that sustainable solutions and endless innovation are the key for the successful growth along with recyclability and eco-friendly solutions. Asia will be the place for the manufacture of styrenic block co-polymers (SBCs),

high value performance products and speciality chemicals derived from non-hydrocarbon renewable raw materials. There is a broad array of polymer and chemical opportunities in fast growing applications like automobile parts, fuel and lubricant additives, tyres, adhesives, sealants, telecom, healthcare, road construction and oil field chemicals. Mr. Fogarty presented a few cases of market needs like eco-friendly materials, hypoallergenic alternative to natural rubber in surgical gloves, long lasting cost effective roads and

the solutions provided by Kraton for these market needs.

There were two books released during the inaugural session. The first one was titled as **"India's Chemical Industry: Creating value through Digitization and Innovation"**. This is a compilation of articles written by the experts from McKinsey & Company.

The second book released was a compilation of articles written by Mr. Mukul Mehta, written in ICC's monthly magazine CHEMICAL NEWS, in 24 parts, titled as **"Innovation R&D, A Primer"**.

The inaugural session was concluded by Mr. Vijay Sankar, Vice President, ICC (Deputy Chairman, The Sanmar Group) with a customary Vote of Thanks.

TECHNICAL SESSIONS:

The two-day mega event was comprised of nine technical sessions and two panel discussions. The technical sessions mainly focused on the theme of the conference viz., "Innovation and Disruption – Chemical Industry in Transition". The sessions were aptly titled to bring out the experiences from the expert speakers, which made the entire



MR. VIJAY SANKAR PROPOSING VOTE OF THANKS

MR. RAVI KAPOOR (CENTRE) CHAIRING THE 1ST SESSION OF THE EVENT. SEATED ARE (L TO R): MR. ULRICH WEIHE, MR. KRIS WADROP AND MR. AVINASH GOYAL.



event very lively. The sessions had topics such as:

DAY 1:

- **How to Approach Innovation in the Chemicals Industry? Learnings from the Globe**
- **Global Overview and Opportunities in Petrochemicals/Refinery Space**
- **Meeting the Demand Gap – Opportunities in the Indian Chemical Industry**
- **Disruptions in Supply Chain**

DAY 2:

- **Digital – Not just a Buzzword but a Revolution**
- **Business Building in the Current Scenario**
- **Innovations in End Consumer Industries**
- **Sustainable Change: Making Innovation a Way of Life**
- **Environment & Sustainability: Responsibilities of the Chemicals Industry**

The technical sessions on the Day-1 were chaired and conducted by Mr. Ravi Kapoor, President, ICC & Managing Director, HeubachColour Pvt. Ltd., Mr. Siddharth Mitra, Consultant, Reliance Industries Ltd., Mr. Rakesh Bhartia, Immediate Past President, ICC & CEO, India Glycols Ltd and Mr. Vijay Sankar, Vice President, ICC & Deputy Chairman, The Sanmar Group. At the end of every session, sufficient time was allocated for interaction with the participants.

SESSION-1: HOW TO APPROACH INNOVATION IN THE CHEMICALS INDUSTRY? LEARNINGS FROM THE GLOBE

DIGITAL IN CHEMICALS – FROM DATA TO IMPACT:

Mr. Ulrich Weihe, Partner, McKinsey & Company, explained why “Digital” is on top management agenda in the present world and showed how the availability of data influence the reduction of costs. From 2004 to 2015, the share of internet users



MR. ULRICH WEIHE MAKING THE PRESENTATION.

in the society has increased from 23% to 67%. The chemical industry is at the beginning of the digital journey and now has started to move rapidly into a shaping phase. How digitization will become disruptive in chemical industry depends on the four drivers, which determine the business opportunities and threats. They are advanced analytics, automation / robotics; end to end process digitization, connectivity, and sensing. The advanced analytics extracts the value of large and complex data sets through new analytical methods.

The automation increases speed, precision, safety and thus reduces the cost. End to end process digitization leads to de-bottlenecking of information flows removing man-machine interfaces. Interconnection of objects and personnel (connectivity and sensing) enable new channels, advanced analytics, automation, and end-to-end process optimization. He illustrated with a couple of examples of “how to think business backward” and explained about the importance of predictive maintenance over preventive maintenance. The typical examples of digital enabled functional excellence in Marketing and Sales are machine learning based granular growth and sales force optimization. The other areas influenced enormously by the digitization would be Manufacturing, Supply chain, Engineering and R&D and Procurement. The optimization of various stages of digitalization to achieve the goals of the organization determines the success of the

business. The most important take waypoints was “look at digitization from a business angle and not from an IT angle”. The capabilities are the key and they will be much more different from the chemical players of today.

STRATEGIES FOR OPEN FACILITIES FOR INNOVATION – AN EUROPEAN EXPERIENCE:

Mr. Kris Wadrop of Centre for Process Innovation (CPI), UK shared his experience and explained how CPI being a technology innovation centre helps the clients for next generation of products and processes. Their services range from Product and Process development to identification of key collaborators and commercialization. He talked about how CPI helps the investor by reducing the risk before huge investment, for process scale up and decreasing the time to market a



MR. KRIS WADROP PRESENTING HIS PAPER.

novel product or process.

Mr. Wadrop explained about the Technology Readiness Levels (TRL) through the evolution from the basic principles to the testing, demonstration and successful operations of the system.

INDIA'S CHEMICAL INDUSTRY: CREATING AND SUSTAINING VALUE:

Mr. Avinash Goyal, Partner, McKinsey & Company started with detailing the performance of the Global Chemical Industry in the past 15 years and talked about the



MR. AVINASH GOYAL ADDRESSING THE GATHERING

drivers behind positive development. He said that the sound industry fundamentals are one of the main reasons for the past growth. He touched upon the productivity gains, increasing pace of agro commodities and the past growth of Chinese chemical industry.

Mr. Goyal said that globally 20% of the companies capture 90% of the economic profit and it is no different in India. We have the same trend in India as well. Companies who are on top need not be there always. Emerging markets, value creation, innovation, and industry trends will determine the business driven in the future. He concluded his presentation with seven imperatives for successful innovation in the chemicals / materials space.

SESSION 2: GLOBAL OVERVIEW AND OPPORTUNITIES IN PETROCHEMICALS/REFINERY SPACE.

GLOBAL OUTLOOK FOR OLEFINS:

Mr. Tony Potter - Vice President - Asia Pacific, IHS Markit Chemical started a very interesting presentation regarding the slowing down of oil production by OPEC and showed some graphs about how the volatile oil prices are going to affect market scenario again. However, the optimistic message was that further price gains are going to be limited as US production growth is going to help keep balances from tightening appreciably in 2017-18. He explained profile of World Ethylene supply and demand based on the data available from 2016. The indicators are that Global Ethylene market is going to be affected with a US delay, though globally we will have a demand for ethylene.

Steam crackers shift to lighter feeds leaves propylene supply far behind ethylene. Hence, China's dependence on alternate technologies for propylene production has increased which has led to technological innovation.



MR. TONY POTTER DELIVERING HIS ADDRESS

In India, imports of vinyls continue to grow and new Polyethylene capacity only gives temporary relief to PP deficit, which is developing substantially. There is a very little capacity available for other C3 derivatives. The other impact factor is the Demonetization which will affect the PVC Demand and Imports. He concluded the presentation with the key issues involved in Ethylene and Propylene market.

GLOBAL OUTLOOK OF AROMATICS:

Mr. Ashish Pujari, Senior Director-Aromatics & Fibres, IHS Markit Chemical shared his experience in the Aromatics business. One of the key considerations is the feedstock, which is an important gasoline component. Strong growth in Gasoline demand and equally

MR. SIDDHARTH MITRA (2ND FROM LEFT) CHAIRING THE 2ND SESSION. SEATED (L TO R) ARE: MR. TONY POTTER, MR. ASHISH PUJARI AND MR. JOHN KING.





MR. ASHISH PUJARI PRESENTING THE PAPER.

strong margins resulted in a strain on Aromatics feed in 2015. Demand growth is directly linked to the GDP. Paraxylene (PX) continues to grow faster than GDP while Benzene chain is growing slower than GDP. Several mega projects have been announced to meet the growing demand of PX.

Mr. Pujari expects that Benzene overcapacity is a temporary problem and there will be potential up-cycle in a couple of years time. In India Gasoline, demand growth is at present very strong amongst major consumers leading to pressure on Aromatics feedstock. Starting up of new petrochemical cracker and growing gasoline demand will limit India's net naphtha exports. According to Mr. Pujari India has all the Benzene it needs, but lacks derivative capacity. There is no styrene capacity in India, hence we export Benzene and import Styrene, which is a derivative of Benzene. He concluded that there is

a huge opportunity to make Benzene derivatives in India. The demand growth will continue to remain strong across the chain. Increasing consumerism and disposable income will drive growth stronger.

MERGER AND ACQUISITION (M&A) – ASIAN INTEREST IN CHEMICAL ACQUISITIONS:

Mr. John King, Vice President Consulting, IHS Markit Chemical, started his lecture by presenting the fact that Specialty chemicals have clinched 6 of the top 10 M&A deals in 2016. Currently China dominates the growth in Specialty chemicals. However, Mr. King added that though Chinese Specialty Chemical business is large and fast growing, it lacks indigenous expertise. Their domestic specialty chemical producers are generally small, lack investment in R&D and the quality of their product is often low. Most high value and high quality products are made by foreign firms in China. BASF's Chinese sales reached over €6 billion in 2015, with 25 manufacturing bases.

He said that the Chinese chemical industry needs to shift to higher-end products to develop further, moving from high volume to high value products and the quickest way to do this is through acquisitions. Though



MR. JOHN KING MAKING THE PRESENTATION.

the European Chemical Industry is the 2nd largest in the world and the EU chemicals sales has increased by 80% in 20 years, but its global market share has decreased by half. Twenty-five percent of production is exported out of the EU market. Mr. King said that IHS Chemical Consulting has provided support to M&A Screening for potential European targets to the tune of €500m - €1 billion in speciality chemicals. Asian M&A overseas, particularly in Europe, is growing as Asian companies look to upgrade into medium-to-high-end chemical products.

SESSION 3: MEETING THE DEMAND GAP – OPPORTUNITIES IN THE INDIAN CHEMICAL INDUSTRY SPECIALTY CHEMICALS – CREATING STEP-OUT GROWTH

Mr. Vikas Kaushal, Managing Director & Country Head- A. T.

MR. RAKESH BHARTIA (SECOND FROM LEFT) CHAIRING THE 3RD SESSION. SEATED (L TO R) ARE: MR. VIKAS KAUSHAL, MR. RAJENDRA VELAGALA AND MR. RAJESH RAWAT.





MR. VIKAS KAUSHAL ADDRESSING THE GATHERING.

Kearney Ltd, UK, talked at length about the 5 factors essential to realize the Step-Out growth. They are:

- Ensuring availability of basic building blocks to specialty chemical players at globally competitive prices is key.
- Enhanced product development and R&D would be critical for success
- Indian specialty sector needs to consolidate to improve competitiveness with global peers
- Robust ecosystem for efficient production and high quality logistics network to reach end markets are critical
- Customer outreach needs to be a focus area to boost consumption in underpenetrated domestic end market.

Mr. Kaushal cited the example of South Korea, which successfully implemented the above factors to develop a robust chemical sector despite domestic feedstock shortage. Their R&D investment increased to 5% of GDP by 2012. The State sponsored reverse brain drain for R&D and partnerships with global leaders for advance technologies helped building a robust chemical sector in South Korea. The Make in India initiative of the Government will help develop in-house R&D and product development capabilities, which give the leverage for India's talent to make it a global R&D and manufacturing hub. This will shift portfolio focus to differentiated products and solutions.

ENSURING FOOD SECURITY FOR BILLION: ROLE OF INNOVATION IN AGRO INDUSTRY:

Mr. Rajendra Velagala, Director - Crop Protection Business, BASF India Limited spoke very nicely about the role of innovation in Agro industry ensuring food security for a billion plus population in India. He started with the enormous size and potential of the Indian Agriculture Sector. Mr. Rajendra said that the world population will be more than 9 billion in 2050 and in 2022 India will surpass China's population meaning in another 5 years India will overtake China. Feeding a billion plus will be a huge challenge.



MR. RAJENDRA VELAGALA MAKING THE PRESENTATION

India is the second largest producer of Rice and fifth largest producer of Soybean in the world. One of our huge challenges is smaller and shrinking land holdings, lower productivity, wastage of agricultural produce, monsoon volatility etc. The only way to meet these challenges is through innovation. Mr. Rajendra's answer to this is to innovate to grow more through information technology, innovate to reduce losses, innovate through chemistry and carrying out the production in a responsible manner.

PLANNING FOR GROWTH IN UNCERTAIN WORLD – A REFINING & PETROCHEM PERSPECTIVE ON MEETING GROWING DEMAND:

Mr. Rajesh Rawat, Vice President –



MR. RAJESH RAWAT PRESENTING THE PAPER

Petrochemical Cracker Business, Reliance Industries Ltd gave an insight about the growth in Petrochemical Industry by taking into account the factors like volatility and uncertainty. During the presentation, he also enlightened the audience regarding the ongoing projects of Reliance Industries. He gave an idea about the growing demand of Polyolefin and PVC and how Asia would drive the global path in the near future. He compared the graphs depicting the growth maturity from 1970 to 2015 in the global platform.

While talking about the Petrochemical Industry's growth, Mr. Rawat impressed upon the audience how the Government Initiatives in India like Swachh Bharat and Make in India have become the automatic Growth Drivers for the economy in India. While talking about changing dynamics in olefins, Mr. Rawat, said that increasing Propane and Ethane supplies from US provides opportunity for Feed flexibility for Gas Crackers for e.g. Declining North sea gas in Europe: Ineos, Borealis, SABIC-UK, etc. In addition, Iran's potential entry into gas markets would further add to the gas feed pool. He cautioned that Crackers need high operational agility in this volatile & uncertain environment. While talking about Reliance he touched upon the upcoming Ethane project and integrated Refinery off Gas Cracker (ROGC) project and their advantages.

Innovation & Disruption : Chemical Industry in Transition

13 - 14 February 2017 | MUMBAI | INDIA



MR. VIJAY SANKAR (SECOND FROM LEFT) CHAIRING THE 4TH SESSION OF DAY 1. SEATED (FROM L TO R) ARE: MS URSULA THAKKAR, MR. SUDIPTA SEN AND MR. P.V.S. MURTHY.

SESSION - 4: DISRUPTIONS IN SUPPLY CHAIN INTERNET OF THINGS (IOT) & DIGITALIZATION - CHANGING THE FACE OF SUPPLY CHAIN IN THE CHEMICALS INDUSTRY:

Ms Ursula Thakkar, Head-Global Supply Chain & Planning, INFINEUM Singapore Pte. Ltd. started her presentation nicely with Infineum Lubricant and Fuel Additives and then moved on to the nature of the digital world, how the Automatic Identification System (AIS) helps to track vessels, impact of Digitalization on supply chain and its tangible benefits.



MS URSULA THAKKAR ADDRESSING THE GATHERING.

After a detailed presentation on the various benefits of Digitalization in business growth, she concluded that Digital Transformation challenges legacy organizational cultures.

BIG DATA AND ADVANCED ANALYTICS (BDAA) IN CHEMICALS INDUSTRY:

Mr. Sudipta Sen, Analytics Partner, McKinsey & Company, started his presentation with the explanation of BDAA and how it is receiving attention across a wide range of industries. BDAA brings the islands of information together and advanced analytics provide high competitive advantage through intelligent analysis methods.



MR. SUDIPTA SEN ADDRESSING THE GATHERING.

BDAA in Chemicals can help address the key industry challenges and unlock large revenue and cost opportunities. He concluded his talk with the four guiding principles on how one can capture the Big Data opportunity in any growing business.

CYBER SECURITY FOR CHEMICAL INDUSTRY:

Mr. P. V. S. Murthy, Executive



MR. P.V.S. MURTHY MAKING THE PRESENTATION

Director, PricewaterhouseCoopers (PwC) talked extensively about the Cyber Security for Chemical Industry. The points covered were:

- Impact of chemical industry to the Indian economy
- Understanding Cyber Security & it's evolution
- Cyber Security Challenges
- Impact of Cyber Security Attacks
- The way ahead & what management should do
- Areas the chemical industry should focus on
- Efforts taken by various organizations

While explaining about what management should do to have a robust cyber security, he emphasized on the integrated approach and talked about management oversight for cyber security. He included a number of questions in the parameters like identification, investment, oversight, prioritization,

strategy and measurement. Management needs to have a smart, executable and proactive plan.

While talking about strategic cyber security program he emphasized on the following 5 steps:

- Ensure that cyber security strategy is aligned with business objectives and strategically funded.
- Identify the most valuable information assets, and prioritize protection of this high-value data.
- Understand the adversaries, including their motives, resources, and methods of attack to help reduce the time from detect to respond.
- Assess cyber security of third parties and supply chain partners, and ensure they adhere to the security policies and practices.
- Collaborate with others to increase awareness of cyber security threats and response tactics.

Mr. Murthy concluded that industrial associations have partnered with government entities in the US to exchange ideas and

strive to improve security posture. He said that similar models need to be introduced in India and appreciated that ICC is working in collaboration with American Chemistry Council, which will greatly facilitate the exchange of ideas.

The Day-1 concluded with an enlightening panel discussion on **Chemicals Transportation / Storage / Handling: Is the Sector ready for meeting the Challenges of the Digitized World?** The panel discussion was chaired and moderated by **Mr. Suresh Ramachandran**, Country Head & Managing Director, ARKEMA India. **Mr. Brian L. Banks**, Manager-Marketing, CHEMTREC, American Chemistry Council, **Mr. Pavithran M. Kallada**, Managing Director, BDP UGL Global Logistics (India) Pvt. Ltd. and **Ms Ursula Thakkar**, Head - Global Supply Chain & Planning, INFINEUM Singapore Pte. Ltd were the panelists.

The salient features and significant improvements in the transportation sector was discussed at length. The available solutions

for the existing logistics issues and the challenges posed by the Digitalization were discussed and views were exchanged. There were many questions from the participants and the panel concluded with some useful outcome and suggestions.

The Second day of the mega event started with the Keynote address by Mr. Samir Kumar Biswas, Joint Secretary, DCPC, Ministry of Chemicals & Fertilizers, Government of India. In his address Mr. Biswas complimented ICC for arranging this Conference, the focus being on "Innovation & Disruption - Chemical Industry in Transition". He said that it is very important and relevant topic for the industry for progressing further. He also said that excellent presentations have been arranged on digitization as well. This will be very useful to the delegates.

Mr. Biswas also said that chemical industry faces lot of challenges which needs to be overcome and complimented ICC for promoting RC initiative in India. He opined that growth process of the chemical industry needs to be



PANEL DISCUSSION IN PROGRESS. SEATED ARE: MR. BRIAN L. BANKS, MANAGER-MKTG-CHEMTREC, ACC; MR. SURESH RAMACHANDRAN (CHAIRMAN OF THE PANEL), COUNTRY HEAD & MG.DIRECTOR, ARKEMA INDIA; MR. PAVITHRAN M. KALLADA, MANAGING DIRECTOR, BDP UGL GLOBAL LOGISTICS (INDIA) PVT.LTD; AND MS URSULA THAKKAR, HEAD - GLOBAL SUPPLY CHAIN & PLANNING, INFINEUM SINGAPORE PTE.LTD.



MR. SAMIR KUMAR BISWAS, JT. SECRETARY – DPCF, MINISTRY OF CHEMICALS & FERTILIZERS, GOVT. OF INDIA BEING PRESENTED WITH A MEMENTO BY MR. STAN HIGGINS, CEO, NEPIC, UK.

supported with adequate safety performance.

The technical sessions on the Day-2 were chaired and conducted by **Dr. Stan Higgins**, CEO, NEPIC; **Mr. Janardhanan Ramanujalu**, Chairman, Sabic Innovative Plastics India Pvt. Ltd; **Dr. Arup Basu**, President & CTO-New Businesses and Innovation Centre, Tata

Chemicals Ltd; **Dr. Prakash Trivedi**, Hon. Editor, **Chemical News** – ICC and **Mr. Patrick Vandenhoeke**, Chairman – RCLG & Vice President, Solvay Corporate Government & Public Affairs. At the end of every session, sufficient time was allocated for interaction with the participants.

Before starting the 1st session, **Dr. Stan Higgins**, summarized

the gist of all the sessions held on Day-1 and presented in a very comprehensive manner.

SESSION-1: DIGITAL – NOT JUST A BUZZWORD BUT A REVOLUTION
CHEMICAL INDUSTRY 4.0 - DIGITAL TRANSFORMATION:

Mr. Charu Kapoor, Principal, Tata Strategic Management Group who started the 1st talk of the Session 1, said that Digitization is simultaneously the biggest opportunity and threat for businesses globally. While adoption of digital technologies have already been made in various manufacturing industries, limited efforts only have been made in the chemical industry so far. Industry 4.0 is the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of things and cloud computing. Industry 4.0, which combines digital and physically advanced technologies, can potentially transform the chemical industry. Use



MR. STAN HIGGINS CHAIRING THE 1ST SESSION OF DAY-2. SEATED ARE MR. CHARU KAPOOR AND MR. ASHOK KUMAR.



MR. CHARU KAPOOR ADDRESSING THE GATHERING.

of 'Digital' in the chemical industry creates opportunities for revenue enhancement and performance improvement. Customer engagement in the chemical industry can be completely transformed through digital initiatives.

Through Internet of Things (IoT), effective connectedness can be achieved in chemicals. Digital plants and 3D printing are important techniques that can aid productivity and effectiveness of plant operations. With the support and initiatives taken by key stakeholders, digitalization can pay rich dividends to the chemical industry in India. Mr. Charu Kapoor talked a bit about the initiatives taken by Tata Strategic which assists clients in addressing their strategic business priorities and provide with implementation support.

MCKINSEY DIGITAL SMART FACTORY – DELIVERING THE NEXT GENERATION OF MANUFACTURING:

Mr. Ashok Kumar, Expert, McKinsey & Company talked about Digital in manufacturing. Digital advances in manufacturing have placed the sector on the brink of the same kind of disruption seen in the past decade from the consumer internet. Technology already common to consumer applications is making its way into manufacturing as rapid access to information is redefining what is possible. Disruptive technologies will change the manufacturing sector between today



MR. ASHOK KUMAR MAKING THE PRESENTATION.

and 2025. New forms of human machine interaction will further optimize production processes. Additive manufacturing (3D printing) is already a reality in many industries.

Based on advances in technology, robots are gaining performance while getting cheaper. What value will digitization create in chemicals manufacturing? The answer is that it is expected to create Labour effectiveness, Process effectiveness, Asset utilization and improvement in Quality. Automation of manual processes using advanced robotics will result in improving cost efficiency and reliability. Mr. Ashok Kumar concluded with five effective approaches for progressing Industry 4.0 that are Focus, strong IT foundations, building a portfolio of 3rd party technology providers, building a strong internal team and experimenting with new business models.

RIDING THE WAVE OF DIGITAL DISRUPTION:

Ms. Ananya Tripathi, Senior Vice President, Myntra, was the only one who was from a fashion industry, which is totally different from Chemical Industry. Having said that the participants really learnt something new from her. The whole idea of listening to her was to get to know what is happening in an alternate business sector which does not deal with chemicals at



MS ANANYA TRIPATHI ADDRESSING THE DELEGATES.

all. However, Digital phenomena is common for all the businesses, though the implementation pattern will differ from one platform to the other.

Ms. Tripathi explained in her talk how Myntra revolutionized the traditional fashion shopping by disruption. The challenges in the fashion shopping were categorized into various themes viz. personalization, machine learning brought to fashion, emergence from online to offline model etc.

SESSION-2: BUSINESS BUILDING IN THE CURRENT SCENARIO GROWTH THROUGH INTERNATIONALIZATION – AN INDO-EUROPEAN CHEMICAL INDUSTRY PERSPECTIVE:

Dr. Joerg Strassburger, Founder & CEO, Go East Advisors GmbH said that Global growth of 10 listed European chemical companies did reach only 2,4% Compound Annual Growth Rate (CAGR) in an average from 2007 to 2015. He gave some statistics based on the available data. Globally the chemical industry is a fast growing industry and thus offers plenty of growth opportunities. Even if India was not able to increase the global market share, from a European perspective it is still fast growing. Listed Indian entities of European chemical companies showed an impressive average growth of 14.9% CAGR which is



INDIA CHEMICAL INDUSTRY OUTLOOK CONFERENCE

Innovation & Disruption : Chemical Industry in Transition

13 - 14 February 2017 | MUMBAI | INDIA



SESSION -2 IN PROGRESS. SEATED ARE: DR. JOERG STRASSBURGER, MR. JANARDHANAN RAMANUJALU, CHAIRMAN - SABIC INNOVATIVE PLASTICS INDIA LTD (WHO CHAIRED THE SESSION); MR. MANU MEHTA AND MR. ANSHUMAN MAHESHWARY.



DR. JOERG STRASSBURGER ADDRESSING THE GATHERING.

strongly above market.

The European chemical companies which have listed entities in India showed higher growth rates which reached 3,2% CAGR in an average and their Indian entities grow faster than chemical companies of Indian origin which are growing at an average of 11.6 % CAGR. So the scenario is quite optimistic for Indian Chemical Industry. Internationalisation of larger and midsize companies reduces dependency from home countries/ regions economic developments and helps to counterbalance economic fluctuations in single markets. Through expansion into emerging markets additional growth potential will open up and the utilization of assets in home countries can be increased.

How Indian Chemical Industry can grow and can also contribute to the growth of European Chemical

Companies?

- With a large and fast growing middle class an India subsidiary can become a strong contributor to the growth of a global company.
- Additional growth opportunities can come through setting up a regional hub for Africa, Middle East and South East Asia.
- Export sales into other emerging markets based on a cheaper Indian production set-up with adapted products will generate additional growth.
- Establishing a Global Sourcing hub for chemical & natural intermediates or technical goods will increase competitiveness and thus will open up additional growth potential globally.

Dr. Strassburger concluded that setting up an India R&D hub and using the specific expertise and approach of Indian engineers would result in more cost efficient production processes and simpler products better adapted to the usage in an emerging market environment.

INNOVATIONS AT INTERSECTIONS:

Dr. Arup Basu, President & CTO, New Businesses and Innovation Centre, Tata Chemicals Ltd gave a comprehensive talk on Innovations at intersections. He explained about the areas of work and areas of learning through a Playbook and Rulebook concept.

Dr. Basu said that there is a potential for Maximum Value



DR. ARUP BASU MAKING HIS PRESENTATION DURING THE SESSION-2 OF THE DAY.

Creation at intersections. One relation to this he talked about Regulatory and Materials chemistry with a string of examples from Tyre labeling to Material science and from Biotechnology to Nutrigenomics. He concluded that the intersections are waiting for maximum value creation and this needs to be achieved through innovation.

BUILDING BUSINESS IN SPECIALITY CHEMICALS:

Mr. Manu Mehta, President- Strategy & Growth Initiatives- Eternis Fine Chemicals Ltd, started in a very interesting manner by saying that "Specialty Chemicals is a jungle of choices" and cautioned that one has to be focused on what he wants to do and how to grow in that business.

Mr. Mehta talked about the growth challenges in Specialities and advised the investors to build



MR. MANU MEHTA DELIVERING HIS ADDRESS.

on a niche scale and then focus on a portfolio expansion. Profitability is driven by strong customer facing applications development capability. Choosing the right business model is very important. He talked about the five stages of growth and concluded that cashing out is not an emotional defeat and monetize at the right time is the key for success.

BUILDING BUSINESSES INORGANICALLY – PERSPECTIVES ON M&A IN THE CHEMICALS SPACE:

Mr. Anshuman Maheshwary, Partner and Lead – Chemicals Practice, A.T.Kearney, spoke about Mergers and Acquisitions in Chemicals.



MR. ANSHUMAN MAHESHWARY PRESENTING HIS PAPER.

He said that last two years saw announcement of five of the biggest chemicals deals in history which is likely to make 2017 a record year for Chemicals M&A as these deals reach the closure. Mr. Maheshwary gave many a statistics based on the current data. Median deal value increased for the seventh straight year to an all-time high. China took lead position from US in driving M&A, over 45% of all acquirers are now coming from Asia. Strategic investors continue to dominate M&A activity; overtook financial investors in \$1Bn+ deals for second straight year. Chemical Executives expect 2017 to

be another strong year for new M&A announcements.

While current macroeconomic conditions are not viewed favorably, M&A remains a strong option for growth with returns higher than organic growth opportunities. Low interest rates, moderate multiples in recent deals and stable financial condition of major companies point towards a favorable landscape for deals. Specialties / fine chemicals M&A – paints & coatings, fertilizers could be next after mega deals in agrochem, industrial gas. Mr. Maheshwary concluded that Digital acquisitions and new competencies (e.g. digital farming) will grow in importance as a driver for M & A starting with smaller deals in 2017. The key factors for successful value creation are strategy, discipline, a dedicated skilled group and effective integration.

SESSION 3: INNOVATIONS IN END CONSUMER INDUSTRIES AN END USER PERSPECTIVE: INNOVATIONS IN CONSUMER GOODS:

Mr. Harish Lade, Vice President,

DR. ARUP BASU (2ND FROM LEFT) CHAIRING THE 3RD SESSION OF DAY 2. OTHERS SEATED (L TO R) ARE: MR. HARISH LADE, DR. SURESH RAMACHANDRAN, DR. V. MOHAN RAO AND DR. SUDHIR NAMBIAR.





MR. HARISH LADE MAKING HIS PRESENTATION

Asian Paints Ltd, spoke about innovations in the paint industry. He talked about the growth strategy in Asian paints and the rapid transition from Paints & Coatings to Home Décor due to the increasing consumerism.

Mr.Lade talked about Customer journeys and Customer experiences. The future innovations in the production line will use IoTs and Statistical Process Control for real time abnormality detection.

INNOVATION AND NEEDS FROM CHEMICALS INDUSTRY: AGROCHEMICAL PERSPECTIVE

Dr. Suresh Ramachandran, Country



DR. SURESH RAMACHANDRAN ADDRESSING THE GATHERING

Manager, Dow AgroSciences India Pvt. Ltd. started his presentation with the global needs and the immediate challenges. He gave some statistics on the Indian Crop Protection Industry (CPI) and expected a great potential to grow in the coming years.

Dr. Ramachandran talked about the growth drivers and believed that innovation in CPI is going to increase the export potential. Safer food, safer environment and safer applicator are the gains of innovation. The innovation in CPI will lead to the production of new mode-of- action fungicides and insecticides.

TECHNOLOGY INNOVATION: PHARMA PERSPECTIVE

Dr. Sudhir Nambiar, President-R&T, Hikal Ltd. spoke about the projected growth of Indian Pharma sector which is expected to touch \$ 280 bn in 2020. The expected market size of Hospitals in India by 2024 will be \$ 200 bn. The top 10 therapy areas in 2020 have been identified and these products will drive the sales growth and market share.

There is definitely a need for innovation. Approvals of new molecules have plummeted in the year 2016. Hence, Structured Innovation will be the key in



DR.SUDHIR NAMBIAR PRESENTING HIS PAPER.

ANOTHER VIEW OF THE GATHERING.



near future. Dr. Nambiar also enlightened the participants with the developments in the R&T space like Immune engineering, Precision medicine, Gene editing, 3D printing, Catalysis, Biologics and Nanotechnology in delivery of anti-cancer drugs to reduce toxicity.

INNOVATIONS IN THE WORLD OF COLORS & MEETING THE SUPPLY GAPS IN RAW MATERIAL SOURCING:

Dr. Mohan Rao, Vice President (R&D), Pidilite Industries Ltd, started systematically with the basics of



DR. MOHAN RAO MAKING THE PRESENTATION

paints, additives, pigments etc. He then narrated about the varieties of monomers and polymers used in paints along with various solvents. He also described about the various types of surfactants used in the paints.

He gave a clear picture about the innovation drivers in architectural coatings. Dr. Rao concluded with the export opportunities available for the renewable resource based materials.

SESSION - 4: SUSTAINABLE CHANGE: MAKING INNOVATION A WAY OF LIFE NO ORDINARY DISRUPTION: HR AS THE HERO OF THE STORY:

Mr. Faridun Dotiwala, Partner, McKinsey & Company, started with the Disruptive forces and the demands on the Organizations and then brought in the main topic



MR. FARIDUN DOTIWALA PRESENTING HIS PAPER.

HR as the hero of the story of the future. The four disruptive forces namely industrialization in emerging economies, disruptive technologies, an aging world and greater global interconnections will be responsible

for the changing world.

Mr. Dotiwala identified 5 thrust areas for HR to emerge as the hero and illustrated with innumerable examples from various fields.

SKILL DEVELOPMENT INITIATIVES AND THE NEEDS OF THE INDUSTRY:

Dr. Deepak Parikh, Managing Director, Clariant Chemicals (India) Ltd., who has been in the industry for a long time gave an authentic talk on skill development without any presentation slides. He classified the skills as hard skills and soft skills and explained about the skill



DR. DEEPAK PARIKH ADDRESSING THE DELEGATES.

requirement in R&D and application development.

He explained about the need for low cost manufacturing by improving the operational efficiency. Dr. Parikh said that people make the

SESSION 4 IN PROGRESS. SEATED ARE: MR. FARIDUN DOTIWALA, DR. DEEPAK PARIKH, DR. PRAKASH TRIVEDI, HON. EDITOR -CHEMICAL NEWS (CHAIRMAN OF THE SESSION), MR. JOHN BRADY AND MR. ANANDORUP GHOSE.



difference and human approach to the skills is very significant in a work environment. More than investing in Human resources, training them is important. Empower them and develop the skills. He concluded with the statement from Mahatma Gandhi - "Be the change you want to see in the world".

CLUSTER IMPACT ON INNOVATION:

Mr. John Brady, Project Director, NEPIC, gave a talk on Cluster Impact on Innovation. He talked about the success story of NEPIC and the need for collaboration, formation



MR. JOHN BRADY PRESENTING THE PAPER.

of Regional Cluster Organisations, Cluster Potential and Industry Ambition, Developing Strategies for Growth and achieve the Capability by initiating future investments.

The role of NEPIC in cluster

development through innovation was explained and the establishment of various Centres of Excellence. The cluster's Internationalization strategy led to European wide collaborative projects. Mr. Brady concluded with the methodology for Tees Valley Process Industry (TVPI) high-level analysis to identify opportunities for improved efficiency and growth.

DRIVING INNOVATION THROUGH REWARDS:

Mr. Anandorup Ghose, Partner, Talent and Rewards, Aon Hewitt talked about this important HR topic.



MR. ANANDORUP GHOSE MAKING HIS PRESENTATION.

For anyone, to have a continued interest in whatever work they do need recognition of his work. Then comes appreciation and award. Mr. Ghose talked at length about the importance of rewards. **"Innovation**

today isn't a sudden break with the past, a brilliant insight that one lone outsider pushes through to save the company".

The linkage between rewards and innovation is, at best weak, and in all possibility non-existent. The drive to innovate, and therefore, the motivating triggers are essentially intrinsic in nature. Innovation is a team sport and policies to drive innovation need to account for that. Collaborative work practices across the company and organizational lines – Individuals with diverse backgrounds team up for best results on innovation. The concluding remark of Mr. Ghose was "Individuals contribute to innovations and only teams can make them meaningful".

SESSION-5: ENVIRONMENT & SUSTAINABILITY: RESPONSIBILITIES OF THE CHEMICALS INDUSTRY ENVIRONMENT & SUSTAINABILITY THROUGH SOLID LIQUID SEPARATION TECHNOLOGY FOR CHEMICAL INDUSTRIES:

Mr. Kishor Makvana, Managing Director, Rotofilt Engineers Ltd talked about solid Liquid separation technology and explained how Rotofilt helps the environment through their services of separation of solid and liquid phase.

