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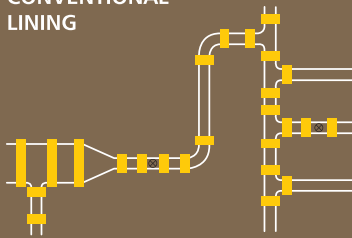
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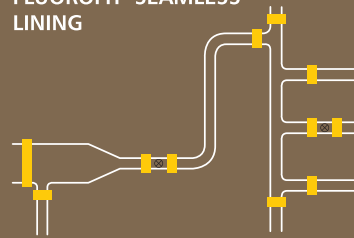
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Vikram Pandit

Technical Marketing Manager, APAC
Sandvik Materials Technology

Vikram Pandit has over 18 years of work experience in Sales & Marketing, Technical Support and Business Development with major Business Houses like ESAB, Kalyani Group, and Sandvik AB.



What are some of the persistent challenges and opportunities you have observed across the refining, petrochemical, oil & gas industries?

The refining, petrochemical, as well as oil and gas sectors have undergone a major

strategic shift over the last few years. Industry players today place emphasis on the longevity in equipment usage to maintain the sustainability of operational processes and save on costs.

In India, the government has rolled out its refining capacity plan from around 240 million metric tons of crude processing,



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For further enquiries, please email our APAC Business Development Manager Virkam Pandit, vikram.pandit@sandvik.com



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which is likely to go up to 470 million metric tons by 2040. This is driving and fueling the growth of greenfield and brownfield projects for us, especially when it is in the backdrop of further refinement on Euro-VI norms of fuel, with many equipment manufacturers or engineering companies moving towards higher corrosion-resistant grades. We are currently seeing higher adoption of super austenitic and higher nickel grades such as Alloy 825, Alloy 625, and Super Duplex.

Separately, the industry has also seen a shift towards C2C (crude to chemical) investments, creating the emergence of a lot more complex processes that put higher demands on the materials in use.

At Sandvik, we have a robust R&D effort that continuously supports the industry's evolution. Our research focuses on high-end alloys in stainless steel, both in duplex and in high nickel portfolios. Last year, we launched Sanicro®

35, an alloy that combines the best features of a super austenitic stainless steel and a nickel alloy. The grade has excellent corrosion resistance for service in sea-water applications and other highly corrosive

environments. Our global standardized processes and complete in-house manufacturing from melt to final product provide customers with quality assurance, so they need not look beyond Sandvik for all their advanced requirements.

Which are the other areas where Sandvik brings value to the segment?

The industry is facing several issues on the maintenance side of the business. Corrosion cost in the industry is huge. A recent study revealed the global cost of corrosion is approximately 2.5 trillion USD, which equates to almost 3% of the annual global GDP.

Understanding that customers would always require better corrosion-resistant alloys, Sandvik is continuously innovating new and better solutions. The new alloy Sanicro® 35 is the most recent product, meant for very aggressive corrosive environments.



Tubes ready for dispatch

In India, Sandvik also initiated the Make in India campaign with the inauguration of a new tube mill in Mehsana, India. In 2020, we added a cold finishing tube manufacturing line to double local production capabilities. Last year, we invested in a new Hydraulic and Instrumentation tubing factory. It will be fully completed and operational next year. This Mill is fully robotized and automated to handle all advanced alloys and meet the future requirements of the sector. Some typical alloys qualified in Production Unit Mehsana (PUM) are Sanicro® 625, C-276, C-22, Sanicro® 35, Sanicro® 825, Alloy 200, 254 SMO, SAF 2707 HD™, to name a few.

Since Sandvik has invested in a new Hydraulic and Instrumentation tubing factory at its Mehsana Mill in Gujarat, could you further elaborate on the offerings and services provided at the Mill?



Production Unit Mehsana

The H&I tubing factory will be set up to address the massive growth we are witnessing within India. It will cater to the requirement of small size tubing from 6-15 mm to produce various alloys. The Mill will be able to cover a wide range of alloys, and at the same time, allow for better lead times to increase value for all our key stakeholders within the region.

At the same time, we will enhance the reach to segments like Automotive (Natural Gas Vehicles), Chemical Industry, Oil & Gas, General Engineering, and more within the region. This will be an exciting development, and we target to start operations by January 2023.

How has Sandvik leveraged digitalization to increase productivity and efficiencies internally and for customers?

Sandvik has always been a leader in innovation and launching new technologies for the industry. One of the elements that we are truly proud of is the full traceability of our products, enabling customers to leverage digital technology to trace them all the way to where the materials came from.

What are your thoughts on sustainability goal 2030, and what is Sandvik's sustainability agenda here?

Sandvik is a sustainable supplier, as can be seen from our involvement in several sustainability indices and support for a number of international principles and commitments.

For instance, we are a constituent of the prestigious FTSE4Good Index Series, an index that measures Environmental, Social and Governance (ESG) performance practices in companies worldwide. In India, we are also part of the extensive sustainability mapping exercise conducted by the Swedish Chamber of Commerce India (SCCI), a collective step committed by member companies to take up green future initiatives. Currently, products manufactured in our steel mill consist of an average of 84% recycled material. The long-term goal is to become 90% circular in our manufacturing system.

How have Sandvik's products and services reflected on the agenda?

With a shift in consumption patterns, we will see the emergence of more CNG gas stations. In the next few years, around 14,000 CNG stations are expected to be set up in India, covering even the logistically challenging central region.

Our commitments align with India's plan to reduce CO₂ emission and hazardous

particle emissions by way of change in automotive fuel, from diesel and gasoline to CNG. As more vehicles move towards CNG and LNG, Sandvik will continue to enhance our offerings of cover storage, transportation, dispensing, and vehicles that form part of the supply chain, partnering for tubing in transportation or the in the supply of CNG from storage to the vehicle itself.

As the year comes to a close, what were some of the key highlights from Sandvik in the region?

Sandvik has made a lot of developments within the Asia Pacific region. 2021 was a year of growth, and we can only thank our customers and partners for their ongoing support and mutual understanding during a period of change in the world.

We look forward to an exciting year ahead.

What are your plans for India and APAC next year and beyond?

Sandvik will continue to build upon its footprint in the Asia Pacific for the foreseeable future, focusing on introducing new alloys, such as the Sanicro® 35, in the market. We will also ramp up working with customers and partners in the region to drive green efforts to create a more sustainable industry. ■

Sandvik's Tube Mill in China



Glenn Darley

Regional Sales Director Tube China
Marketing Manager, APAC

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Sandvik's tube mill in Zhenjiang, China, has been serving customers around the Asia Pacific region since 2011. The mill, located 250km northwest of Shanghai, produces straight and U-bent tube for heat exchangers and hydraulic and instrumentation tubing in austenitic and duplex stainless steels as well as high-

alloy austenitic stainless steels and nickel alloys.

In 2019, Sandvik expanded its offerings by opening a state-of-the-art coiled tubing line for premium grades of seamless stainless steel products. By combining advanced production technology and extensive manufacturing know-hows,



Production Unit Zhenjiang

smaller dimensions to longer lengths – and delivers them around the region within a timeframe as short as 28 days from order.

For customers such as heat exchanger fabricators, coiled tubing in bigger spool sizes translates to requiring fewer connectors and decreased risk of system leakage, enabling them to increase efficiency, reduce downtime, and ultimately decrease manufacturing costs.

This year, Sandvik celebrated the 10th anniversary of the Zhenjiang Mill by planting the Tree of Hope and strengthening its commitment in

supporting customers to navigate through challenges posed by the pandemic. ■



New Coiled Tubing production line launched in Zhenjiang.

supported by technical experts, Sandvik is able to supply high alloy and duplex tube products in a wide range of dimensions. The Zhenjiang Mill currently produces weld-free coiled tubing that meet customers' specific requirements – from

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Six Technology Innovation Platforms launched to foster technological innovations in Heavy Industries

New Delhi, India: Ministry of Heavy Industries launched six web-based technology innovation platforms on 2nd July, 2021 in order to bring together the Industry & Academia to foster technological innovations in heavy industries. They offer opportunities to industries to seek optimum solutions for technological problems faced by them from the vast pool of scientific & technical manpower in the academia.

The details of the six platforms are as under:

TechNovuus set up and maintained by Automotive Research Association of India (ARAI) focussing on Automotive sector (<https://technovuus.araiindia.com>).

SANRACHNA set up and maintained by BHEL focussing on the power sector and renewable energy sector. <http://sanrachna.bhel.in>).

DRISHTI set up and maintained by Central Manufacturing Technology Institute (CMTI), Bengaluru focussing on the various technologies associated with Capital goods. (<http://www.drishti.cmti.res.in>).

ASPIRE set up and maintained by International Centre for Automotive Technology (ICAT) focussing on Automotive Technologies development. (<http://www.aspire.icat.in>).

KITE set up and maintained by AMTDC-IIT Madras focussing on Robotics and Virtual Reality, