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Freight Rates for the Direct Road Movement of Fertilizers Lowered

New Delhi, India: To ensure timely and adequate availability of fertilizers to farmers at affordable prices, Department of Fertilizers has approved the freight rates for the direct road movement of fertilizers upto 500 km from plant/port to block level, as recommended by the Tariff Commission. A decision has been taken to reimburse the freight cost in respect of secondary movement of fertilizers from rake point to district/ block headquarter on monthly basis at the lower of the normative Per Tonne Per Kilometer (PTPK) rate or actual expenditure incurred by the company. The decision will come into effect from today.

The decision will ensure availability of urea in remote areas, while keeping the cost under control. It will be one of the major tool to maintain the demand and supply uniformly all over the country up to the block level and will benefit farmers during the peak demand season. Fertilizer companies will not be allowed to do circuitous routing of fertilizers which will save subsidy and promote efficient transportation of fertilizers. The district wise normative road freight rates have been computed in scientific manner in line with the policy.

Shri Dharmendra Pradhan to Represent India at the St Petersburg International Economic Forum

New Delhi, India: The Minister of State (I/C) for Petroleum and Natural Gas Shri Dharmendra Pradhan will be visiting St Petersburg, Russia from 16-17 June 2016 to represent India at the St Petersburg International Economic Forum (SPIEF). SPIEF is an annual international conference dedicated to economic and business issues. It attracts over thousands of participants, including political and business leaders, leading scientists, public figures, and members of the media from all over the world. The Forum mainly discusses the most pressing issues facing Russia and the world.

During his visit to St Petersburg, Shri Pradhan will be meeting his Russian counterpart Mr Alexander Novak and CEOs of Rosneft, Gazprom, Gazpromneft, Lukoil and Novatek. He will also participate in a panel discussion on the subject 'New Global Petroleum Market Realities'. The visit will provide an opportunity to discuss bilateral relations particularly in the field of hydrocarbon sector between India and Russia.

Both countries enjoy a Special Privileged Strategic Partnership and cooperation in the field of hydrocarbon sector which is one of the key areas of this time tested partnership. During the visit of Hon'ble Prime Minister to Moscow in December 2015, both countries had agreed to further enhance cooperation in the oil and gas sector. As a result of this, ONGC Videsh Ltd (OVL) and Rosneft completed all formalities for acquisition of 15% stake by OVL in Vankorneft, which is a subsidiary of Rosneft. The deal is another effort in augmenting oil security for the country.

KSB Pumps Appoints Rajeev Jain as New Managing Director

Mumbai, India: Effective 1st July, 2016, Mr. Rajeev Jain takes over as Managing Director at KSB Pumps Limited – the Indian arm of the German Multinational giant – KSB Ag.; Germany. Mr. Jain will also assume the portfolios and responsibilities as the Chairman of MIL Controls Ltd. (an 100% KSB Ag.; owned Control Valve manufacturing company in Aluva near Kochi) and will spearhead the Global Design Center – KSB Tech as its Managing Director, located in Pune along with heading KSB groups' Asia West operations as the Regional Executive Officer.

Prior to assuming this very important role, Mr. Jain was the Managing Director at KSB in Indonesia for over a decade and successfully steered the company to a leadership position in that region. During this tenure in Indonesia, he also was the Managing Director of KSB Singapore and the Regional Executive Officer for South East Asia.

In another development, KSB in India launched new monobloc pumps – Etabloc. Pump and motor connected in one compact unit results in an extremely compact and space-saving design. And all this without sacrificing excellent energy efficiency for which KSB pumps are known for.

Digital Transformation Leads Agenda at Honeywell Process Solutions' Annual Users Conference

Texas, USA: Helping industrial companies harness the Industrial Internet of Things (IIoT) to transform their entire enterprise will be the lead topic for Honeywell Process Solutions' (HPS) 41st annual Honeywell Users Group (HUG) for the Americas.

"Honeywell's invention of the distributed control system (DCS) more than 40 years ago allowed manufacturers to use data to operate their plants more safely and productively," said Vimal Kapur, president of HPS. "The Industrial Internet of Things will allow manufacturers to more efficiently gather and analyze a broader range of data across multiple operations and plants to use data to transform entire enterprises."

Hundreds of Honeywell technology users from across the oil and gas, chemical, pulp and paper and metals and mining sectors are expected at HUG, which began today and runs through Friday. The event will feature technology displays along with dozens of Honeywell- and customer-led sessions and technical discussions.

Showing how IIoT is working in real-world scenarios is especially critical this year. A recent survey of North American manufacturing executives suggests that while investments in data analytics are rising, companies are still grappling to better understand its benefits.

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Topcon and Bentley Systems Announce Integration between MAGNET 4.0 and ProjectWise

California, USA: Topcon Positioning Group and Bentley Systems announce a new level of direct communication between Bentley's design applications and Topcon mobile work force products with the upcoming MAGNET 4.0 release.

With the direct communication from MAGNET Enterprise to Bentley's ProjectWise, users of Topcon's industry-leading family of MAGNET and 3D-MC software solutions can now, while working in the field, access or receive i-models created by Bentley's OpenRoads design modeling technology. Furthermore, the survey data and as-built conditions captured by Topcon's field devices can be brought back into Bentley's design applications using the same MAGNET to ProjectWise direct connection.

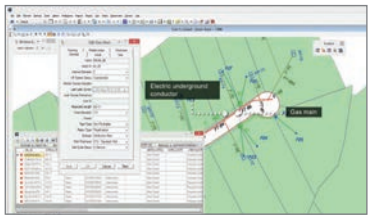
Both countries enjoy a Special Privileged Strategic Partnership and cooperation in the field of hydrocarbon sector which is one of the key areas of this time tested partnership. During the visit of Hon'ble Prime Minister to Moscow in December 2015, both countries had agreed to further enhance cooperation in the oil and gas sector. As a result of this, ONGC Videsh Ltd (OVL) and Rosneft completed all formalities for acquisition of 15 per cent stake by OVL in Vankorneft, which is a subsidiary of Rosneft. The deal is another effort in augmenting oil security for the country.

Neptune to Debut New Metering and Peristaltic Pumps at ACE16

North Wales, UK: Neptune, part of PSG, a Dover company and a leading brand of chemical metering and peristaltic pumps, portable mixers, chemical feed systems and other related equipment, will be exhibiting in Booth 2328 at the ACE16 Annual Conference & Expo hosted by the America Water Works Association (AWWA) from June 20-22, 2016, in Chicago, IL.

Macintosh HD:Users:darrenwight:Desktop:Screen Shot 2016-06-10 at 12.52.53 PM.pngAt this year's ACE16 expo, Neptune will be showcasing its new Series MP7100 mechanically actuated diaphragm metering pump. The Series MP7100 is engineered from the ground up to be more robust and durable than similar mechanical diaphragm pump designs. The MP7100 pump incorporates the ruggedness of a hydraulic diaphragm metering pump, eliminates the need for intermediate fluid or hydraulic oil to actuate the diaphragm and reduces the potential for gearbox oil to contaminate the process. The result is a pump design that provides reliable and accurate dosing of a wide range of mild to aggressive chemicals, including those used in municipal water and wastewater treatment. The gears of the Series MP7100 pump operate in an oil bath for longer life while its finned gearbox design dissipates heat more efficiently than other designs. This pump has a maximum capacity range up to 275 gph (1,041 L/h) pressures to 235 psi (16 bar), and a suction-lift exceeding 20 ft. (6m) on water-like chemicals.

Bentley Open Utilities for Streamlined Design and Management of Utility Networks



With Bentley OpenUtilities, users can design networks, estimate costs, manage work orders, maintain network models, and manage their network with reports and analysis.

Mumabi, India: Bentley Systems is pleased to announce the release of Bentley OpenUtilities, a new family of applications that enable utilities to design, map, and manage their networks with greater precision and efficiency. Bentley OpenUtilities supersedes Bentley Utilities Designer and Bentley sisNET to establish a common set of applications that enable utilities to increase productivity, accelerate projects, and reduce software costs.

The initial release of Bentley OpenUtilities provides water, gas, and district energy utilities with outage planning tools to better plan maintenance and respond to unplanned outages. Electric utilities will benefit from an Electric Optimization tool that accelerates design by determining the proper sizes for primary conductors, distribution line fuses, distribution transformers, and secondary conductors

TATA Chemicals' Consolidated Profit from Operations for Q4 FY 15-16 Up by 26 per cent

Mumbai, India: Tata Chemicals Group declared its Consolidated Financial Results for the full year (FY15-16) and fourth quarter ended March 31, 2016. The Company reported income from operations for the FY15-16 on consolidated basis at ₹ 17,708 Cr, up 3 per cent Y-o-Y and ₹ 10,650 Cr up 6 per cent on a standalone basis. For the quarter ended 31st March, the Company reported income from operations at ₹ 4,007 Cr and EBITDA of ₹ 520 Cr up 26 per cent, Standalone income from operations reported at ₹ 2,268 Cr up 7 per cent with EBITDA at ₹ 186 Cr, up 14 per cent.

Turkish Chemical Engineering Students Win 2016 Honeywell UniSim Design Challenge

Texas, USA: Two Turkish chemical engineering students who used Honeywell's simulation software to show how biodiesel byproduct can be utilized in an energy-efficient, integrated process to produce bio-gasoline, have been named the winners of Honeywell Process Solution's (HPS) annual UniSim Design Challenge. The students were recognized during the company's annual customer symposium for the Americas held this week in San Antonio, Texas.

Ozgun Deliismail and Okan Akin from the Izmir Institute of Technology, under the supervision of Associate Professor Dr. Erol Seker, designed a unique solution to produce bio-gasoline using glycerol, a byproduct of biodiesel. With UniSim Design R440, Akin, Deliismail and Dr. Seker created a preliminary conceptual design and simulation of the production of synthesized bio-gasoline, which can be used for transportation without any additives used to boost the fuel performance.

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LANXESS Expands Industrial Lubricant Additives Business

Mumbai, India: Specialty chemicals company LANXESS has expanded its capacities for light-colored sulfur carriers at its sites in Mannheim, Germany, and Kallo, near Antwerp, Belgium. For the Rhein Chemie Additives (ADD) business unit, this step strengthens its already strong position in the market segment for highly specialized industrial lubricant additives. Light-colored sulfur carriers are used as additives in formulating high-performance metalworking fluids and gear oils that ensure good lubrication between metal surfaces at very high pressures.

LANXESS has over 50 years of experience in manufacturing sulfur carriers, and this capacity expansion was its response to the steadily growing demand for these products worldwide. Modernized continuously, LANXESS's plants have proven their high level of safety for decades. This track record is of critical importance for these products, the synthesis of which is very demanding in terms of safety.

"This is also the reason we see no major difficulties coming our way from the upcoming tightening of the German Federal Immission Control Act, the keyword being the Seveso-'Directive, No. 2012/18/EU. And for our customers, this translates into even higher supply reliability," said Martin Säwe, head of the Lubricant Additives business line within LANXESS's ADD business unit.

Centre to Set up Chemical Hubs to Boost Industry

Ananth Kumar, Union Minister - Chemicals and Petrochemicals

Mumbai, India: The Centre has announced creation of chemical hubs across the country, early environment clearances in existing clusters, adequate infrastructure, and establishment of a Central Institute of Chemical Engineering and Technology.

In an interactive session after the launch of India Chem 2016, Union Minister of Chemicals and Petrochemicals Ananth Kumar admitted the industry faced challenges over environment clearances for greenfield and brownfield projects.

But he said there would be no compromise over the environment and the industry would have to put in place effluent treatment plants.

"Two days ago, I had discussed the issue with Union Environment Minister Prakash Jawadekar and it was decided that environment clearances would be issued for brownfield expansion in clusters in Maharashtra, Gujarat, Karnataka, Tamil Nadu, Odisha and Andhra Pradesh. If the industry tells us it will adhere to all environment parameters and go in for effluent treatment, we will facilitate brownfield expansion clearances," Kumar said.

Reliance Sells Its Interest in Gulf Africa Petroleum Corporation to Total

Mumbai, India: Reliance Exploration & Production DMCC (REPDMCC), an indirect wholly owned subsidiary of Reliance Industries Limited and Total, have executed agreements on May 30th, 2016 for the sale of the entire 76 per cent interest held by REPDMCC in the Mauritius-incorporated Gulf Africa Petroleum Corporation. The proposed transaction is subject to regulatory approvals and otherclosing conditions that are customary for similar transactions.

GAPCO is a holding company with operating subsidiaries in Tanzania, Kenya and Uganda which are primarily engaged in petroleum product import, and trading, storage, distribution, marketing, supply and transportation of oil products in East Africa. Since the acquisition of 76 per cent equity interest in GAPCO by REPDMCC in 2007, GAPCO has significantly grown and is one of leading petroleum marketing company in East Africa, which now operates 108 retail outlets and owns 260 TKL of storage capacity.

REPDMCC's agreement to sell its interest in GAPCO is part of a joint transaction,wherein both REPDMCC and the Minority Shareholder have agreed to sell their entirerespective holdings in GAPCO for cash.

The net proceeds for the sale will be finalized on completion of the transaction whichis expected to be within the coming months.

BASF Opens Sixth Construction Chemicals Plant in India

Kolkata, India: BASF inaugurated a concrete admixtures production plant in West Bengal, its sixth construction chemicals plant in India. With the new plant, BASF hopes to meet increasing demand for high quality construction chemicals projects in the eastern part of the country.

"Asia Pacific is one of the fastest growing markets globally and India is a strategic growth engine of this market. The Kharagpur plant will help us better serve the growing demand for durable and energy efficient construction materials, which will make 'Smart City' a reality in India," Christian Mombaur, Senior Vice President, Construction Chemicals Asia Pacific, BASF said.

At the new unit, BASF will produce standard and custom-made performance-based construction chemicals under the Master Builders Solutions brand. These include concrete admixtures product ranges such as Master Glenium, Master Polyheed, Master Pel and Master Rheobuild, as well as chemical solutions for underground construction under the Master Roc product brand.

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After Potassium Bromate, FSSAI Seeks to Ban Potassium iodade from Bread

New Delhi, India: The Centre for Science and Environment(CSE) has lauded FSSAI for removing potassium bromate from the list of permitted chemical food additives. However, they have now sought a ban on potassium iodate, another carcinogen that is used as a flour treatment agent in bread.

"We welcome FSSAI's move to ban potassium bromate. Now that the industry has decided not to use both these chemicals in public interest, we urge FSSAI to also ban use of potassium iodate in bread-making," said a senior CSE official.

Both these chemicals are a common agent in Bread making. Owing to their harmful effects, they are banned in most parts of the world but were still being used in India. FSSAI, after the CSE study came up, had recommended a ban on the chemical with immediate effect. Following this, bread makers had reported a 10 percent decline in sales and consumption; some sluggishness was reported in the stock market as well.

However, after the trade unions and associations from all parts of the country came forward and assured that the use of the chemical will be stopped from immediate effect, sales slowly picked up to normal. The FSSAI has also welcomed the prompt response from the industry and said that it will "remove all apprehensions from the public mind." The chemical was used for whitening the flour and increasing pliability of the dough.

Anti-dumping Duty on Chemical from 5 Nations

New Delhi, India: India may impose anti-dumping duty of up to USD 168.76 per tonne on imports of a chemical, mainly used in textile and packaging industry, from five countries including China and Iran to protect domestic players. MCC PTA India Corp and Reliance Industries Ltd (RIL) have jointly filed an application seeking anti-dumping investigations.

In its final findings, the Directorate General of Anti-Dumping and Allied Duties (DGAD), under the ministry, has found that 'Purified Terephthalic Acid' has been exported to India from China, Iran, Indonesia, Malaysia and Taiwan below its normal value which has resulted in dumping. The DGAD said that it considers it necessary to impose the duty on the imports. It has recommended an anti-dumping duty in the range of USD 83.08 per tonne to USD 168.76 per tonne on the imports.

Tata Chemicals to Suspend DAP Production at Haldia

New Delhi, India: Tata Chemicals has decided to suspend production of soil nutrient DAP at its Haldia plant in West Bengal and will supply the fertiliser to customers from its inventory and imports.

In a regulatory filing, the company said the production of Di-ammonium Phosphate (DAP) will be suspended from June 19 due to emerging market conditions. "...the company has decided to supply DAP to its customers from inventory in hand and imports, and consequently production of complex fertilisers, including DAP, is being temporarily suspended at Haldia, West Bengal," it said.

However, the production of Single Super Phosphate (SSP) will remain unaffected, it said. DAP prices have also declined sharply to USD 340-350 per tonne from USD 440 per tonne last year.

BASF India's Parent to Buy Germany's Chemetall for USD 3.2 bn

New Delhi, India: Chemical firm BASF's parent firm has signed an agreement to acquire specialty chemicals firm Chemetall for USD 3.2 billion. Germany-based Chemetall supplies specialty chemicals which are used in surface treatment of metals and plastics.

It has 2,500 employees globally and 21 production sites in more than 20 countries. In India, Chemetall has 150 employees and had reported turnover of USD 24 million in 2015 and has around 150 employees.

The chemicals manufactured by Chemetall are used in automotive, aerospace, coil and metal forming.

Westlake Chemical to Buy Axiall for USD 3.8 bn

Texas, USA: US-based manufacturer and supplier of petrochemicals, polymers, and building products Westlake Chemical has signed a definite agreement to buy Axiall for USD 3.8 billion, including debt and other liabilities.

Approved by the board of directors of both companies, the deal is expected to be completed by Q4 of this year.

Westlake's president and chief executive officer Albert Chao said: "This transaction aligns two remarkable companies and creates a company with greater financial and operational flexibility and accelerates our growth strategy.

"We believe that after this transaction, we will be better able to serve our customers with a more diversified portfolio that should create significant value and growth opportunities for Westlake stockholders.

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Stepan Company to Expand Polyester Polyol Facility in Poland

Brzeg Dolny, Poland: US-based specialty and intermediate chemicals manufacturer Stepan Company is planning to expand its polyester polyol facility in Brzeg Dolny, Poland.

As part of the expansion, a new reactor will be added to the facility.

The expansion will be carried out to support Stepan's growth in the coatings adhesives sealants and elastomers (CASE) business for its European customers.

Stepan Company Europe polymers vice-president Roger Stubbs said: "The completion of this expansion to our facilities in Poland marks a significant milestone in our growth story within the European polyester polyol industry.

"Commitment to these plans by Stepan is an endorsement of our growth strategy. Together with manufacturing and technical centres in the Americas and Asia, Stepan is one of the leading suppliers of Polyester Polyols around the world.

The company also had finished its project to relocate its European R&D and technical service centre to new laboratories located in Wroclaw, Poland.

The newly expanded facilities will serve Stepan's business in insulation foams and various CASE activities.

BASF Shanghai to Build Shanghai Automotive Coatings Plant

Caojing, China: BASF Shanghai Coatings has started construction on an automotive coatings plant at its Shanghai Chemical Industry Park in Caojing, China. BASF will invest around EUR 140m in the new plant, which is expected to become operational in the fourth quarter of 2017.

As part of the latest investment of the joint venture between BASF and Shanghai Huayi Fine Chemical, the new facility is an expansion of the automotive coatings plant that started production in 2014.

BASF Greater China chairman and president Dr Stephan Kothrade said: "With the expansion, we continue to invest in local production to get even closer to China's automotive industry. BASF will take an active role in developing this rapidly growing business, based on our local production network, innovative power and market knowledge."

As well as the new facility, BASF operates a production facility for resins and electrocoat at the same site. The proximity of these plants is expected to lead to more synergies and efficiency.

Greenyug to Co Locate Bio-based Chemical Plant at ADM FacilityADM Facility

Columbus, USA: Greenyug LLC will build an industrial-scale ethyl acetate manufacturing facility adjacent to Archer Daniels Midland Co.'s wet mill corn processing facilities in Columbus, Nebraska. Greenyug has formed a subsidiary, Prairie Catalytic LLC, that will own and operate the facility. Prairie Catalytic has recently executed a conditional commitment with USDA Rural Development for a loan guarantee under its Business and Industry Loan Guarantee program. This facility will position it as a renewable supplier of ethyl acetate. ADM's corn wet mill in Columbus will supply the project with bioethanol feedstock and other services. Construction of the facility is anticipated to start in late 2016 with production set to begin about a year later.

Greenyug developed its patented technology at its Santa Barbara, California, research facility and continued the scale-up at its fully integrated demonstration plant in India. Greenyug has developed a proprietary platform to add value to bioethanol by upgrading it into a variety of biobased chemicals with broad market appeal. Greenyug ethyl acetate, the first of such products, is a widely marketed specialty solvent used extensively in products such as paints, coatings, pharmaceuticals, adhesives and a variety of consumer goods. Ethyl acetate has a global market of more than USD 4 billion. The market for ethyl acetate is growing faster than GDP because of its desirable properties.

Wison Engineering Begins Construction on EPC Project in UAE

Shanghai, China: Wison Engineering, one of the leading chemical engineering, procurement and construction management (EPC) service and technology providers in China is pleased to announce that the Company has kicked-off its first EPC project on site in United Arab Emirates , going an important step forward in the strategic market of the Middle East.

This project, located in west of Abu Dhabi, is a part of the ethylene plant expansion project of a leading provider of innovative, value creating plastics solutions. Wison Engineering's work scope includes engineering design, procurement and construction services. The project is scheduled to be mechanically completed in October, 2017.

The project not only signals the company's breakthrough into the core market of ME but also showcased Wison Engineering's wide recognition among project owners in the ME region. To offer more customized services to local project owners, the Company has established a project execution center and set up a local design, procurement and project management team in Abu Dhabi, which will allow the company to allocate its resources more efficiently and respond faster to the local project needs.

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OTG to Expand Resin-coated Proppant Manufacturing Plant in Canada

Sandnes, Norway: Oilfield Technology Group (OTG) is planning to expand its resin-coated proppant manufacturing facility in Canada to provide a more efficient supply of the products to fracturing service companies and operators in the oil and gas industry.

OTG is a part of Hexion, formerly known as Momentive Specialty Chemicals, that provides thermoset resins.

To be completed by the last quarter of this year, the expansion includes the purchase of more land for the installation of track that will accommodate more than 100 railcars.

New storage silos will allow sand supplies, especially in peak seasons.

The increased production capacity will also help meet market demand quickly and allows on-time delivery of product through Hexion's own transloading network that serves the Western Canadian Sedimentary Basin. The phased expansion will increase capacity and logistics capability to the Canadian proppant market.

Oilfield Technology group senior vice-president and general manager Jerry Kurinsky said: "Hexion is a leading supplier of resin-coated proppants to the oil and gas industry and this expansion will increase our manufacturing and delivery capabilities to meet the needs of our customers.

Shell to Build New Petrochemicals Complex in Pennsylvania

Pennsylvania, USA: Shell Chemical Appalachia is planning to build a new petrochemical complex, including an ethylene cracker and polyethylene derivatives unit, near Pittsburgh, Pennsylvania, US.

Construction of the project is expected to begin in around 18 months, with commercial production planned to start early next decade.

The proposed complex will use low-priced ethane from shale gas producers based in the Marcellus and Utica basins to produce 1.6 million tonnes of polyethylene per year.

Currently, polyethylene is used in various products such as food packaging, containers and automotive components.

Royal Dutch Shell global chemicals business executive vice president Graham van't Hoff said: "Shell Chemicals has recently announced final investment decisions to expand alpha olefins production at our Geismar site in Louisiana and, with our partner CNOOC in China, to add a world-scale ethylene cracker with derivative units to our existing complex there.

Ferro Acquires Pinturas Benicarló in Spain

Ohio, USA: US-based performance materials producer Ferro has completed the acquisition of Spain-based Pinturas Benicarló.

With the EUR 15m acquisition, Ferro will add new waterborne coatings technology to its Performance Colors and Glass segment and venture into the painted glass container market.

Pinturas produces waterborne industrial paints and serves international glass manufacturers and processors.

These paints can be used to decorate container glasses for perfume and cosmetic, food and beverage and other consumer products applications.

Ferro chairman, president and CEO Peter Thomas said: "Pinturas is an excellent strategic fit with our Performance Colors and Glass Segment.

"Total sales of organic coatings for container glass are estimated to be approximately USD 100m annually.

"We believe the combination of Pinturas' product offering and our significant market position in glass coatings and broad geographic reach will be highly synergistic."

Canada to Invest USD 378 million in Chemicals Management Planin China

Ottawa, Canada: The Government of Canada will invest over 490 million Canadian Dollar (USD 378 million) in its chemicals management plan (CMP) over the next five years.

The CMP is designed to be a comprehensive and integrated strategy for identifying and taking action on potentially harmful chemical substances.

Announced by the minister of environment and climate change Catherine McKenna, along with the minister of health, Jane Philpott, the funds will be used to complete the next phase of the CMP programme, which helps reduce the risks posed by chemicals to Canadians and the environment.

The government noted that though chemical substances provide benefits, they could also have harmful effects on human health and the environment if not managed well.

In the last decade, the CMP has assessed around 2,750 chemicals in Canada, including a wide range of substances such as stain repellents, flame retardants and bisphenol.

So far, 800 million Canadian Dollar (USD 611 million) has been invested in the CMP.

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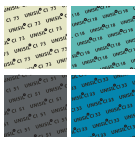
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Bostik Expands Manufacturing Capacities at Seremban Plant

Milwaukee, USA: US-based specialty adhesive producer Bostik expanded production capacities of its cementitious product at its Seremban plant in Malaysia, to meet the growing demand for the product in Sabah and Central and North Malaysian regions.

The company uses Polymer Modified Binder (PMB) technology to manufacture cementitious products at its Seremban plant.

The expansion of the plant will help speciality adhesive producer to strengthen its position in the Malaysian market, as well meet the demands of its construction clients from Kuala Lumpur, North Malaysia and Sabah. Bostik will be manufacturing ceramic tile adhesives, tile grouts, and levelling compounds at its new extended facility.

Earlier in 2014, Bostik opened its second plant in Johor Bahru, Malaysia, to tap the Southern Malaysia and Singapore markets, while the new expansion reflects on the company's development plans in the country.

Albemarle to Sell Global Surface Treatment BusinessMake Succinic Acid from Wood

Louisiana, USA: US-based Albemarle has signed an agreement to sell its Chemetall surface treatment business to Germany-based BASF for USD 3.2 billion.

Headquartered in Germany, Chemetall operates 21 production sites in more than 20 countries, as well as ten research and development locations and 24 sales offices.

Albemarle president and CEO Luke Kissam said: "The sale of Chemetall reflects Albemarle's continued commitment to maximising shareholder value by investing in the future growth of our high priority businesses, reducing leverage and returning capital to shareholders.

"For BASF, the purchase of Chemetall represents a unique opportunity to acquire an industry-leading surface treatment business with a proven track record of success."

Chemetall develops and manufactures technology and system solutions for surface treatment. The chemicals protect metals from corrosion, facilitate forming and machining, and allow parts to be optimally prepared for the painting process. They also ensure proper coating adhesion and can be used in automotive, aerospace, coil, and metal forming industries.

Subject to regulatory approvals and other customary closing conditions, the transaction is slated for completion by year-end.

Honeywell UOP Opens New Manufacturing Facility in China

Zhangjiagang, China: Honeywell UOP business has expanded its presence in China with the opening of its new facility at Zhangjiagang City in Jiangsu Province, Shanghai, to support coal-to-plastics technology

The new facility is designed to produce materials that converts methanol from coal into feedstocks for making plastics, and is scheduled to begin operations next year and help China in meeting the growing demand of plastic.

It will be producing catalysts for Honeywell UOP's Advanced Methanol-to-Olefins (MTO) process technology.

Honeywell UOP's MTO process converts methanol produced from coal or natural gas into olefins ethylene and propylene, which are core chemicals in plastic manufacturing.

Catalysts are crucial in MTO process, which converts methanol into olefins.

Honeywell's performance materials and technologies business group president and CEO Rajeev Gautam said: "MTO is an innovative, proven technology that enables countries that are rich in coal, but which have had to import petroleum, such as China,

ETH Zurich and Partners Demonstrate Process to Make Succinic Acid from Wood

Zürich, Switzerland: A research team led by Switzerland's science and technology university ETH Zurich has demonstrated a new process that manufactures succinic acid from wood instead of oil.

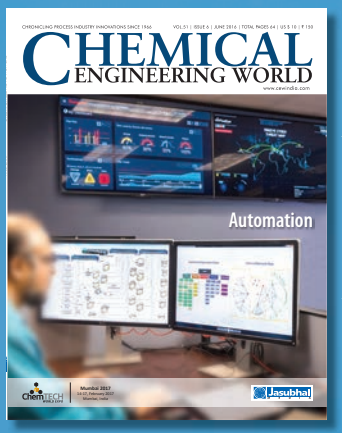
Succinic acid is a major basic chemical product that is added to fuel and lubricants to protect motors from corrosion.

The new process uses bacteria to manufacture succinic acid in a method demonstrated to be cost-effective, environmentally friendly and safe.

The team of researchers is being led by Konrad Hungerbühler, a professor of safety and environmental protection technology in chemistry at ETH Zurich. They have identified wood or cellulose waste from the forestry and paper industries as the best source material.

The team also included scientists from Switzerland's EPFL and Sweden's Chalmers University of Technology.

Since oil reserves are limited, scientists have been exploring alternate ways to manufacture these products from sustainable materials.



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Chemists Find New Way to Recycle Plastic Waste into Fuel

Shanghai, China: A new way of recycling millions of tons of plastic garbage into liquid fuel has been devised by researchers from the University of California, Irvine and the Shanghai Institute of Organic Chemistry (SIOC) in China.

"Synthetic plastics are a fundamental part of modern life, but our use of them in large volume has created serious environmental problems," said UCI chemist Zhibin Guan. "Our goal through this research was to address the issue of plastic pollution as well as achieving a beneficial outcome of creating a new source of liquid fuel."

Guan and Zheng Huang, his collaborator at SIOC, together with their colleagues have figured out how to break down the strong bonds of polyethylene, the most common commercially available form of plastic. Their innovative technique centers on the use of alkanes, specific types of hydrocarbon molecules, to scramble and separate polymer molecules into other useful compounds. The team's findings were published recently in Science Advances.

Scientists have been seeking to recycle plastic bags, bottles and other trash generated by humans with less toxic or energy intensive methods. Current approaches include using caustic chemicals known as radicals or heating the material to more than 700 degrees Fahrenheit to break down the chemical bonds of the polymers. In this newly discovered technique, the team degrades plastics in a milder and more efficient manner through a process known as cross-alkane metathesis. The substances needed for the new method are byproducts of oil refining, so they're readily available.

Behavioral Economics Study Shows Boost in Fuel and Carbon Efficiency of Airline Captains

Chicago, USA: Interventions rooted in behavioral economics can significantly and safely boost the use of fuel- and carbon-efficient flight practices in the airline industry, according to economists at the University of Chicago and the London School of Economics and Political Science.

The large-scale study, which incorporated data from more than 40,000 unique flights, found significant savings in carbon emissions and monetary costs when airline captains were provided with tailored monthly information on fuel efficiency, along with targets and individualized feedback. The behavioral effects of such interventions are currently estimated as the most cost-effective way to prevent a metric ton of carbon dioxide from entering the atmosphere.

The study was conducted in partnership with experts in sustainability and flight operations at Virgin Atlantic. It included UChicago economists John List, the Homer J. Livingston Professor of Economics, and Robert Metcalfe, Becker Friedman Institute research scholar; as well as Greer Gosnell, a PhD researcher at LSE.

Solar Cells for Greener and Safer Energies

A semi-transparent solar cell based on AgBiS2 nanocrystals

Barcelona, Spain: Most of us know that the most common inorganic solar cells, displayed over roof tops and in solar farms, are made of silicon. However, the production of silicon solar cells can be expensive and energy demanding and the final modules are heavy and bulky. Many lower-cost thin film solar cells, alternative to silicon, are composed of toxic elements such as lead or cadmium, or contain scarce elements such as indium or tellurium.

Now ICFO researchers Dr Maria Bernechea, Dr Nicky Miller, Guillem Xercavins, David So, and Dr Alexandros Stavrinadis, led by ICREA Prof at ICFO Gerasimos Konstantatos have found a solution to this increasing problem. They have fabricated a solution-processed, semi-transparent solar cell based on AgBiS2 nanocrystals, a material that consists of non-toxic, earth-abundant elements, produced in ambient conditions at low temperatures. These crystals have shown to be very strong panchromatic absorbers of light and have been further engineered to act as effective charge-transporting medium for solution-processed solar cells.

The team of researchers at ICFO developed these cells through a low temperature hot-injection synthetic procedure. They first dispersed the nanocrystals into organic solvents, where the solutions showed to be stable for months without any losses in the device performance. Then, the nanocrystals were deposited onto a thin film of ZnO and ITO, the most commonly used transparent conductive oxide, through a layer-by-layer deposition process until a thickness of approximately 35nm was achieved.

Researchers Find New Ways to Make Clean Hydrogen, Rechargable Zinc Batteries

California, USA: A Stanford University research lab has developed new technologies to tackle two of the world's biggest energy challenges -- clean fuel for transportation and grid-scale energy storage. The researchers described their findings in two studies published this month in the journals Science Advances and Nature Communications.

Hydrogen fuel has long been touted as a clean alternative to gasoline. Automakers began offering hydrogen-powered cars to American consumers last year, but only a handful have sold, mainly because hydrogen refueling stations are few and far between.

Unlike gasoline-powered vehicles, which emit carbon dioxide (CO_2), hydrogen cars themselves are emissions free. Making hydrogen fuel, however, is not emission free: today, making most hydrogen fuel involves natural gas in a process that releases CO_2 into the atmosphere.

To address the problem, Cui and his colleagues have focused on photovoltaic water splitting. This emerging technology consists of a solar-powered electrode immersed in water. When sunlight hits the electrode, it generates an electric current that splits the water into its constituent parts, hydrogen and oxygen.

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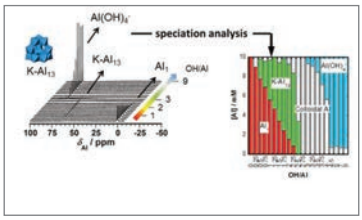
Tracking Aluminum Used to Purify Tap Water



This is an analysis using 27Al qNMR (quantitative NMR) spectroscopy. Each spectrum can be measured in just three minutes. Credit: Kobe University

Hyōgo, Japan: A Kobe University research group including Associate Professor Maki Hideshi (Center for Environmental Management), PhD candidate Sakata Genki (Graduate School of Engineering, Department of Chemical Science and Engineering, currently employed at Central Glass Co., Ltd.) and Professor Mizuhata Minoru (Graduate School of Engineering) have developed a new analysis method that uses magnetic fields to quickly and accurately measure the concentration of aluminum used to purify tap water. These findings can potentially be used in developing efficient and environmentally-conscious coagulants for water treatment. The findings were presented on May 29, 2016 at the 76th Japan Society for Analytical Chemistry Symposium.

In order to provide clear, safe tap water it is necessary to remove particles called colloids from raw water. These particles are very small, between nanometer order and micrometer order in diameter. Polychlorinated aluminum is used as a coagulant in the water treatment process to collect and dispose of these particles. However, aluminum ions can be toxic for fish and inhibit plant growth. The Japanese Water Works Law specifies that aluminum concentration in water must be limited to below 0.1ppm (1:10,000,000).

Various hydrolyzed species of aluminum ion can be detected in water. Until now the "ferron method," involving pigments and absorption meters, has been widely used to calculate the concentration of these compounds. However, this method has some disadvantages: the analysis takes several hours and the results often contain errors.

Liquid By-products from Wood and Forest Industry Find Use in Wood-plastic CompositesMolecule

Savonlinna, Finland: There is an increasing need to find new alternatives for crude oil based materials such as plastics. WPCs are natural fibre composites with properties of both plastic and wood. These composites are used, for example, in buildings and in the manufacture of automobiles. It is estimated that the production of WPCs will experience an annual growth of 14 per cent between 2014 and 2019.

Wood and plastics are very different materials in terms of their chemical properties, which is why additives are used in WPCs to enhance the compatibility of these constituents. Additives are also used to improve composites' water absorbing and weather resistance properties, among other things. However, some additives are rather expensive and their incorporation into WPCs is not straightforward. Thus, WPCs are in need of novel and effective additives that are based on renewable resources.

Efficient Hydrogen Production Made Easy

California, USA: In the 2015 movie "The Martian," stranded astronaut Matt Damon turns to the chemistry of rocket fuel, hydrazine and hydrogen, to create lifesaving water and nearly blows himself up. But if you turn the process around and get the hydrazine to help, you create hydrogen from water by changing conductivity in a semiconductor, a transformation with wide potential applications in energy and electronics.

"We demonstrate in our study that a simple chemical treatment, in this case a drop of dilute hydrazine (N_2H_4) in water, can dope electrons directly to a semiconductor, creating one of the best hydrogen-evolution electrocatalysts," said Gautam Gupta, project leader at Los Alamos National Laboratory in the Light to Energy team of the Lab's Materials Synthesis and Integrated Devices group. The research was published in Nature Communications.

Understanding how to use a simple, room-temperature treatment to drastically change the properties of materials could lead to a revolution in renewable fuels production and electronic applications. As part of the Los Alamos mission, the Laboratory conducts multidisciplinary research to strengthen the security of energy for the nation, work that includes exploring alternative energy sources. In recent years, the materials science community has grown more interested in the electrical and catalytic properties of layered transition metal dichalcogenides (TMDs). TMDs are primarily metal sulfides and selenides (eg, MoS2) with a layered structure, similar to graphite; this layered structure allows for unique opportunities, and challenges, in modifying electrical properties and functionality. Gupta and Aditya Mohite, a physicist with a doctorate in electrical engineering, have been pioneering work at Los Alamos seeking to understand the electrical properties of TMDs and use that knowledge to optimize these semiconductors for renewable fuels production.

Oregon Chemists Build New, Stable Open-shell Molecule

A tube containing newly synthesized diindenoanthracene, or DIAn, is shown in the hand of the University of Oregon's Gabriel E. Rudebusch. Credit: University of Oregon

Oregon, USA: University of Oregon chemists have synthesized a stable and long-lasting carbon-based molecule that, they say, potentially could be applicable in solar cells and electronic devices.

The molecule changes its bonding patterns to a magnetic biradical state when heated; it then returns to a fully bonded non-magnetic closed state at room temperature. That transition, they report, can be done repeatedly without decomposition. It remains stable in the presence of both heat and oxygen.

Biradical refers to organic compounds, known as open-shell molecules, that have two free-flowing, non-bonding electrons.

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Government to Boost Chemical Industry; Plans to Start Institute of Chemical Engineers, Technologists

According to Ananth Kumar, Union Minister, Ministry of Chemicals & Fertilizers, the Government of India has proposed to set up chemical hubs across various states, and is also going to start Central Institute of Chemical Engineering and Technology (CICET). Kumar was speaking at the launch of India Chem 2016.

The Government of India is determined to boost the chemical industry in the country.

The Union Minister for Chemicals & Fertilizers, Ananth Kumar said that the government is making all efforts to create chemical hubs across the country, establish adequate infrastructure and ensure early environment clearances in existing clusters.

He revealed that a Central Institute of Chemical Engineering and Technology has also been proposed by the ministry. Chemicals connect all industries and the story of growth rests on the edifice of chemicals and petrochemicals sector, he underlined.

The minister also spoke about the sucess of 'Make in India' campaign and said that under this campaign, chemicals and petrochemicals have been identified as one of 25 thrust areas, with strong emphasis on deriving maximum value from crude through value addition along the downstream chemical value chain.

The Ministry of Chemicals & Fertilizers envisages having all 22 refineries as the nerve centres for downstream petrochemical production and tipping points for value addition.

Kumar also commented on the PCPIR and said that the government has set-up steering committee to realise the development of five PCPIRs in the country which would attract investments of around ₹ 8 lakh crore and is already in talks with the Chief Ministers of the states of Gujarat, Odisha and Andhra Pradesh for the same. The biggest challenge is having refinery with cracker as the anchor tenant which can supply building blocks for downstream petrochemical projects. Currently, negotiations are in progress in Vizag and Nagapattinam for setting-up anchor tenants.

The sector has seen investments of the order of USD 50 billion (₹ 3.5 lakh crore) over the last few years which includes completion of pending projects like Brahmaputra Crackers & Polymers Ltd (BCPL) in 2015 and OpAL, to be commissioned later this year. Commissioning of cracker in BPLCL's Kochi refinery will also go into production in December 2016.

Kumar revealed that the government has started promoting the concept of Reverse SEZ and has already made significant progress as far as Iran is concerned. This, Kumar believes, will help the industry secure the feedstock and various other building blocks for producing the downstream petrochemicals.

Kumar acknowledges that environmental clearances have continued to be a major challenge for brownfield expansions by the industry, and said that the Ministry

of Chemicals & Fertilizers (MoC&F) has been in talks with the Ministry of Environment & Forests (MoEF) to get clearances for such projects and setting up separate division to specifically look into the issue.

The government intends to take up cluster clearance approach which will mandate the industry to strictly comply with the two conditions: safeguarding the environment and 100 per cent effluent treatment, he stated further.

The MoC&F also intends to create strong interface between the union and various state governments to facilitate development of adequate infrastructure for the transportation of chemicals.

During the period 2014 -16, many chemical MNCs have invested in India to expand their presence in the country.

In the years to come, India's chemical industry would require around 8.5 lakh technologists and engineers to support the envisaged growth of the country's chemical industry.

India needs a paradigm shift to change its image from consuming economy to producing economy. ■

The government intends to take up cluster clearance approach which will mandate the industry to strictly comply with the two conditions: safeguarding the environment and 100 percent effluent treatment, he stated further.

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'We Want to Grow Gradually at Market Plus Growth Rate'

Vertellus Specialties entered into Indian market through acquisition of Vapi Products Private Limited. "From a distributor network in India before 2011 to become one of the top 20 speciality companies in the country, Vertellus' India contribution to global operations is better than any other Indian unit's contribution to their respective global performances, says **Deepak Chander, Business Director, Vertellus Speciality Materials (I) Pvt Ltd.**

Vertellus, as a company, was not present in India before 2011. "We did have a distributor network in the country before 2011, but Vertellus employees were not directly involved into it. The company entered into Indian market through acquisition of Vapi Products Private Limited. We first acquired a manufacturing facility in India and later set up an office here. After the acquisition of the unit, we rechristened the plant and brought lot of international operating standards," says Chander.

This is one of the key manufacturing facilities for Vertellus where the company manufacturers Dichlorodiphenyl Sulfone (DCDPS) – a poly sulfone intermediate. It is widely used in polymer industry for manufacturing medical equipment and aerospace industry. The product is supplied to all over the world, he adds.

While talking about Vertellus's presence and growth in India, Chander elucidates that the company has been growing pretty strong in India and now the company is one of the top 20 speciality companies in the country. "Our country contribution to global operations is better than any other Indian unit's contribution to their respective global performances."

Vertellus' Indian Business Segment

Prima facie, we are looking at three areas in India. One, we are looking at expanding our manufacturing capacities in India. A project is already under process, where we are looking at expanding manufacturing capacity for DCDPS. Two, we are also working on developing products and services and operating models to have a leadership position in the pharma and agrochemicals industries in India. Three, we are looking at expanding our reach as collaborative manufacturing by tying up with people with assets and competencies for co-developing products, clarifies Chander.

We are already working with a leading agrochemical companies where we produce a product for them and have been manufacturing product for them for long, he adds.

While answering on home & personal care, coating and adhesive segments of Vertellus, Chander simplifies that the company is new entrant in home & personal care and coating segments while well established in the area of supplying natural ingredient. Vertellus is the leading supplier of castor oil and castor oil derivative formulating ingredients and offers a variety of ingredients from plants and have been using natural-based formulating ingredients for personal care for decades. Most of Vertellus' products are castor oil derivatives and acceptance of these derivatives is very good. The company is waiting for new launches to come and then commercialise it and take it to the market.

Operational Challenges in Indian Market

Cultural difference, policy nuisances and its implementation hurdles are the biggest challenges for foreign players in India. India has got good policies, but when it comes to implement these policies in a timely manner, the country lags behind. Policy announcement and the gap in its implementation must be reduced, ponders Chander.

He further adds that Data integrity is another issue which needs to be addressed immediately. Further, in India, the war between central and state governments is an issue which hampers the growth of industry.

On Vertellus' experience in setting up unit in India, Chander says, "Vertellus's ancestor company – Reilly Chemical Company entered into Indian market around 1920 through a joint venture – much before it started its operation in China – which was not so successful. It was the time when China was the fastest growing trading market and we fortunately got an opportunity to enter into the Chinese market – again through a joint venture. Our Indian experience helped us lot in successfully operating in China. So, India has always been on the radar of the company for many years, but we waited just waited for the right time."

Technology Tie-up and Acquisition

In replying acquisition and technology tie ups opportunities in India, Chander says, "India is certainly a key market for us and we are also established as a key ingredient supplier for pharmaceutical industry. There are certain set of customers and markets, we are actively catering to and there are many other sectors, we are planning to cater to."

India has got good policies, but when it comes to implement these policies in a timely manner, the country lags behind. Policy announcement and the gap in its implementation must be reduced.

While Vertellus always looks for acquisition and technology tie ups opportunities, but these decisions depend a lot on different business conditions, financial viabilities and timing. There are actually three levels within Vertellus which influence these decisions. First, we have internal matrix to evaluate the EBTIDA performance of the company - the basic criteria. Second, we assess the lucrativeness of the investment. And third, we estimate that how strong position our investment can create for the company at the regional level, he adds.

There are plenty of opportunities in India; however, exploring these opportunities and make a business case is a herculean task, he clarifies.

In doing business in energy front, Vertellus is now looking for companies working on fuel cells and manufacturing of solar panels (adhesives) and have product catering to these industry which are very niche segments, says Chander.

Operational Excellence – the Core at Vertellus

Operational excellence is still considered as a 'cost' factor - especially by many small and medium level companies in India because Indian companies still consider the benefits first and then invest into advanced manufacturing technologies, claims Chander.

He simplifies that when Vertellus acquired the plant, the company immediately realised that operating the plant could not possible in this manner it was being operated before. Vertellus recovered the investment by increasing the overall reliability of the plant and by increasing the final output.

About 80 to 85 per cent capacities are considered to be a good performance in chemical industry due to its complex in nature. But by making some changes in the process, we could event operate at more than 100 per cent capacity. Operational excellence within the plant also helped us building a strong Environment, Health and Safety (EHS) standards. Our plants, across the world, follow the same operational standards, he adds.

Adopting New Application – India vis-à-vis Global

Taking a toll of Indian companies in accepting new application, Chander says that India – and even in China, cost and regulatory hurdles slower the process of adoption of new application and the challenges are similar across the globe. Further, challenges in implementing third-party technologies are also similar across the world.

Even for the chemical companies which are inventing new technologies for themselves, the implementation challenges are similar. ICI's methanol technology, which was executed only at BP's plant in Australia and Germany's Maglev technology which was executed commercially only by some Chinese companies, exemplify how it is difficult for new technology to be adopted by users unless it is consumer oriented technology, he adds.

Future Growth Strategy

Chander is confidence on the company's growth trajectory in India by saying that Vertellus wants to grow gradually at market plus growth rate and is also looking at opportunity to expand its manufacturing footprint in the country. The company may also set up an engineering excellence centre in India to support the global process engineering capabilities.

Vertellus considers India is a key market and wants to use the country as a sourcing place for the company's global needs. Vertellus plans to increase its sourcing capacities for both, raw material and engineering materials, and also the services in India, he adds. ■

Technical Article

CLPM: Delivering on the Promise of Plant-wide Optimisation

Petrochemical manufacturers experience unique challenges when it comes to maintaining effective regulatory control. As practitioners know that the dynamics of petrochemical processes are complex. From the volatility of batch reactions and rapid responses of pressure control to the highly nonlinear and the sluggish nature of temperature control, the range of both process dynamics and industry applications routinely push the common PID controller to its limits. Whereas an effectively tuned PID can enable safe and efficient production, a poorly tuned controller can inadvertently hamper quality and constrain production throughput. Innovations in process modeling technology have proven to simplify the tuning of individual PIDs. Only recently these innovations have been applied to simplifying controller optimisation on a plant-wide basis.

Proportional Integral Derivative (PID) remains the dominant regulatory control solution used by petrochemical manufacturers. Indeed, it is the control solution of choice across the process industries around the globe. Widespread adoption of the PID controller has been facilitated by its relative low cost and ease of configuration. These positive attributes notwithstanding, PID controllers must be tuned for their unique application in order to deliver the objective level of performance. Historically the tuning of PIDs – whether manually or with the help of software – has proven to be a challenge.

Regular tuning of plant PIDs is generally acknowledged as a best-practice that provides meaningful financial benefits. A study published in 2001 by the UK's Energy Efficiency Best Practices Programme found that manufacturers who frequently tuned their facility's PID controllers realised significant gains. Among the study's findings were increases in throughput of up to 5 per cent and reductions in quality related defects of as much as 50 per cent. Even though the potential gains are significant, the challenge of regularly tuning the PIDs of their complex processes has proven greater for most manufacturers.

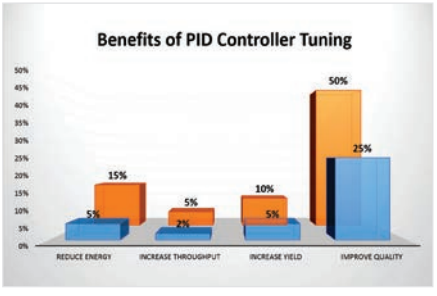

Figure 1: The UK's Energy Efficiency Best Practices Programme linked regular tuning of PIDs to significant economic gains. Improvements to both top-line and bottom-line performance were documented.

Software products for tuning PID controllers have been available for decades, promising a repeatable method and optimal results. As such, these tools sought to automate the process and correct the deficiencies inherent with manual tuning techniques. Unfortunately, early tuning software proved incapable of modeling the highly variable dynamics common in industrial process manufacturing. More specifically, they required practitioners to settle a process before performing the appropriate testing (e.g. step, bump, doublet). This steady-state requirement proved impractical for many petrochemical applications characterised by their noisy, oscillatory behavior.

In 2008, a major innovation in dynamic process modeling was introduced that enhanced the value proposition of tuning software. Non-steady state (NSS) modeling eliminated the need for a settled process prior to tuning the associated PID. With its unique ability to accurately model process dynamics using noisy, oscillatory – even long dead-time – process data, the innovation made it possible to improve the performance of loops that were previously viewed as 'off limits' for traditional tuning techniques due to their complexity or economic importance. Proof of the innovation's value to process manufacturers in general and chemical manufacturers was particularly quick in coming.

Mastering Real-World Dynamics

Evonik Industries is a leader in the global petrochemicals market with operations in over 100 countries. The company's facility located in Galena, Kansas (USA) manufactures an array of pharmaceutical intermediates, specialty chemicals and herbicides, and industrial solvents. Process complexity and poor controller tuning had resulted in excessive overshoot and persistent oscillations when the plant's controllers were operated in automatic during start up. In order to correct for these issues the plant's engineering staff routinely operated controllers in manual mode at the start of each batch. The outcome was an unnecessarily long cycle time and the loss of valuable production potential. It wasn't until they utilised software equipped with NSS modeling that the plant could establish effective, efficient control over its batch processes.

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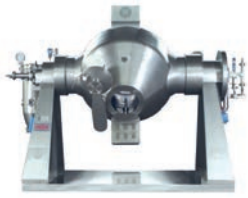

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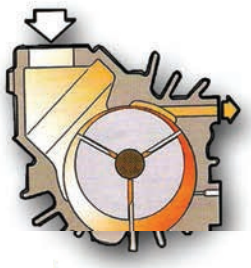

VACUUM SOLUTIONS

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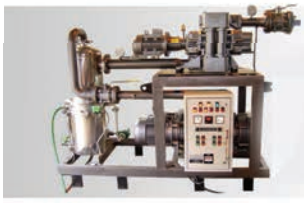

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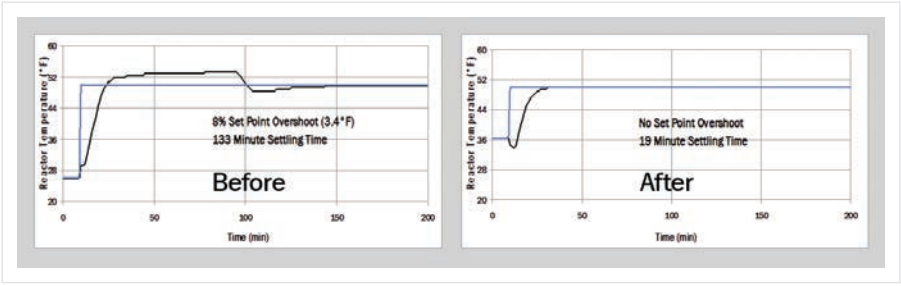

Figure 2 – Traditional tuning software had failed repeatedly to model Evonik's batch dynamics accurately, forcing plant staff to operate controllers in manual mode during start-up and resulting in a combination of overshoot and long settling times. The NSS modeling innovation made it possible to tune the highly variable process, eliminating overshoot and reducing settling time by ~85 per cent.

"We experimented with other tuning software packages to see if they could accurately model our batch dynamics," noted John Gaines, Production Manager at the Kansas Plant. "In order for the tools to work properly, they required us to settle out our process and conduct bump tests starting from a steady state. In the world of batch processes, that requirement is simply not realistic and it forced us to control the process manually."

Improvements in the plant's PID control were immediate and exceeded the maximum increase in production throughput that had been previously published by the Energy Best Practices Programme. Using software equipped with the NSS Modeling Innovation, Evonik engineers accurately modeled the process' dynamics and tuned the associated loops for a combination of zero overshoot and minimal settling time. Using the new parameters, the plant operated the process in closed-loop during startup for the first time. More importantly, engineers documented a 9.3 per cent reduction in production cycle time. Even so, the performance gains were only realised after engineers had singled out the bad acting PIDs. What's more, gains were limited to individual control loops and not yet realised plant-wide.

Taking Innovation to New Levels

For years, manufacturers across the petrochemical industry have been pushing automation technology suppliers to move beyond single loop optimisation. In response, Control Loop Performance Monitoring (CLPM) technologies were introduced to the market at the start of the new millennium. The ability of CLPM technologies to capitalise on everyday set point changes and output changes to automatically produce process models, however, was only introduced during the last decade. Like traditional tuning software, early CLPM solutions with this capability required steady-state conditions in order to produce meaningful models and actionable information. The same noisy, oscillatory data that limited the effectiveness of early PID controller tuning software also constrained the efficacy of CLPM technologies.

The first integration of NSS modeling with a CLPM solution was completed in 2013. With its ability to accurately model noisy, oscillatory data, the innovation allowed accurate plant-wide modeling of the complex dynamics common to petrochemical processes. This advancement allows CLPM solutions to fully capitalise on the considerable number of closed-loop set point and open-loop output changes that occur daily at a typical plant. Additionally, select CLPM solutions can aggregate the analysis from all models associated with a given PID control loop, providing a more complete assessment of a given loop's dynamics and more relevant recommendations for controller optimisation. For the first time, control loop optimisation is truly possible on a plant-wide basis. For manufacturers of all types, this is welcome news. (See Figure 3)

Figure 3 - Select CLPM solutions automatically capture both closed-loop set point changes and open-loop output changes, calculating models of the associated process dynamics. Aggregated modeling data offers a comprehensive view of a given control loop's behavior and it provides the basis for tuning values suitable for controlling that same range of behavior.

Understanding the Oil Sands

Petrochemical companies located in the tar sands of Canada apply a unique process in their extraction of crude oil. The Athabasca oil sands are known as a rich source of both heavy crude and bitumen. Indeed, the Government of Alberta has concluded that the oil sands of Canada represent a full 70% of the world's proven natural bitumen reserves. In order to process the crude oil contained in oil sands it must first be separated from the partially consolidated sandstone and loose sand that surrounds it. Steam-assisted gravity drainage (SAGD) is a common method for separating oil from earth. The process involves the drilling of horizontal wells into a known oil reservoir. Steam is injected via one well in order to reduce the oil's viscosity and to cause it to drain downward into a second well where it is collected and pumped out for refining.

A single SAGD facility is generally comprised of several steam generating units, a water separation area, and up to a half dozen extraction pads. Such a facility employs approximately 1000 PID control loops in the regulation of continuous oil extraction and processing. In the best of times the supervision of such a production facility is challenging. That challenge is exacerbated when the price of oil is depressed and fewer staffs are available to oversee the production process. Technologies like CLPM enable these plants to proactively monitor their critical control systems. They improve staff efficiency by identifying changes

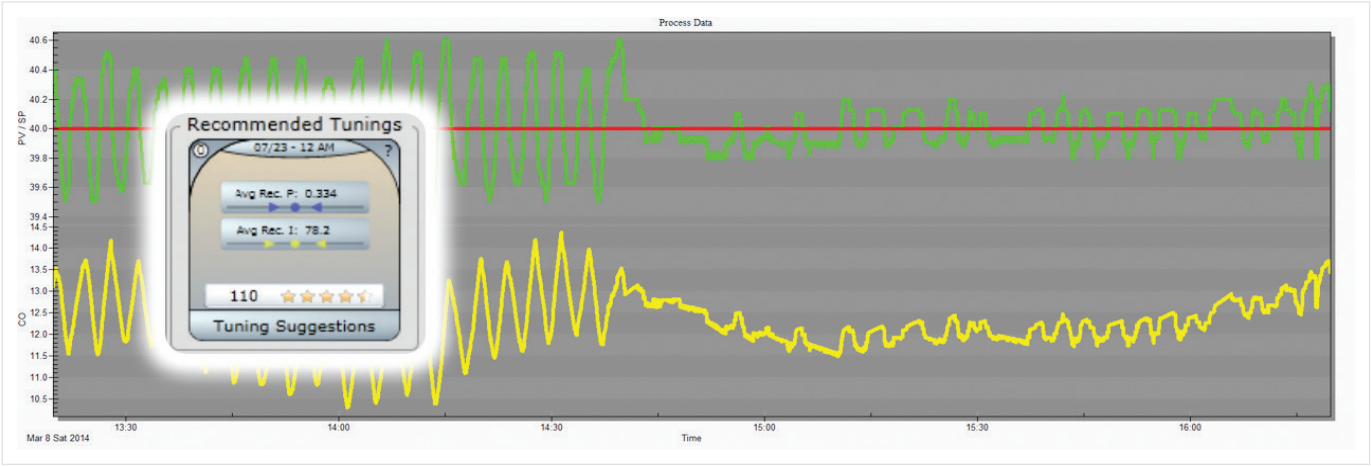

Figure 4 – PlantESP's TuneVue™ feature aggregates process model data and recommends PID tuning parameters. Shown above is the trend from a SAGD plant. The control loop's performance can be seen to improve dramatically based on use of CLPM solution's tuning recommendation.

that can affect performance – changes that are routinely overlooked. More importantly CLPM technologies actively monitor performance, recommending adjustments for maintaining optimal plant-wide control and production.

Large Scale Modeling and Tuning

An independent oil producer located near Fort McMurray, Alberta first implemented CLPM technology in 2014 to improve production efficiency across its extraction facilities. The producer understood that a transition from reactive controller corrections to proactive PID optimisation would lead to lower overall production costs. In order to achieve its goal, however, the CLPM technology would need to go beyond providing standard process analytics and find meaningful opportunities for improvement; it would need to recommend specific adjustments to regulatory control using little more than everyday set point changes as the basis for its optimisation.

The benefits and computational challenges associated with NSS modeling are significant when applied to CLPM technology and plant-wide monitoring. In comparison, the effectiveness of the optimisation routines of traditional process modeling and tuning products are severely constrained by the noisy, oscillatory conditions typically present in plants. Now consider that one SAGD facility utilises a total of 995 PIDs to regulate control. During a span of 121 days, because of its use of NSS, the CLPM technology successfully identified and modeled a total of 323,612 closed-loop set point changes and open-loop output changes. That can be equated to nearly 3 model fits per loop each day and nearly 1 million model fits across the plant each year. While the processing requirements were truly significant, the benefits were equally meaningful.

The benefits of CLPM matched the goal established by the producer. In addition to identifying mechanical challenges such as valve stiction along with isolating issues linked to loop interaction, the CLPM solution found numerous opportunities for PID controller tuning. Many of the recommendations surprised production staff as they believed the associated PIDs were already tuned optimally. Using aggregated model data and analysis of tuning parameters, however, the CLPM solution visually clarified how the existing tuning parameters had failed to provide adequate control under normal operating conditions. Once the new parameters were implemented the engineers saw immediate improvements. The transition from reactive to proactive loop management was completed. (See Figure 4)

Simplifying Plant-wide Optimisation

Petrochemical manufacturers are faced with unique challenges in the control and optimisation of their production processes. The complex dynamics associated with typical petrochemical processes require innovation solutions. Specifically, those solutions have needed to address the noisy, oscillatory conditions which petrochemical manufacturers view as the 'real world'. Fortunately, there are now CLPM solutions equipped with NSS modeling that can overcome these challenges. Unique capabilities for modeling and tuning have simplified controller optimisation on a plant-wide basis. ■

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Technical Article

PROFIBUS Installations to Optimise Production Automation

PROFIBUS, a high-speed digital system that has to comply with a lot of rules, is a proven standard within the industry. But lack of knowledge level of the maintenance technicians leads to a point that they are going to look at the PROFIBUS installation as a 'black-box'. When a disturbance occurs, nobody knows what to do and where to start.

PROFIBUS is a proven standard in the industry. We see more and more plants completely equipped with this outstanding technology. The management of these enterprises is aware that the intelligence and diagnostics of the instruments contribute to costs savings and optimisation of production automation. The grey area is the knowledge level of the maintenance technicians who need to work with this system. Normally, their know-how is relatively limited which leads to a point that they are going to look at the installation as a 'black-box'. When a disturbance occurs, nobody knows what to do and where to start.

The black-box effect costs an enterprise enormous amount of money. If disturbances are not solved quickly, the production line is on hold and that means profit loss. PROFIBUS is the backbone of the installation and must therefore be the most stable element. This waste of finances does not need to occur.

The situation is very simple; we should not forget the people on the maintenance floor. They have direct contact with this relatively new technology and must feel happy with it. This is a pure psychological matter. Many maintenance technicians have years of experience in conventional technology and are forced to step-over to PROFIBUS. Conventional technology is relatively simple, because it only relates to voltages and currents. PROFIBUS is a high-speed digital system that has to comply with a lot of rules. Also test- and measurement tools are different. The multi-meter is not useable anymore and this was the tool these people have always worked with. This leads to negative thoughts and communication to the outside world. The situation will get worse when the technicians also do not have an electrical background. To tackle the black-box effect, it is recommended to follow the points below.

- **Divide the Installation in Segments**
  Use PROFIBUS repeaters or Hubs to split the installation up in isolated segments. This guarantees that short circuits and wire breaks only have impact on 1 segment and not the entire installation. Segmentation also simplifies troubleshooting and maintenance. Because of cost issues these components are sometimes not implemented. This is a missed opportunity, because at the end the maintenance costs were higher than the initial investment.

- **Include Measurement Connectors**
  Every segment has to be equipped with measurement connectors to hook-up measurement tools. When these facilities are not integrated, the installation has to be shut-down when a measurement has to be done.

- **Up-to-date Installation Drawing**
  An up-to-date installation drawing has to be available. In a lot of cases the installation drawings are still version 1 and have never been updated. Drawings are very important for troubleshooting and maintenance. Important points for a useable drawing: addresses, cable lengths, installation order and termination resistors.

- **Investment in Test- and Measurement Tools**
  Invest in tools that are required for PROFIBUS measurements. 2 types of tools are essential:
  A) The ProfiTrace Analyzer to verify if the communication is not showing deviations. With this tool we can detect; wrong addresses, cable breaks, instrument loss, diagnostic events, etc.
  B) The oscilloscope to verify the electrical signals on the cable. With this tool we can detect; EMC, reflections, many/less termination, etc.

- **Training**
  The last step is the understanding of the installation rules and obtaining practical experience with the required tools. To achieve this we need training. The enterprise has to invest in the education of its technicians. This investment will pay itself back within a short time.

Conclusion

As soon as the above points are taken care off, a successful life-cycle comes a lot closer. To conclude, the entire issue comes down to know-how and the awareness of modern automation technology. ■

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Technical Article

Alarm Management-A Challenge

Quantifying the benefits of the Alarm management helps in avoiding alarm overload and thus more attention of Operators to the plant conditions requiring timely assessment or action. It is not do once activity rather a continuous process.

In the past we have seen Three Mile Island (1979), Union Carbide, Bhopal (1984), Herald of Free Enterprise (1987) & Texaco Refinery, Milford Haven (1994) accidents which are a few high-profile examples where absence of good alarm management was a major factor responsible for disastrous outcome. Reductions in operating staff and the corresponding increase in process responsibility for each operator (more loops per operator) have contributed to such issues. I recall when started my job after completing Engineering course in 1988, one of the first jobs was Alarm System designing for Power plant. Those days alarm management was not a topic of grave concern as it is today. There used to be 60 to 100 alarms configured per operator. Each was designed to be highly reliable and available; however, due to limitations in component design, these were relatively costly. Alarm list was also prepared after rounds of discussions among all the wings of plants i.e. electrical, process, instrument, etc and engineers had to justify the need for the same. There used to be big control desks having hardwired alarm windows initially having bulbs and then gradually shifted to LEDs. Those were so called good old days.

Since modern control systems come pre-engineered with alarm conditions galore, alarms are now often mistakenly considered free. There is, therefore, no incentive to justify the alarms or minimise their number. No one wants to be blamed for not providing an alarm and therefore require alarm on all conditions provided by the system. However, this has resulted in one un-intentional by-product—alarm overload.

Instead of previously manageable 60 to 100 alarms per operator, modern alarm systems are generating more than 1000 alarm per operator. When it comes to alarms, more is not better. This overload effect can create several undesirable outcomes like:

- Causing a process disturbance to last longer than necessary.
- Creating increased stress for operators that can lead to poor judgement and diminish the operators' effectiveness resulting in plant abnormal conditions.
- Causing the original process disturbance to become worse than necessary.
- In some cases even the alarm is made OFF by the operators where the frequency is high and when actual alarm conditions occur, that goes un-noticed resulting in an accident/plant failure. This specially happens when plant operations are near alarm point/alarm conditions are not properly defined. In modern DCS, works stations alarm are more attributed towards this.

In order to optimise the plant operations, Alarm Management System (AMS) has to be in place. Now days in most of the Safety Audits, it is also asked whether AMS is followed or not? This is therefore the need of the hour. AMS results in minimising the potential damage caused by the process operator missing a critical alarm. By using timely alarms that lead an operator to corrective actions, the goal is to improve plant safety, to increase efficiency and to reduce environmental constraint limit violations.

In order to optimise the plant operations, Alarm Management System (AMS) has to be in place. Now days in most of the Safety Audits, it is also asked whether AMS is followed or not? This is therefore the need of the hour.

There are two standards / guidelines widely being followed for AMS i.e Engineering Equipment and Materials Users' Association (EEMUA) 191 and ANSI/ISA-18.2-2009 Management of Alarm Systems for the Process Industries.

As per ISA-18.2, the foundation part of Alarm Management is the definition of an alarm; an audible and /or visible means of indicating the operator an equipment malfunction, process deviation, or abnormal condition requiring a response.

Figure 1 illustrates the relationship between the stages of alarm management lifecycle covering alarm system specifications, design, implementation, operation, monitoring, and maintenance and change activities from initial conception through decommissioning. This lifecycle model is useful in identifying the requirements and responsibilities for implementing an AMS. This lifecycle is applicable for the installation of new alarm systems or managing an existing system. More details can be found in the ISA standard as referred.

The life cycle explained in Figure 1 can be put under four parts:

1. Optimising System Design: This takes care of Stages A to E. When properly

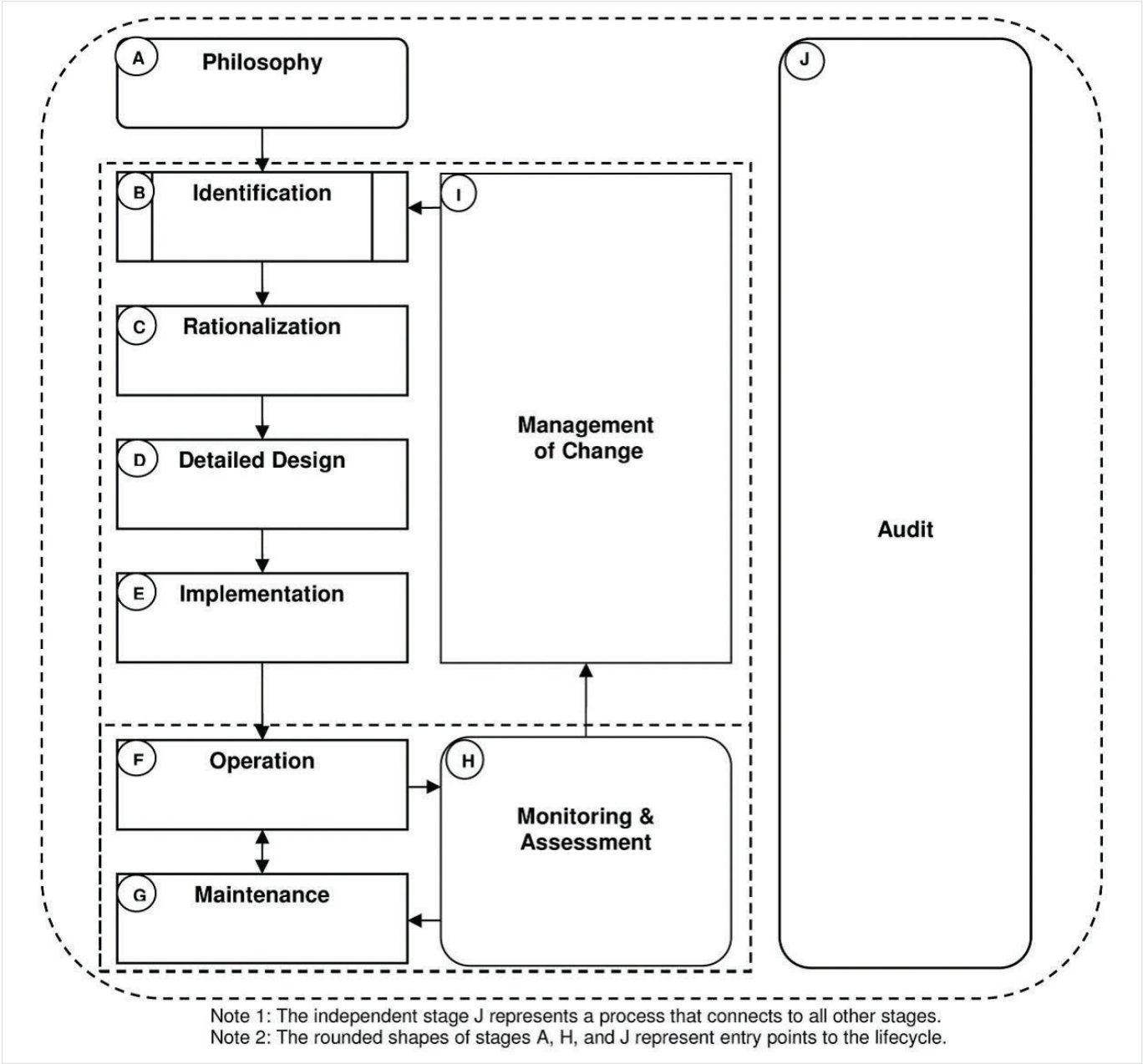
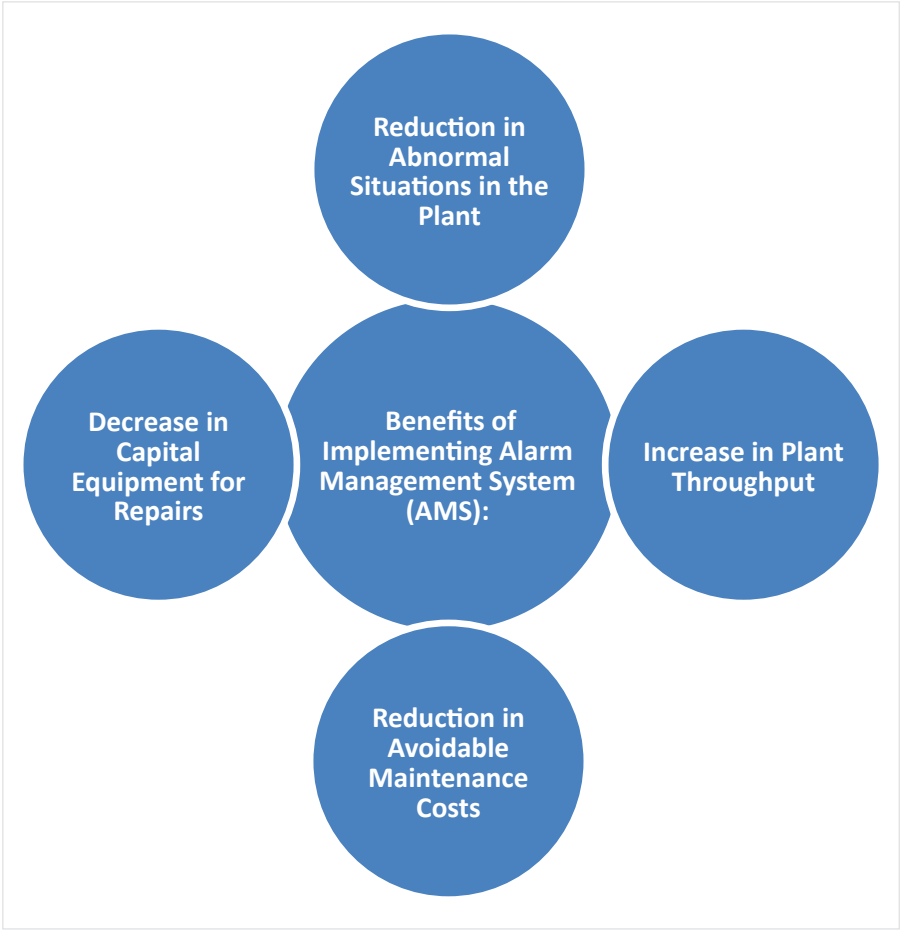


Figure 1: Relationship between the stages of alarm management lifecycle

executed, this task supports the design of an alarm system that prevents alarm flooding and other undesirable alarm system occurrences. It also provides operators with the information they need to take proper action when alarms occur. Next task is to find out the root causes of the alarm by way of analysis: Types of alarms, types of operator work record, process record type analysis. Top 10 tag analysis is the most suitable way to optimise this. Here alarms occurred are noted for 30 days & then out of total alarms in a day how much is their contribution is calculated. 10 such tags (based on their ranking from most to least) are taken out (excluding if there has been any plant outage/ breakdown) & its further analysis is done as what kind of alarms they have produced i.e. HI, HIHI, LO, LOLO, IOP etc. Discussions are then held with

Very likely to be Acceptable	Maximum Manageable
~150 alarms per day per operating position	~300 alarms per day per operating position
~6 alarms per hour per operating position	~12 alarms per hour per operating position
~ 1 alarm per 10 minute per operating position	~2 alarms per 10 minute per operating position

Table 1: Performance Evaluation



Right alarm at right time with the right importance and right information will be delivered to the plant operator which will be help in increasing its productivity. This is also considered as good Engineering practice and useful for regulatory agencies & insurance companies

the concerned process Engineer(s) and either alarm limits are changed or some of the alarms are deleted which are not required. This way the total number of alarms are optimised and effective alarm system is created.

2. Advanced Support to Operators: This includes stages F&G. This enables creation of summary windows in the DCS which will list currently active alarm. In most of the modern DCS, this window will provide sort, filter, shelving and other functions to help improve display of information to the operators.. This will help high priority alarm getting attention of the operators.

3. Performance Evaluation: This is stage H. Its purpose is to evaluate the performance of the existing alarm system. As per ISA18.2-2009, it is as mentioned in the table at the bottom of previous page (based upon at least 30 days of data):

4. Continuous Improvement: Stages I & J are covered here. Continuous alarm system improvement is supported by performing uniform management of the enormous amount of alarm-related data typically contained in the alarm master data-base.

For most alarm systems, three points of life cycle model i.e., Philosophy, Monitoring and Assessment or Audit are considered as starting points.

For new process plants, Philosophy is preferred point of starting. For existing plants, either monitoring and assessment or audit is preferred.

Process Condition Model shows the boundaries of process conditions, from normal and target conditions to the abnormal conditions of upset and shutdown. This simple model is a useful reference in the development of alarm principles and alarm philosophy. The warnings and indications are not to suggest alarms are required, only that under some circumstances alarm may be warranted. Every alarm is rationalised to ensure it is necessary.

Relatively few individual alarms (e.g. 10 to 20 alarms) often produce a large percentage of the total alarm system load (e.g. 20% to 80%). The most frequent alarms should be reviewed at regular intervals. Substantial performance improvement can be made by addressing the most frequent alarms.

What Steps an industry should take to comply and remain as Safe Working place!

- Let there be a CFT who will study the standards EEMUA 191 and ISA 18.2.
- Get an audit of existing alarm system. This will highlight the deficiencies of your alarm system and what areas need to be improved and determine if alarm rates are acceptable.
- It is critical to get senior management sponsorship for an alarm system improvement project. Information that should help management sponsor your project are operator survey results and a benchmarking and assessment report which compares your plant alarm system KPIs with EEMUA 191 and ISA 18.2 requirements.
- Prepare a Strategic Plan to reach compliance which will include training of the operator personnel, buy Alarm Management Software tool, Top 10 tag analysis etc.
- And finally implement the Strategic Plan! It is not do once activity and should be a continuous process. ■

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Guest Column

Strategies to Reap Operational Benefits from Smart Manufacturing or Industrial IoT

Globally, the transformation of the manufacturing sector has begun. The emergence of the Industrial Internet of Things (IIoT), Industrie 4.0, Smart Manufacturing, and other new approaches and initiatives have the potential to uproot traditional ways of doing business. In a connected and collaborative environment the entire manufacturing and supply chain ecosystem becomes agile, flexible and performs better. The impact of these new technologies is being felt across all industries, including the downstream chemical industry.

s Smart Manufacturing Or Industrial IoT a Smart Strategy?

Before the shale oil and gas boom in the US, and in Europe after the financial crisis of 2008, the industry GDP was declining. The European Union started issuing manufacturing competitiveness reports to guide policy makers to stimulate the economy. The studies found that manufacturing contributes over-proportionally to exports, a way of bringing liquidity to the region, and increases the resilience to crises and capacity to recover after them. Benchmarking with countries such as Germany with a higher than average industry GDP demonstrated that the average level of industry GDP could be increased. Finally, the fact that innovation in manufacturing is proven to stimulate manufacturing growth made the EU innovation program Horizon 2020 receive a focus on manufacturing. Both the program for the discrete and the process industries are set up as private-public partnerships to increase ownership by industry, and multiply the public investment. Europe's strategy inspired the member countries to set up their own programs in line with national needs, the most well-known being Germany's Industrie 4.0; however the UK's Catapult program and France's Industrie du Futur are also likely to create economic impact.

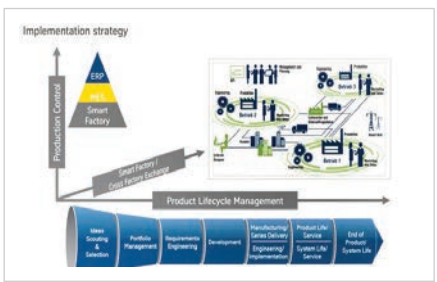

Figure 1. Industrie 4.0, a government initiative. Source Presentation by Dr. Achatz, ThyssenKrupp, Orlando 2015

For the so-called innovation-driven economies as the World Economic Forum calls them, initiatives that impact product value are the most effective to boost growth; however, cost-related improvements in the domain of process and productivity innovation are also useful. All initiatives mentioned aim to affect these economic factors. Some initiatives, mostly government initiated, such as Horizon 2020 or Industrie 4.0, but also Smart Manufacturing Leadership Coalition (SMLC) are concerned with environmental footprint; and the European initiatives also have social sustainability goals, such as well-being at work, jobs, quality of life, etc. We do then conclude that these initiatives are a smart strategy for growth and societal well-being.

Other major initiatives

New information technologies have been applied to optimise individual unit processes in factories, but Smart Manufacturing (SM) systems that integrate manufacturing intelligence in real-time across an entire production operation are rare in large companies, and virtually non-existent in small and medium size organisations. The SMLC was founded as an industry initiative in the US to overcome the costs and risks associated with commercialisation of Smart Manufacturing (SM) systems, primarily oriented towards the process industries. A few years later, the Industrial Internet Consortium was founded to accelerate the development, adoption and widespread use of interconnected machines and devices and intelligent analytics. Also China and India started their initiatives.

Vocabulary

To create clarity we make the following distinction between smart manufacturing and Industrial IoT: Smart Manufacturing is more encompassing and includes all methodologies, processes and technologies that substantially improves the outcome of manufacturing, be it in the form of product value, quantity or quality, or in the form of productivity or reduced environmental footprint. There are two main sources of improvement: advanced manufacturing that involves improvements in fundamentals, such as physics, or chemistry, such as photonics, or chemical nanostructures – engineering science, such as modular production technology and intensification, additive manufacturing or advanced forming. The second group is related to IT, communication or automation related technologies, among which we find internet enabled applications, often referred to as Industrial IoT. For example, advanced or model-based process control, often applied in refining and petrochemicals, could be applied to a larger degree in smaller chemical processes. Industrial Data Analytics have a great potential for the industry.

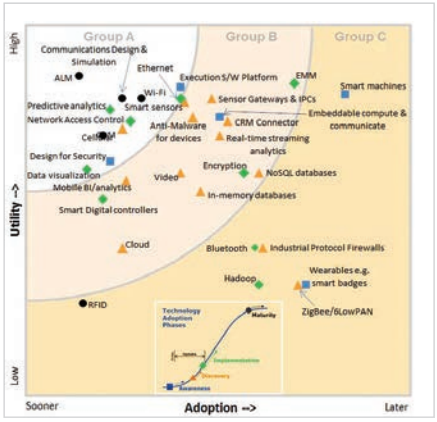

Figure. 2 Industrial IoT; Strategy Report by Greg Gorbach, ARC Advisory Group

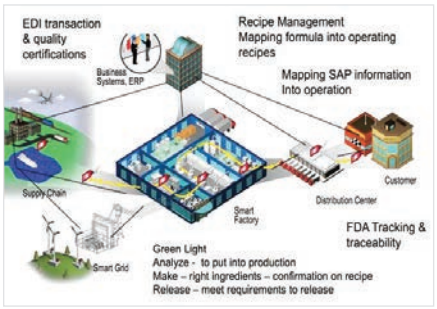

Figure. 3 A snapshot of supply chain management; Smart Manufacturing Leadership Coalition

Application Examples

Current manufacturing processes and technologies can be augmented with smart manufacturing or Industrial IoT, and create incremental value quickly. In Europe, ThyssenKrupp is one of the integrated companies that consistently implements Industrie 4.0 across domains and operations. The company was able to increase the throughput of a plant producing intermediate products (transforming steel slabs into rolled steel), by applying pull manufacturing and coordinating manufacturing and logistics with real-time information. While pull manufacturing is not new, it a great opportunity for many industry sectors to apply it. Fortunately Industrie 4.0 creates momentum to do this.

In specialty and performance chemicals as well as life sciences, the NAMUR organisation is well known for their vision and standards, mostly in automation and IT for manufacturing. In supply chain coordination, the contribution by Dr Poetter from Bayer Technology Services in 2013, anticipated the use of wireless and/or internet connectivity to faster order raw materials to variable production orders. A supply chain operating network such as Elemica could perfectly play its role in such a scenario to make the link between supplier and manufacturer to find the raw material that could arrive earliest at the production site, when the supplier has IoT connectivity with its logistics network. The latter could then directly coordinate via Industrial IoT connectivity with the manufacturer to reserve a docking station and create an unloading appointment.

In the near future, modular production technology - miniature chemicals plants in a container - will make supply chains much more agile than today's. But to plan and optimise them, they become also more complex. Manufacturing capacity can then be very fast and flexibly scaled up and down, and production units can be shipped to sites close to raw material production or consumers. Early examples today are on-site production of liquefied air and dangerous gases as feedstock for downstream production. As a result of these developments, ARC Advisory Group expects that supply chains will become far more agile, dynamic and complex over the coming years. Not only will the number of permutations of possible routings become orders of larger magnitude, also the tighter supply chain network integration will cause important supply and demand volatility that should be damped with high quality supply chain coordination and professional operation of supply chain operation networks (SCON). New developments in discovery, predictive and prescriptive analytics applied to supply chain network regulation and optimisation are very promising to assist the operators. As these can operate in-memory and in the cloud, they take out 'latency' of previous-generation applications and can compensate for supply chain volatility.

Industrial data analytics, in combination with the internet is particularly powerful. When data scientists add their complex event processing techniques and statistical methods to process structured (eg, time-series) data and unstructured data such as operator logs, to the modelling techniques based fundamental and engineering science, great results can be obtained in the domains of production, quality, energy or assets. Production analytics at Dow or Sabic UK have proven to create several millions of dollars in operating efficiency. Other companies use quality analytics to monitor maintenance needs of quality testing techniques, or to determine the useful life span of rotating equipment before maintenance, resulting in improved uptime, increased first-quality production and major cost reductions.

Engineering humans into the system

Industrial IoT, supply chain optimisation and analytics can help the operators best, when they allow them to focus on problem solving by providing easily interpretable analyses within context and free them from repetitive tasks. Then the operator can work at his best, and assess, delegate, interpret, judge and decide with consciousness and skill. As each decision involves emotional processing in the brain, for example when it concerns ethics, we will continue to need operators as part of our systems.

Recommendations

ARC recommends users to take time for planning the future and set radical improvement targets in product, process and supply chain performance, as Industrial IoT solutions have shown to be able to provide those. These goals should be aligned with the users' strategies, and a roadmap should include quick wins - as incremental solutions are available today - as well as a long term plan. Since the smart manufacturing landscape changes quickly these roadmaps must be updated regularly. ■

(The article was published in Nov 2015 issue of CEW magazine)

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Opinion

Digitisation of Supply Chain in Chemical Industry

Unlike in the past decades, the challenge enterprises face now is not simply manufacturing quality products and delivering standardised value to customers, but for businesses to offer tailored value to different client segments at scale. Products have to be available at the right time and at the right price for the end customer.

With the prevalence of the Internet, together with the Government at centre and states focusing on building digital infrastructure to bridge the last mile network, it is imperative that companies now focus on developing their strategies to enhance the supply chain efficiency. The explosion of e-commerce business opportunities also contributes to this phenomenon.

The 'Internet of Things' will push supply chains to strategically think and invest in the digitalisation of their logistics process. Today, chemical companies globally are adopting an outsourced model of supply chain management. The companies concentrate on the core competency of R&D, product development and manufacturing, with the entire supply chain and logistics outsourced to 3PL and 4PL companies with digitalisation and integration capabilities, bringing cost advantage to companies. The introduction of technology in logistics via RFID, GPRS and sensors not only enhance end-to-end visibility but also address the growing concern of supply chain security, compliance etc.

In India, automation of logistics activities in the chemical sectors lags behind peers in the West. Digitalisation of these processes will enable chemical companies to stay focussed on their core competency of R&D and manufacturing. An automated supply chain environment will allow companies to outsource non-core activities such as order planning and order verification, material movement planning, factory inventory management, drumming, storage, domestic and international transportation and shipping to the end customers.

Most Indian chemical companies today are still conducting these activities through in-house management and resources. While embarking on this process, companies rush to adopt digital technologies, electronic supply chain processes and cloud technologies without appropriately aligning it to greater business goals, with a misconception of earning quick returns on such investments. This approach is often used to capitalize on "low hanging fruits" such as process improvements or productivity gains, overlooking the need to adopt holistic digitalisation to cater for future market needs, bringing true value inherent in digitalisation.

This emphasizes the need for an analytical method to structure the movement of physical material, and also manage data, trend analysis, near and distance sourcing mapping, order cycle to delivery. Digitalisation helps to extract critical business insights from the wealth of data collected, and provide your company a much needed end-to-end visibility into your value chains, giving an edge to your organisation in this competitive business environment.

Companies embracing supply chain digitalisation have to commit to the following:

- Will you adopt supply chain digitalisation as a strategic imperative?
- Are you able to get buy-in from stakeholders?
- Are you able to change the culture of the company's supply chain process?
- Do you have a clear digitalisation road map?
- Are you able to invest and see beyond the initial cost of transition to reap the benefits in the long term?
- Can you create awareness and ownership around the digitalisation process?

The paradigm shift in the mindset of Indian corporations is crucial in reaping the benefits of a digitalised supply chain.

The factors below will be key to India's success story in leading supply chain digitalisation:

- Digital talents in India
- Increasingly tech-savvy Indian consumers
- Rapid growth of mobile technology and penetration of Internet in the rural areas
- Rapid digitalisation of the Government

The time is ripe for the growing chemical Industry in India to identify changing supply chain trends and adopt an outsourced model for supply chain activities, with focus on end-to-end visibility with high level of supply chain security and compliance as priority. ■

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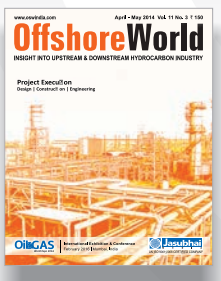

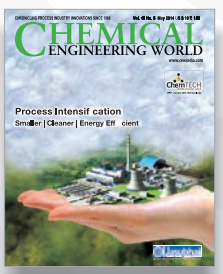

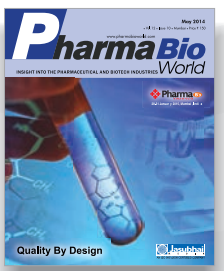

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Reliance-IIP Develop Technology for Benzene Extraction from FCC Light Naphtha

There has been an increasing pressure on refiners around the world to reduce the amount of benzene and other hazardous air pollutants in the gasoline pool because of health and environmental concerns. In 2011, Environmental Protection Agency (EPA) in the US made it mandatory for refiners to meet an annual average gasoline benzene content standard of 0.62 volume percent (vol.-%) for all of their gasoline, both reformulated and conventional.

Reliance Industries Ltd (RIL) and Indian Institute of Petroleum (IIP) have developed and commercialised a technology to remove benzene from Fluid Catalytic Cracker (FCC) light naphtha. RIL-IIP have filed joint patent for the process to create strong Intellectual Property (IP) and "freedom to operate" assurance, the RIL statement said.

The light naphtha produced from Fluid Catalytic Cracker (FCC) units is the major contributor of Benzene in the gasoline pool. Due to health and environmental concerns, there has been an increasing pressure on refiners around the world to reduce the amount of Benzene and other hazardous air pollutants in the gasoline pool. In 2011, under Mobile Source Air Toxics (MSAT) gasoline fuel programme, Environmental Protection Agency (EPA) in USA required refiners to meet an annual average gasoline benzene content standard of 0.62 volume percent (vol.-%) for all of their gasoline, both reformulated and conventional, nationwide. It was evident that, in the near future, Europe and the rest of the world will also impose lower limits on Benzene content in the gasoline.

According to the statement, in 2011, RIL had started to evaluate available technologies to remove Benzene from FCC Light naphtha. However, higher capital and operating expenditures, loss of value due to significantly lower benzene recovery and loss of octane barrel due to loss of high-octane olefinic compounds were some of the disadvantages with the available technologies.

Further, the available extractive distillation technology that used solvent to extracts Benzene from FCC light naphtha was not proven commercially. It is very challenging to extract Benzene from light naphtha using solvent because of its rapid degradation by polymerisation in the presence of reactive species such as olefins and di-olefins, and contaminants such as sulphur, nitrogen, chlorides, oxygenates, etc.

RIL-IIP Team did several experiments in the laboratory and pilot plants, and established that selected solvent is robust and meets the required performance criteria. Based on pilot plant data, process scale-up and process design optimisation was done.

RIL and IIP Dehradun signed an agreement to co-develop an extractive distillation process using a robust solvent that would not degrade appreciably in the presence of difficult species and contaminants. 0.2 vol.-% Benzene or less in raffinate (return stream to gasoline) and 99 vol.-% or higher Benzene recovery (extracted and upgraded to cyclohexane grade benzene) were the two crucial targets for both the organisations.

It was understood that robust and selective solvent will improve unit operation and performance resulting in higher reliability and availability of the unit.

RIL-IIP Team did several experiments in the laboratory and pilot plants, and established that selected solvent is robust and meets the required performance criteria. Based on pilot plant data, process scale-up and process design optimisation was done. All this data and work was used to develop Technical Information Package (TIP) containing the following documents:

- Simplified Process Flow Diagram
- Heat and Mass Balance
- Preliminary Data Sheets for Critical Equipment

TIP was handed-over to Technip, who was selected as Detailed Engineering Contractor (DEC) for this new process named Benzene Recovery Unit (BRU).

RIL did the construction and the 'flawless' commissioning of BRU. On 23rd May-2016, the on-specification raffinate product (less than 0.2 vol.-% Benzene) was sent to storage for blending and sales.

RIL & IIP has joined the league of technology developers and there are many enquiries for licensing the technology. ■

Compressed Air Consumption Monitoring

Make your Compressor save your money

Why compressed air?

Virtually in every manufacturing facility in the world, for hundreds of industrial control applications, compressed air systems are used as power sources for tools and equipment. Most industrial facilities need some form of compressed air - from running a simple air tool to operating pneumatic controls.

Leaks waste energy and money

Compressed air is an advantageous but also rather costly energy source. An undetected hole or a leak in compressed air lines can cost a plant several thousand rupees per year. Predictive leak detection and repair will result in substantial cost savings and system efficiency. However, if these costs are not measured and accounted for separately then there is no motivation for the person responsible for the equipment to work towards cutting the costs of compressed air consumption. If the system's compressed air consumption is recorded, however, there is greater motivation to detect leaks and reduce consumption.

How are the leaks detected?

Dividing a plant into zones is key to leak detection

In order to provide predictive maintenance information, a plant should be first divided into zones based on the number of fittings and potential leakage points. After sectioning a plant into smaller, more manageable zones, the meter is mounted in the supply line to the zone. The sensor will detect leakage areas based on the zone's increase in air consumption over time or monitor air consumption when machines in the zone are shut down.

Testo 6440 Compressed Air Flow Meter

Testo 6740 Dew Point Transmitter

After a leakage area is detected, leak repair can occur quickly. A compressed air flow meter will target a leakage area by zone so that plant personnel can focus on a specific, smaller area, rather than search an entire plant for air leaks. With the zone identified, maintenance can quickly pinpoint the exact leak location and repair the leak.

Thus, a compressed air flow meter can monitor:

- Leakage per individual machine
- Leakage per zones in a plant
- Consumption per machine cycle
- Consumption per shift
- Consumption per zones in a plant

It can also verify leak repair and help in system improvements.

How can Testo help?

- We discuss with you the details and condition of your compressed air network.
- We offer a suitable instrument for demo of your requirements (if you want to start on a small scale)
- We offer complete systems that can include monitoring of consumption - Dewpoint Transmitter for air quality and Compressed air flow meter for quantity, with or without PC communication for data analysis.

In other words, we cater to your compressed air system needs with simple or complex smart solutions and make the burden of looking after your compressed air, easy to handle.

Benefits:

Not only the energy costs could be reduced by monitoring the compressed air, but the purchase of another compressor is no longer necessary and an existing compressor could be switched to standby. Installation and purchase of the compressed air meter is paid off in no time. While Testo Compressed Air Flow Meter 6440 monitors consumption of compressed air, Testo Dew Point Transmitter 6740 monitors quality of compressed air.

Compressed air is used in all areas of industry. Humidity is normally undesirable because it can cause damage or impair the quality of the end product. Testo trace humidity sensors enable you to keep an eye on these processes. ■

Courtesy: Testo India Pvt. Ltd.

For more info:

Write to info@testoindia.com or visit www.testo.in

Liquid Ring Vacuum Pump & Booster Blowers

A liquid ring vacuum pump should be strongly considered when the gas load is wet. Its internal construction allows the pumping of saturated loads without concern of damage to the pump. In fact, a net pumping increase can be realized from the standard pumping curve as the warm process vapors condense inside the cooler liquid ring.

This is not the case when oil sealed or dry vacuum pumps are employed when pumping wet gases and should rarely be considered for this type of service. However, the liquid ring vacuum pump relies on the physical properties of the sealant to determine its maximum vacuum level and is usually limited to around 25mmHg.

When deeper vacuum levels are required an extra pumping stage can be employed such as the Rotary Booster or Blower. Applying one rotary booster at the vacuum pump suction can enhance the operating pressure down to 4-10mm. The improved performance can often make the boosted system a more cost effective way of increasing performance compared to using more or larger primary vacuum pumps.

A booster blower is shown above, backed by a liquid ring, with its two interlocking rotors used to trap and convey gas. The rotors are synchronized by external gears and rotate in opposite directions. Each rotor traps a pocket of gas as it moves past the inlet port. The trapped pocket of gas is then conveyed around the periphery of the casing bounded by the casing and the rotor. The gas is moving at a constant pressure with actual compression occurring when it is discharged at the discharge port. The lobes are synchronized through the use of timing gears which maintain a constant clearance between the rotors and the cylinder.

The back gassing of a blower is completely determined by these clearances. Booster blowers do not have sealing or lubricating fluids in the pumping chamber and rely on separate lubricating fluid reservoirs located on each end of the cylinder to provide lubrication to the bearings, seals and timing gears. Generally, Labyrinth seals are designed to separate the oil reservoir from the pumping chamber. Typical rotating speeds are as high as 3 to 4000 rpm and are available in different materials of construction to meet the gas constituency of the process.

Since the compression occurs completely at the discharge port of the blower there is little chance for the compressed gas to share its heat with the blower housing, therefore blowers are generally limited in their compression ratio. Typically for gas discharge pressures higher than 10mm the theoretical limit is 2.3:1. Higher compression ratios will result in the discharge nozzle becoming overheated which in turn will transfer excessive heat to the blower lobes and can potentially result in mechanical failure.

Even though a booster blower will operate with a compression ratio of only 2.3:1 above 10mm there remains a tremendous advantage to pumping below 10mm since as the pressure moves lower the compression ratio across the blower can be as large as 50:1. This allows a very large capacity pumping system to be realized by adding a blower to a smaller vacuum pump and when applied to a liquid ring vacuum pump allows the system pressure to move lower than the vapor pressure limitation of the liquid ring.

Calculating the temperature rise across the booster blower is relatively simple and straight forward. From atmospheric to pressures down to 10mm the temperature rise coefficient is essentially unity. As the pressure moves lower to say.1mm, then the temperature rise coefficient becomes a much lower value, typically.01.

Temperature Rise = T x TRC x (K-1)/ (K) x (SR-1)/Volumetric Efficiency
Where T = Absolute temp of the inlet gas
TRC = Temperature rise coefficient
SR = Staging ratio

For example a blower operating a 10mm with a 2:1 staging ratio and an inlet gas temperature of 100f would yield a temperature rise of 90f. If we change the staging ratio to 3:1 this would result in a temperature rise of 180f. And if we change the operating inlet pressure to 1mm the temperature rise now becomes 24f.

Pressures below 4mm are possible when using a liquid ring vacuum pump by staging multiple booster blowers ahead of the liquid ring, or a combination of blowers and ejectors. Operating pressures in the fractions of an mm range are achievable. ■

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Coupler

OPW Engineered Systems has added the LYNX coupler to its complete line of terminal solution offerings. Based on OPW Engineered Systems' existing couplers, LYNX incorporates a U-pin design that enables an operator to disassemble the coupler in a matter of seconds in order to shorten the service cycle as much as possible. Each LYNX coupler comes with a five-year warranty.

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Mass Spectrometry

Agilent offers range of systems, software and technologies designed to improve both the speed and accuracy of MS. The highlight is the Agilent 8900 Triple Quadrupole ICP-MS system. The controlled-reaction chemistry of this inductively coupled plasma/MS system delivers the lowest detection limits for previously difficult elements. It also includes a fast detector that sets a new benchmark for single nanoparticle applications.

The Agilent JetClean self-cleaning ion source designed to keep Agilent quadrupole GC/MS systems free of matrix deposits that would otherwise build up over time and degrade instrument performance. Using a carefully controlled hydrogen flow, JetClean technology greatly reduces/eliminates the need for source cleaning on Agilent single and triple quadrupole GC/MS systems.

The Agilent Arsine/Phosphine GC/MS Analyzer enables polyethylene and polypropylene producers to reduce costs by moving impurity detection to an internal quality-control workflow, and the Agilent Water Screener GC/MS Analyzer, designed to provide fast data review and reporting of regulated compounds and contaminants of emerging concern, as well as unknowns.

Agilent MassHunter BioConfirm Software includes a new walk-up version of the drug-to-antibody calculator, which enables characterization of antibody drug conjugates by non-expert LC/MS users. This software speeds up recursive feature extraction and performs simultaneous analysis of multiple data files from quadrupole time-of-flight MS used in tandem with gas or LC. New analytical features, such as improved reporting, are available on Agilent MassHunter Quant Software, as well as support for national pharmacopoeia system suitability testing and a new metabolomics database and method for dynamic multiple reaction monitoring. It enables routine analysis of central carbon pathway metabolites, using Agilent's mid-range triple quadrupole LC/MS systems. Agilent's MassHunter VistaFlux Software, enables cutting-edge, targeted, isotopologue data extraction and pathway visualization of metabolomic flux results for greater biological understanding.

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Motors

Leroy-Somer, based in France and part of the Emerson group, has been supplying motor solutions for a wide range of applications. The industrial refrigeration market is a particular area of expertise. A number of Leroy-Somer IMfinity 2 motors in the power range of 9 to 250 kW were the ideal fit.

Featuring an advanced mechanical and electrical design (magnetic core optimisation) IMfinity has been designed to deliver extreme reliability in all installed applications. IMfinity is able to operate with all the major worldwide voltages and frequencies covering at least 80 per cent of power supplies.

Another key factor in this particular application was the rapid supply of motors for the build, utilising Emerson's Express Availability service.

For details contact:
Emerson Industrial Automation
117B Developed Plot Indl Estate
Perungudi, Chennai 600 096
Tel: 044-66918400
E-mail: tr.sathishkumar@emerson.com

or Circle Readers' Service Card 4

Multi-parameter Waterproof Meter

Hanna Instruments offers HI98194 multi-parameter, waterproof and carriageable meter that monitors most important water quality parameters like pH, mV, ORP, EC, TDS, resistivity, salinity, seawater, DO, atmospheric pressure and temperature. This meter has digital probe which directly measure pH, EC, TDS and then meter calculate other parameters. The probe transmits readings digitally to the meter, where data points can be displayed and logged.

Feature backlit graphic LCD display up to 12 parameters simultaneously. It is waterproof protected. The HI7698194 probe features a quick connect DIN connector that makes a waterproof connection with the meter. The probe and meter automatically recognize the sensors that are connected. Integrated temp sensor allows for automatic temp compensation of pH, conductivity and dissolved oxygen measurements. The meter features a built-in barometer with user-selectable units for dissolved oxygen pressure compensation. Quick calibration provides a speedy, single point calibration for pH, conductivity and dissolved oxygen.

For details contact:
Hanna Equipments (India) Pvt Ltd
3/4/5/6 Aum Sai Bldg, Plot 23 C, Sector 7
Kharghar, Navi Mumbai 410 210
Tel: 022-27746554, 27746555, 27746556
Fax: 91-022-27746557
E-mail: sales@hanna-india.com / www.hannaindia.in

or Circle Readers' Service Card 5

Dispersible Polymer Powders and Si Resin

WACKER offer silicones and polymer binders for sophisticated coating and construction applications. VINNAPAS 5005 N and VINNAPAS 8118 E are two versatile dispersible polymer powders with outstanding adhesive properties for dry-mix mortars, especially for tile adhesives.

Wood impregnated with the silicone resin emulsion SILRES WH is protected against damp, moisture and damage, such as cracks caused by swelling and shrinking, for an exceedingly long time. Further highlights include VINNAPAS 4121 N and VINNAPAS 5518 H as binders for exterior applications such as external thermal insulation composite systems or finishing coats.

For details contact:
Wacker Chemie AG
Hanns-Seidel-Platz 4
81737 München, Germany
Tel: +49 89 6279 1619
E-mail: ingrid.ostermeier@wacker.com

or Circle Readers' Service Card 6

Portable Thermal Imagers

This Nyxus Bird with high-resolution (640 x 480) IR-pixel detector offers superb image quality. A thermal resolution of less than 0.08 K allows visualization of even the smallest thermal differences or signatures. With one click users can easily toggle between the IR channel and a visual (7 x 40) monocular usable for daylight viewing.

Individual snapshots can be stored and comfortably exported. Video data can be streamed via the integrated USB interface, once attached to a Windows PC Nyxus Bird turns into an infrared long-range webcam. A serial interface allows connection to computer controlled remote.

For details contact:
InfraTec GmbH
Infrarotsensorik und Messtechnik
Gostritzer Straße 61–63
01217 Dresden, Germany
Tel: +49 351 871-8630 | Fax: +49 351 871-8727
E-mail: thermo@InfraTec.de

or Circle Readers' Service Card 7

Brushless Slotless Motors

Portescap offers the new 22ECP two-pole motors which balance speed and torque capabilities, bringing premium performance to the most commonly specified brushless motor working points. Part of their Ultra EC platform of brushless slotless mini motion solutions, these cost-optimized motors can provide 30 per cent more continuous torque and 100 per cent more power over similar comparative motors without compromising on the smooth operation and long life you expect from Portescap's brushless slotless motors.

The 22ECP motor features their patented Ultra coil technology which provides unparalleled torque and power density, from low to high speed. The 22ECP can be adapted to most applications in the medical and industrial markets, enhancing the life and reliability of a device without compromising on power and machine throughput. The new 22ECP is an ideal choice for applications such as hand tools, factory automation equipment, lab automation equipment, disposable medical tools, industrial grippers and automation actuators.

The 22ECP is available in 45 and 60 mm length versions, with hall sensors and a total of 3 different coils to match your speed and voltage requirements. Upon request, Portescap can provide options for customization including gearboxes, encoders, coil variations and mechanical interface modifications.

For details contact:
Portescap
Unit No. 2, SDF-1
SEEPZ-SEZ
Andheri (E), Mumbai 400 096
Tel: 022-42006200 | Fax: 91-022-42004036
E-mail: sales.asia@portescap.com

or Circle Readers' Service Card 8

Ratio Pyrometer

LumaSense Technologies, Inc introduced the IMPAC IGAR 6 Advanced infrared thermometer. It is a digital, compact pyrometer with 1-colour, 2-colour, and smart operating modes for non-contact temp measurement in ranges between 100 to 2,000^{0}C.

The switchover technology, known as Smart Mode, allows the pyrometer to measure temp in 1-colour mode at low temp (100 to 250^{0}C) and then transition to 2-colour mode to provide the advantages of measurements in ratio mode at higher temp (280 to 2,000^{0}C). The automatic, smooth transition from 1-colour to 2-colour measurement occurs between 250 and 280^{0}C. In addition, the pyrometer can operate in 1-colour mode (100 to 2,000^{0}C) and 2-colour mode (250 to 2,000^{0}C). It is ideally suited for different industrial applications. Sample applications include induction heating, hardening, tempering/annealing, brazing, sintering, vacuum processes, coating and laser heat treatment.

The IGAR 6 Advanced joins the Series 6 family of digital, compact infrared thermometers and leverages highly accurate infrared technology to determine the temp of a surface. The IGAR 6 Advanced shares the available Series 6 sighting options such as through-lens-sighting, laser targeting and TV module, and can be connected to a PC through an RS485 to USB connection.

For details contact:
LumaSense Technologies GmbH
Kleyerstraße 90, Frankfurt / Main, 60326 Deutschland, Germany

or Circle Readers' Service Card 9

Close-coupled Pumps

KSB offers new monobloc pumps – Etabloc. Pump and motor connected in one compact unit results in compact and space-saving design without sacrificing energy efficiency.

Etabloc pumps find applications in industrial as well as construction segment. Pumps are designed to handle clear water, cooling water, swimming pool water, drinking water, spray irrigation, heating and ventilation, condensate, etc. There are 43 different sizes of pumps available for selection. They can deliver heads up to 160 metres with flow up to 640 m^3/hr. Motors up to 110 kW can be coupled with the pumps.

Stub shaft design feature eliminates the need for coupling alignment. Optimized hydraulic system ensures high efficiency. Great choice of materials and mechanical seal is available making the pump suitable for variety of applications. KSB make IEC Standardized IE2 high-efficiency motors are with IP55 enclosure proves the pump set is robust in construction and safe for life. Back pull out design allows easy maintenance and large seal chamber facilitates easy and faster cooling of mechanical seal.

For details contact:
KSB Pumps Ltd
Mumbai-Pune Road, Pimpri, Pune, Maharashtra 411 018
Tel: 020-27101241
E-mail: bipin.kode@ksb.com

or Circle Readers' Service Card 10

Oil-lubricated Vacuum Pumps

These oil-lubricated vacuum pumps of the TMS Series are single stage, oil-lubricated rotary vane vacuum pumps with oil re-circulation system. The lubricant system is rated for continuous operation of high intake pressures so that the pump may be used in a versatile manner in most rough vacuum applications. The pumps are used for suction of air also in presence of water vapour and for continuous industrial use. TMS Series pumps are made from high quality materials, has economical features which matches together to achieve: high pumping speed over the range of absolute pressure 1,000 mbar-0.5 mbar; high water vapour tolerance and low noise level; no pollution; air-cooled: built-in anti suck-back system. The pumping capacities available are: 17 m^3/hr, 35 m^3/hr, 65 m^3/hr, 100 m^3/hr and 150 m^3/hr.

For details contact:
Toshniwal Instruments (Madras) Pvt Ltd
267 Kilpauk Garden Road, Chennai 600 010
Tel: 044-26448983, 26448558
E-mail: sales@toshniwal.net

or Circle Readers' Service Card 11

Coreless Brush DC Motor

Portescap offers the new DCT range of Athlonix Brush DC motors. It features Portescap's proven energy efficient coreless design with an optimized self-supporting coil and magnetic circuit. With torque carrying capabilities reaching up to 14.96 mNm, the 24DCT provides high performance with efficiency reaching up to 90%. Athlonix 24DCT miniature DC motors are available in precious metal and graphite commutations with a Neo magnet inside. The unique constant force spring design for carbon brush provides consistent performance. An REE (Restriction of Electro Erosion) coil is an available option, which prolongs the life of the motor. Component standardization and design modularity allow quick customization capability for samples across various applications. Athlonix motors are compatible with encoders and gearheads of various sizes and ratios.

For details contact:
Portescap
Unit No: 2, SDF-1, SEEPZ-SEZ
Andheri (E), Mumbai 400 096
Tel: 022-42006200 I Fax: 91-022-42004036
E-mail: sales.asia@portescap.com

or Circle Readers' Service Card 12

Brake Motors

Emerson Industrial Automation offers Leroy-Somer FFB brake motors developed around the flexible concept. The FFB can be integrated in most fixed or variable speed applications. Its modular encoder adaptation principle makes it a versatile motor, suitable for the simplest to the most demanding variable speed applications. The industrial control of its performance (running-in of all the friction parts as standard) and a wide range of braking function supervision accessories (opening, closing and wear sensor, etc), significantly increase the safety of the transmission chain.

In order to achieve significant energy savings, FFB brake motors offer various different efficiency levels: non-IE, IE2 and IE3. Ideal for variable speed operation, they comply with requirements for improved energy efficiency in motorised industrial applications.

The new IMfinity induction motors platform, the latest generation 3000 range of geared motors, the high performance levels of the Unidrive M variable speed drives and the FFB brake motor range all enhance Emerson´s ability to offer solutions that are designed to work together perfectly.

For details contact:
Emerson Industrial Automation
117B Developed Plot Indl Estate
Perungudi, Chennai 600 096
Tel: 044-66918400
E-mail: tr.sathishkumar@emerson.com

or Circle Readers' Service Card 13

INDIA

Oil & Gas World Expo 2016

Concurrent Events: SMP World Expo, EnerTECH World Expo

Dates: 3 – 5 March 2016
Venue: BC&EC Mumbai, India
Details: Platform to showcase services, technologies, innovations and current & future trends of entire value chain of hydrocarbon industry.
Contact: +91 22 40373636
Email: sales@jasubhai.com
Website: www.chemtech-online.com

Watertech India 2016

Dates: 15 – 16 September 2016
Venue: New Delhi
Details: An event for water, wastewater and solid waste management products/ technologies/services
Organiser: Messe Frankfurt Trade Fairs India Pvt. Ltd.
Contact: +91-22-6144 5900
Email: prashant.lade@india.messefrankfurt.com
Website: www.watertechindia.com

India Chem 2016

Dates: 1 – 3 September, 2016
Venue: Bombay Exhibition Centre, Mumbai
Details: Event of chemicals and petrochemicals industry in India in its 9th edition
Organiser: FICCI
Contact: +91 22 2496 8000
Email: vishal.ganju@ficci.com
Website: www.indiachem.com

Automation 2016

Dates: 22 – 25 August 2016
Venue: Bombay Exhibition Center, Mumbai
Details: Automation 2016, a four day automation event is set to introduce new and upcoming technology this year
Organiser: IED Communications Ltd
Contact: 91 22 22079567
Email: jyothi@iedcommunications.com
Website: www.iedcommunications.com

INTERNATIONAL

Chemcon Europe

Understanding the Global Petrochemical Industry
Dates: Sep 30-Oct 02, 2014
Venue: London, UK
Details: The conference will cover impact of shifting feedstock slates: shale gas and oil, coal, and bio-based feeds are expanding feedstock options worldwide
Organiser: IHS Inc
Contact: 000 8000 016 775 (Toll Free)
Website: www.ihs.com

Chemspec South East Asia - 2016

Dates: 30 Nov to 01 Dec, 2016
Venue: Queen Sirikit National Convention Center, Bangkok, Thailand
Details: Exhibitions for the fine and speciality chemical industry
Organiser: Mack Brooks Exhibitions Asia Ltd
Contact: +66 (0) 2684 6894
Email: wendy@mackbrooks.com
Website: www.chemspec-southeastasia.com

SOMChE - 2016

Dates: 1-3 December 2016
Venue: Miri Marriott Resort & Spa, Malaysia
Details: an established platform for chemical engineers from academia and industries to disseminate their latest research and to highlight new technologies.
Organiser: Curtin University, Sarawak Malaysia
Contact: +60 85 44 3939
Email: somche2016@curtin.edu.my
Website: www.curtin.edu.my

Petrochemistry and Chemical Engineering

Dates: 05-07, 2016
Venue: Phoenix, Arizona, USA
Details: The conference will cover advanced technologies in petrochemistry and chemical engineering
Organiser: OMICS International
Contact: 1-650-618-9889
Email: contact.omics@omicsonline.org
Website: www.omicsonline.org

New Contracts/Expansions/Revamps

The following list is a brief insight into the latest new projects by various companies in India.

• CHEMICALS

Eternis Fine Chemicals proposes an expansion of synthetic organic chemicals manufacturing unit from 42,200-TPA to 60,000-TPA in MIDC Kurkumbh, district: Pune, Maharashtra. The current status of the project could not be ascertained. According to MoEF sources, total land area is 100,400 sq m and built up area is 42,710 sq m. 33% will be developed as green belt area. The project will entail: 1) capacity expansion of existing products and by-products; 2) addition of similar products and by-products; 3) introduction of new eco-friendly biomass boiler as replacement to furnace oil. Project involves manufacturing of fragrance from organic raw materials by chemical process like hydrogenation, esterification, Diels-Alder reaction, cyclisation, dehydrogenation, aldol condensation, etc, followed by distillation to match precise quality standards. By-products capacity will be augmented from 11,400-TPA to 20,000-TPA. The estimated cost of the project is ₹ 1,050-million. The power requirement 12,000-KVA will be available through Government Electricity Board.

Saras Plywood Products is planning a 60-TPM urea formaldehyde resin manufacturing plant in New GIDC Gundlav, district: Valsad, Gujarat. The existing land area is 1.5 acres. The estimated cost of the project is ₹ 7.5-million. Kalyan Industries is the equipment supplier. The project is waiting for environmental clearance. Civil work will commence in 3 months. The project is planned for completion in this year. According to SEIAA sources, the company has proposed primary treatment plant followed by evaporator for treatment of industrial effluent and has also proposed a multi-cyclone separator.

FMC India is planning an expansion of its chemical manufacturing unit at IDA Patancheru, district: Medak, Telangana. The estimated cost of the project is ₹ 17.5-million. As of September the project was waiting for the environmental clearance. According to MoEF sources, the plot area is 4.027 acres. The company proposes to manufacture 50-TPM of products as part of the expansion. Green belt on 33 per cent of the land area will be developed and maintained. Power requirement will be made available through SPCPDCL. The project will be completed within 2 years.

Globex Laboratories (R&D) proposes a pigments manufacturing unit at village: Dabhasa, district: Vadodara, Gujarat. According to MoEF sources, the project will come up in the existing land on 9,312-sq m. Kadam Environmental Consultants, Vadodara is the environmental consultant. The project will entail manufacture of 40-TPM red pigments, 40-TPM yellow pigments and 450-TPM dilute phosphoric acid. Environment clearance has been obtained for the products – red pigments and yellow pigments. Construction work has begun, as EC and NOC have been received. Effluents generated will be treated in effluent treatment plant having MEE. The company has applied for Amendment in Environmental Clearance dated 26th September 2012 for change in fuel from LDO to agro waste briquettes and addition of one raw material, ie, phosphoric acid and generation of dilute phosphoric acid (25 per cent basis) as by-product.

Bohra Industries is implementing an expansion of its chemical and fertilizer manufacturing unit at Umarda, district: Udaipur, Rajasthan on 14,500-sq m of existing land. The project will entail expansion of single super phosphate capacity from 400-TPD to 600-TPD, granulated super phosphate from 200-TPD to 300-TPD and addition of new products namely 150-TPD triple super phosphate, 550-TPD synthetic gypsum, 30-TPD di-calcium phosphate, 160-TPD phosphoric acid, 0.3-TPD potassium fluoride, 150-TPD H_2SO_4 and 0.3-TPD sodium tri poly phosphate (STPP). Machinery has been ordered from China. Civil work is in progress. The project is scheduled for completion in 2018.

Ami Lifesciences proposes expansion of its synthetic organic chemicals manufacturing unit (viz, pharmaceutical bulk drugs and drug intermediates) from 65.70-TPM to 131.60-TPM in Padra, district: Vadodara, Gujarat. The estimated cost of the project is ₹ 87.046-million. Environmental Consultant to this project is Envisafe Environment Consultants. According to MoEF sources, total plot area is 23,760-sq m (existing 10,270-sq m and 13,490-sq m for expansion). The unit currently manufactures 2-TPM 1-Acetyl Naphthalene, 1-TPM 2-Acetyl Naphthalene, 6-TPM Itopide HCl, 1.20-TPM Loxapine Succinate, 0.30-TPM Amoxapine, 6-TPM Venlafaxine, 6-TPM Progunil HCl, 6-TPM CB-2-L-Valine, 0.60-TPM Nateglinide, 0.60-TPM Quetiapine, 24-TPM Carbomazepin and 12-TPM Oxacarbomazepin. The expansion will involve addition of new products. Water requirement from ground water source will be increased from 34.53-cu m/day to 181-cu m/day after expansion. Effluent generation will be increased from 9.35-cu m/day to 79.5-cu m/day after expansion. Highly concentrated effluent will be sent to captive incinerator for incineration. Remaining effluent (70-m^3/day) will be treated in the ETP comprising primary, secondary and tertiary treatment. Treated effluent will be sent to CETP for further treatment. ETP sludge, inorganic residue and incineration ash will be sent to TSDF. Spent carbon, organic residue will be sent to incinerator.

Adi Finechem is planning a 40-TPA specialty products manufacturing project on a 2-acre land at an estimated cost of ₹ 400-million in village: Chekhala, district: Ahmedabad, Gujarat. The project is waiting for environmental clearance.

RSPL is planning a 1,500-TPD soda ash plant and 40-MW captive power project in village: Kuranga, district: Jamnagar, Gujarat. Land acquisition is in progress. 85 per cent of land has been acquired. The project is waiting for environmental clearance. The entire project is planned for completion in 5 years from zero date.

• MINING

Metabluu Power, a sister concern of Minera Udyog India, is planning a 75,000-TPA iron ore mining project in village: Devikonda, district: Karimnagar, Telangana. The project is awaiting Government approval.

Aryan Ispat & Power is planning an expansion of its coal washery in village: Bamoloi, district: Sambalpur, Odisha. The project will come up in the existing 204. 65-acre integrated steel plant premises. The capacity of the project is to be augmented from 0.70-MTPA to 5.70-MTPA. The cost of the project is ₹ 600.7 million. The project is awaiting environmental clearance and planned for completion in 1-year from zero date. According to MoEF sources, the expansion is based on heavy media cyclone (wet process) technology. The washery will produce washed coal of an average ash around 34% (GCV 4,350-Kcal/kg), middling (ash content about 58%) of GCV around 2,350-Kcal per kg useable as fuel in FBC boilers. The proposed expansion will be the state-of-the-art with close circuit water system, classifying cyclone, high frequency screens, thickener and multi-roll belt press filters. Power requirement of 5-MVA will be sourced from its own power plant connected with the Grid Corporation of Odisha.

NTPC is planning the Kudanali-Luburi coal mining project in district: Angul, Odisha. The company has signed an agreement on June 15, 2015 with Jammu and Kashmir State Power Development Corporation (JKSPDCL) for promoting a joint venture company with 67:33 equity participation for undertaking exploration, development and operation of jointly allocated Kudanali-Luburi Coal Block at Odisha by the Ministry of Coal.

DSP Associates is planning a 15,17,600-TPA sand (minor mineral) mining project in the mines of Tikola-1 Sand Unit at village: Tikola, district: Gurgaon, Haryana. Mining lease area is 42.50-hectare. The estimated cost of the project is ₹ 55-million. The project is waiting for environmental clearance. Mining work is expected to commence soon. According to MoEF sources, out of the total area, 31.50-hectare area falls in the river bed and 11-hectare area falls in agricultural land (outside river bed). Method of mining will be opencast semi-mechanized without drilling and blasting. The mine will be excavated out in layers up to a depth of 3-m in riverbed and 9-m in agricultural field. Letter of Intent (LoI) for mining contract has been granted for a period of 9 years.

• NON-CONVENTIONAL ENERGY

Viaton Energy, promoted by the 3F Group and Creative Group, is planning a 10-MW power project in Punjab. Discussion is in progress with the Government for allocation of site. The company is already operating a 10-MW biomass-based IPP at village: Khokhar Khurd, district: Mansa, Punjab from July 2013. The generated power is being sold to the Government of Punjab.

Hubli Electricity Supply Company is planning solar RTPV grid connected power plants in district: Belagavi, Karnataka. E-tenders have been floated to design, manufacture, supply, installation, testing and commissioning of solar RTPV grid connected power plants on roof-tops of 31 HESCOM office buildings in Belagavi Zone Jurisdiction for total load of 136-KWp including operation and maintenance for a period of five years. The approximate amount put to tender is ₹ 18.62-million.

• NON-CONVENTIONAL POWER

BMS Starch, a part of the BMS Group, is implementing a 6-MW biomass-based co-gen power plant in village: Kurandi, district: Bastar, Chhattisgarh. The project is coming up along with a starch manufacturing unit on 26-acre of acquired land at a total estimated cost of ₹ 1,350-million. Equipment supplier is yet to be appointed. Civil work is in progress. The project is expected to be completed in this year.

• THERMAL POWER

Surguja Power, a 100 per cent subsidiary of Adani Mining, proposes a 540/600-MW coal washery rejects based thermal power project spread over 47.5-hectare of land in villages: Parsa, Kete, district: Surguja, Chhattisgarh. The estimated cost of the project is ₹ 35-billion. According to MoEF sources, Greencindia Consulting is the environmental consultant. The project will comprise of a 4 x 135/150-MW power plant based on the coal washery rejects within the Parsa East and Kete Basan coal block at Udaypur Tehsil, district: Surguja. The Group has been assigned work by Rajasthan Rajya Vidyut Utpadan Nigam (RRVUNL) for mining, development and operation of Parsa East coal block and supply of beneficiated coal. Sizeable amount of rejected coal will be generated, which shall be utilized for power generation by setting up the power project within the coal block. The plant is proposed to have circulating fluidized bed combustion-based (CFBC) coal fired boilers.

Rain Cements is planning a 7-MW waste heat recovery-based power plant in village: Boincheruvupalli, Peapully Mandal, district: Kurnool, Andhra Pradesh. The estimated cost of the project is ₹ 700-million. The project will come up in the existing cement plant premises. The project will generate up to 7-MW of gross electrical energy from the waste heat and the flue gases evolved during the cement manufacturing process. The project that will be financed by a combination of internal accruals and bank loans is expected to be completed in about 14 months. The Board of Directors of the company had approved of the project at its meeting held on 27th February, 2015.

Seven Star Steels is planning an expansion of its thermal (coal-based) captive power project from initial 8-MW to 12-MW at a cost of ₹ 600-million in village: Kalendamal, district: Jharsuguda, Odisha. The project will come up along with an expansion of its sponge iron plant from 60,000-TPA to 180,000-TPA and ingot plant from 39,200-TPA to 80,000-TPA. Machinery will be partially procured locally and partially imported; orders are yet to be placed. The project is waiting for industrial clearance. Work on the project will commence soon.

Adani Power Rajasthan is planning an expansion of Kawai Thermal Power Plant in Kawai, district: Baran, Rajasthan. The capacity will be augmented from 1,320-MW by addition of 2x800-MW. The project is waiting for environmental clearance.

• FERTILISER

Fertilizer Corporation of India is planning to set up a 1.27-MTPA natural gas-based urea plant in district: Gorakhpur, Uttar Pradesh. Deloitte Touche Tohmatsu India is the Financial Advisor. Request for Qualification (RFQ) invited for selection of investor for setting up the project at the Gorakhpur unit of FCIL in August 2015. The Ministry of Chemicals and Fertilizers, has authorized FCIL for revival of the Gorakhpur Unit by selecting a suitable investor to setup, design, finance, construct, establish, operate and maintain the project for a term of 33 years, which may further be renewed. The total land area of 993.81 acres is available with FCIL. The estimated Investment size is ₹ 60-billion. The Government has earmarked 2.4-MMSCMD of domestic natural gas for the project from Daman Field of Oil and Natural Gas Corporation, which is expected to commence production from September 2016. The natural gas is proposed to be transported through the upcoming Jagdishpur-Phulpur-Haldia pipeline to be constructed by GAIL (India). The construction period is 3 years.

Agrocel Industries is implementing a potassium schonite manufacturing unit in village: Dhordo, district: Kutch, Gujarat. Civil work is in progress.

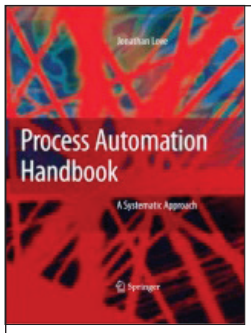
• PETROLEUM

Indian Oil Corporation is planning a common user facility (CUF) for storage of petroleum products in Berhampur, district: Ganjam, Odisha. Single window clearance has been received. Land acquisition and land allotment is under progress. The project is planned for completion in 3 years from zero date.

Indian Oil Corporation is planning an ethylene derivative plant at Paradip refinery complex, district: Jagatsinghpur, Odisha. The estimated cost of the project is ₹ 40-billion. The plant will provide products that will facilitate manufacturing of polyester chips, fibers, PET bottles, PET chips, polyester yarn, etc. The corporation is evaluating the feasibility for setting up the plant.

• CEMENT

The Ramco Cements proposes capacity upgradation of Line-1 cement plant and setting up a new captive power plant in village: Jayanthipuram, district: Krishna, Andhra Pradesh. The current status of the project could not be ascertained. According to BSE reports, Petron Engineering Construction has received Letter of Intent (LoI) from the company for civil and mechanical works for the project. The contract value is ₹ 225-million.

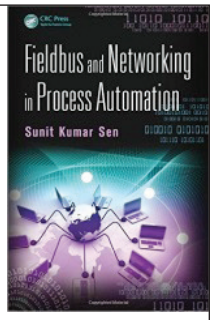


Process Automation Handbook: A Guide to Theory and Practice

Author/s: Jonathan Love
Price: USD 271
Pages: 1093 (Hardcover)
Publisher: Springer

About the Book: This book distils into a single coherent handbook all the essentials of process automation at a depth sufficient for most practical purposes. The handbook focuses on the knowledge needed to cope with the vast majority of process control and automation situations. In doing so, a number of sensible balances have been carefully struck between breadth and depth, theory and practice, classical and modern, technology and technique, information and understanding. A thorough grounding is provided for every topic. No other book covers the gap between the theory and practice of control systems so comprehensively and at a level suitable for practicing engineers.

Fieldbus and Networking in Process Automation



Author/s: Sunit Kumar Sen
Price: USD 140
Pages: 461 (Hardcover)
Publisher: CRC Press

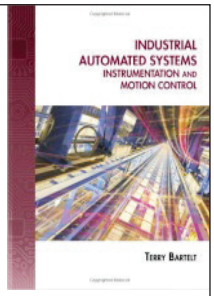
About the Book: Fieldbuses, particularly wireless fieldbuses, offer a multitude of benefits to process control and automation.

Fieldbuses replace point-to-point technology with digital communication networks, offering increased data availability and easier configurability and interoperability.

Fieldbus and Networking in Process Automation discusses the newest fieldbuses on the market today, detailing their utilities, components and configurations, wiring and installation methods, commissioning, and safety aspects under hostile environmental conditions.

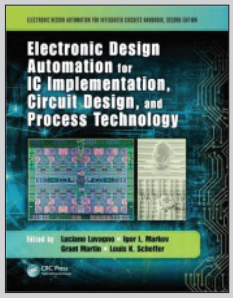
Offering a snapshot of the current state of the art, Fieldbus and Networking in Process Automation not only addresses aspects of integration, interoperability, operation, and automation pertaining to fieldbuses, but also encourages readers to explore potential applications in any given industrial environment.

Industrial Automated Systems: Instrumentation and



Author/s: Terry L.M. Bartelt
Price: USD 32 - 198
Pages: 744 (Hardcover)
Publisher: Cengage Learning

About the Book: Industrial Automated Systems: Instrumentation and Motion Control is the ideal book to provide readers with state-of-the art coverage of the full spectrum of industrial maintenance and control, from servomechanisms to instrumentation. Readers will learn about components, circuits, instruments, control techniques, calibration, tuning and programming associated with industrial automated systems. The book focuses on operation, rather than mathematical design concepts. It is formatted into sections so that it can be used for a variety of courses, such as electrical motors, sensors, variable speed drives, programmable logic controllers, servomechanisms, and various instrumentation and process classes. This book also offers readers a broader coverage of industrial maintenance and automation information than other books and provides them with a more extensive collection of supplements, including a lab manual and two hundred animated multimedia lessons on a CD.



Electronic Design Automation for Integrated Circuits Handbook

Author/s: Luciano Lavagno, Igor L. Markov
Price: USD 170
Pages: 808 (Hardcover)
Publisher: CRC Press

About the Book: The second of two volumes in the Electronic Design Automation for Integrated Circuits Handbook, Second Edition, Electronic Design Automation for IC Implementation, Circuit Design, and Process Technology thoroughly examines Real-Time Logic (RTL) to GDSII (a file format used to transfer data of semiconductor physical layout) design flow, analog/mixed signal design, physical verification, and Technology Computer-Aided Design (TCAD). Chapters contributed by leading experts authoritatively discuss Design For Manufacturability (DFM) at the nanoscale, power supply network design and analysis, design modelling, and much more.

New to This Edition:

- Major updates appearing in the initial phases of the design flow,
- Significant revisions reflected in the final phases of the design flow,
- New coverage of cutting-edge applications and approaches realised in the decade since publication of the previous edition these are illustrated by new chapters on 3D circuit integration and clock design

Offering improved depth and modernity, Electronic Design Automation for IC Implementation, Circuit Design, and Process Technology provides a valuable, state-of-the-art reference for Electronic Design Automation (EDA) students, researchers, and professionals.

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'Indian Companies to Recognise the Changing Global Landscape'

Being an expert in Fluorination/Halogenation which is a major factor that provides the bedrock for the Specialty Chemicals Business, SRF Ltd has enhanced it further by expanding into other chemistries and developing expertise in them, says **Anurag Jain, President & CEO, Specialty Chemicals Business, SRF Ltd.** In a detailed discussion with **Mittravinda Ranjan,** he elucidates the company's transformation from a commodity chemical manufacturer to become a globally recognised name in the Specialty Chemicals marketspace.

What does it take for an Indian company to be successful in the global market?

For an Indian company to be successful vis-à-vis its global counterparts, a key differentiator lies in the management approach to R&D. Continuing and long-term investment in R&D becomes essential in the face of stiff a global competition and investor expectation to generate recurring and sustainable profitability from the core operations of a company.

One must also recognise that India is now very much a part of the global market. All major international entities are present in India today. Developing low-cost yet high-quality processes for generic drugs which Indian pharmaceutical manufacturers are known for, or becoming a force to be reckoned with in the two-wheeler space as Bajaj has done, are fundamentally built on a bedrock of know-how generated over years of sustained investment in innovation. The world today recognises that the ability to make something, per se, is not a differentiator; the rules of the game are being re-written.

The onus lies with the leadership of Indian companies to recognise the changing landscape. Being efficient and operationally excellent are mandatory; but competitive advantage requires the ability to innovate.

Though India has the best of the minds to carry out research work, on an average, industries only spend around 2 per cent of revenue in R&D. How important is it for Indian companies to change to survive in the long-term in the time of global competition?

India ranks 81 out of 141 countries on the Global Innovation Index 2015. Globally, Switzerland, the United Kingdom, Sweden, Netherlands and the United States are ranked as the most innovative countries in the world. It is, perhaps, no surprise that these countries are considered the most successful countries today.

This is not to say that India is not changing. It is closing the gap with the top innovators, and it is, today, considered an innovation outperformer within the category of developing countries. The 2 per cent metric is surely a strong pointer towards the under-investment in innovation, though it does not factor in the reality that India has some of the lowest-cost intellectual capital in the world. In order to succeed globally, companies need to increasingly depend upon innovation as a tool to drive their next wave of growth. Innovative companies are more likely to gain in the long-term than companies that invest merely in capacity expansion that permit them to make more of the same.

Driven by this view, SRF has invested and continues to invest in R&D and technology development. SRF's process

research and development work is driven by two state-of-the-art R&D centres located at Bhiwadi and Chennai. Both the R&D centres focus on product and process development, developing futuristic new processes and chemistry platforms. The R&D team has developed processes and technologies for the production of a number of fine chemicals and intermediates in the field of Specialty Chemicals. Because of our approach to research, development and innovation, SRF is, today, a preferred partner to major pharmaceutical and agrochemical companies worldwide.

What steps has SRF taken to transform itself into a technology and innovation oriented company and maintaining the environment across all business segments? (Please talk about major challenges that organisation has to face from time to time and continuous effort & investment in people.)

SRF started life as a commodity chemical manufacturer. We purchased technology from global majors and operated in an environment where the license raj determined demand and supply. The first major challenge the company faced was liberalisation, the opening up of the economy in the 1990s. SRF seized upon that opportunity to diversify and grow. We recognised that the only way to survive was by gaining capability. This process required us to learn and internalise the technology we had purchased.

The next challenge we faced was phase-out of our products under the Montreal and Kyoto Protocols, and the reluctance of developed nations to sell us technology for newer generation products. Again, SRF reacted to this challenge by developing in-house technology. This was possibly one of the more difficult challenges the company faced – transitioning from a purchaser of technology to a developer of one – and it took us many years to scale this peak, completing by the early 2000s.

Emboldened by this experience and driven by SRF's vision to become an innovation and technology powerhouse, SRF set up its own R&D centres to develop process technologies for Fluorine chemicals. This was possibly the hardest challenge the company took up – driven not by external pressures but by an internal drive to change and grow. It has taken us close to ten years to become a globally recognised name in the Specialty Chemicals marketspace; the blink of an eye in some ways, a long and arduous journey fraught with challenge and difficulty in others.

TQM is our quality philosophy of choice. Retention of our people and development of their capabilities is what will differentiate companies and countries in the days to come. We have been somewhat successful in this endeavour, and have four generations working together shoulder to shoulder. In the digital age, managing their likes and preferences is a key challenge we are working on.

What are your plans to expand speciality chemical business and which are the future businesses SRF will be looking at in the years to come to add to the portfolio and strategies for realising them?

With expertise of over 25 years, SRF has become an epitome of quality production. We are now the largest backward-integrated specialty Fluorination player in India. The Specialty Chemicals business has also established itself as a credible, global player in the Specialty Chemicals business space.

The Business enjoys an enviable reputation for its capabilities to develop and manufacture advanced intermediates for agrochemical and pharmaceutical companies. While agrochemicals is a sizeable market, growth in pharmaceuticals segment is driven by a significant rise in demand for newer drugs that requires newer APIs.

At SRF, we believe sustainable technologies are the key to the future. We continue to invest in clean, lean and green technologies and believe this will enable us to continue our growth trajectory in the years to come.

What are the key success factors that define the success of the Specialty Chemicals Business at SRF?

Being an expert in Fluorination/Halogenation is a major factor that provides the bedrock for the Specialty Chemicals Business. We have enhanced it further by expanding into other chemistries and developing expertise in them. Our expertise also arises from our ability to develop products at competitive cost structures, which can emanate from finding solutions through breakthrough technologies, doing backward integration in multiple key building blocks, and the like. We have continued to expand our multi-step synthesis capabilities and focus on backward integration as we continue to leverage our strong technical expertise. Apart from this, it is the strong project implementation and plant operational skills that transpire into better delivery at competitive prices for our customers.

How has the focus on technology and environment contributed in gaining customer trust for the Specialty Chemicals Business at SRF?

The Specialty Chemicals Business is today respected for the deep knowledge it has on certain types of platform chemistries, where some of our customers may even trust us to develop better processes than they can themselves. There can be no higher statement of trust than to be handed over a molecule, a timeline, and a statement of confidence; and this has only been possible as a result of sustained investment in technology and people, and our capability to execute our operations safely and reliably.

Merely development of technology is not enough. The world is increasingly alive to the fact that responsible handling of hazardous products is essential. A clean and green process is always preferred, and SRF's focus on environment – born of our values as an organisation – has held us in good stead. Truly elegant solutions find that clean and green technologies are extremely lean as well, with cost-effectiveness emerging from the absence of effluents and waste. The ability to think in this way has transformed how global leaders in agrochemicals and pharmaceuticals perceive and relate with SRF. ■

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- Factory Automation
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- Instrumentation And Controls
- Robotics
- Power Plant & MCC Automation (Smart MCC)
- Drive Automation
- Emergency Shutdown System & SIL Certification
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- Gas Detection System
- Tank Gauging Systems
- Gas Chromatography
- Online Condition Monitoring System

Visitor's

- Managing Directors & CEOs
- Presidents & Vice Presidents
- Business & Purchase Managers
- Plant Managers
- Manufacturers & Suppliers
- Consultants & Service Providers
- Government Representatives
- Experts from the industries like : Power, Cement, Steel, Chemicals, Petrochemicals, Fertilizers, Pharmaceuticals, Biotechnology, Pil Exploration, Oil Refining & Hydrocarbon Processing, Railways, Defense & Telecommunication etc
- Associations & Institutes related with Automation
- Contract Manufacturers

Facts & Figures - CHEMTECH World Expo 2015

600	21	600	150	40000	2000
EXHIBITORS	COUNTRIES	DELEGATES	SPEAKERS	VISITORS	STUDENTS

"The managements of refining industries are looking at maximizing the EBITDAs and improving refinery GRMs through integration with the downstream petrochemical value chains. While the middle management is interested in throughputs - the teams at operations level are interested in temperature, pressure, catalyst flow and other parameters. Today, the whole challenge is interpret the real time data for improving the top and bottom line margins."

Mr R K GHOSH
Former Director (Refineries), IOCL, and
President, Reliance Industries Ltd at IAC World Expo 2015

"With an expanding horizon of Automation to the second-tier equipment, achieving a world-class performance remains a distant dream. Automation through real time monitoring and protection also comes handy in the circumstances where the response time available for the operator or maintenance technician to act and prevent failure is so little that catastrophic failure can be prevented. Centralised online asset monitoring also eliminates the need to send personnel into the hazardous for data acquisitions."

Mr A S Basu
Managing Director, CPCL

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- Instrumentation & Process Control
- Industry Automation (Process & Factory)
- Systems Integration & ERP Solutions Providers
- Water & Waste Water Treatment Consultants
- Environment Solutions Providers
- Waste Management Consultants
- Financial Institutions
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