The energy efficient maintenance free equipment and reduction of

SESSION 5. SEATED ARE: MR. KISHOR MAKVANA, DR. SANDRA ROUNTREE, MR. PATRICK VANDENHOEKE (CENTRE), CHAIRMAN-RCLG (ICCA) & VICE PRESIDENT-CORPORATE GOVT. & PUBLIC AFFAIRS, SOLVAY BELGIUM (WHO CHAIRED THE SESSION); DR. REBECCA DOCHERTY AND MS SAMANTHA FRASER.

INDIA CHEMICAL INDUSTRY OUTLOOK CONFERENCE

Innovation & Disruption : Chemical Industry in Transition

13 - 14 February 2017 | MUMBAI | INDIA





MR. KISHOR MAKVANA ADDRESSING THE GATHERING.

wash liquid are the specialties of Rotofilt. Efficiency of production process is determined by how it performs in terms of Cost, Quality, Productivity, Safety, Health and Environment. The results of filtration steps within that process have an impact on this efficiency.

WATER TREATMENT TECHNOLOGIES AND TREATMENTS FOR THE CHEMICAL INDUSTRY:

Dr. Sandra Rountree, Biochemica, UK, gave a presentation on Water Treatment Technologies. Biochemica is one of UK's leading independently owned water and wastewater treatment specialists.

It provides a comprehensive



DR. SANDRA ROUNTREE MAKING THE PRESENTATION

package of bespoke water management solutions and chemical products. Biochemica takes care of Legionell management service, cooling tower control, online monitoring and boiler control. All these services have led to an appreciable amount of cost cutting in the respective processes and the efficiency has tremendously improved.

MATERIALS INNOVATION FACTORY:

Dr. Rebecca Docherty, Materials Innovation Factory, University of Liverpool, UK, gave a presentation on **Delivering Innovative Products in Globally Competitive Markets using Efficient Sustainable Cost Effective Processes**. To survive in



DR. REBECCA DOCHERTY PRESENTING THE PAPER.

today's increasingly competitive global marketplace, industry is under increasing pressure to develop innovative products in a more efficient and sustainable way, whilst keeping costs down. The creation of new functional materials at a molecular level is fundamental to developing innovative step-change products.

The Materials Innovation Factory has been set up with the collaboration of Unilever at a cost of £65 million, in the University of Liverpool campus. The industries can use this facility for developing innovative processes and products. The concept of Research Hotel with a dedicated team of experts and

SOME OF THE FOREIGN DELEGATES AT THE CONFERENCE





PANEL DISCUSSION IN PROGRESS ON THE DAY-2. PANELISTS ARE: MR. R. PARTHASARATHY, VICE CHAIRMAN & MG.DIRECTOR, THIRUMALAI CHEMICALS LTD; MR. ASHWIN SHROFF (CHAIRMAN OF THE SESSION), CHAIRMAN & MG.DIRECTOR, EXCEL INDUSTRIES LTD; DR. MILIND GOKHALE, GHARDA FOUNDATION; MR. VIKAS VAZE, CEO - SHROFFS FOUNDATION TRUST AND PROF. & CHAIRPERSON - CENTRE FOR EDUCATION IN SOCIAL SECTOR (CEDSS) - SP JAIN INSTITUTE OF MANAGEMENT RESEARCH.

computer aided material design are the highlights of this facility, said Dr. Dochertys.

GOLDEN SAFETY RULES (GSRs): ARE THEY KEEPING US SAFE?

Ms. Samantha Fraser, Partner, ERM Australia Pty Ltd. gave the last talk of the conference and it was a very interesting one as well. She has carried out a survey among employees of 15 companies and analysed how the Golden safety Rules and other cardinal rules work. The analysis was done by taking into many other factors.

The conclusion was that people would like to have a compliance culture rather than a punitive culture in an organisation. The rapidly developing field of good practice in **Critical Control Management** is displacing the need to communicate behavioural rules in isolation from other controls. People move away from GSRs because they are too focused on



MS SAMANTHA FRASER PRESENTING HER PAPER

the individual. We need to define and verify the engineering, design and competency controls as well. It is more rigorous. However, they prevent fatalities. Hence, GSRs cannot be ignored or compromised but alternative approaches can be considered.

The **Panel Discussion** on the Day 2 was chaired and moderated by **Mr. Ashwin C. Shroff**, CMD, Excel

Industries Ltd. The topic was **“How to spend strategically: What has changed post the mandate for 2% CSR?”**. **Mr. R. Parthasarathy**, VC & MD, Thirumalai Chemicals Ltd; **Dr. Milind Gokhale**, Gharda Chemicals Ltd.; **Mr. VikasVaze**, CEO, Shroff Foundation Trust and **Dr. Rukaiya Joshi**, Professor, SP Jain Institute were the panelists.

How CSR is being looked at by Academia, a Non Profit Organization and by the Industry was very interesting. There was a healthy discussion on the role played by the industries and how efficiently they can improve their operations in an environmentally friendly way, which automatically will result in an improved CSR. The participants interacted with the panelists at the end of the panel discussion.

Mr. H. S. Karangle, Director General, ICC made the concluding remarks and proposed a customary vote of thanks. ■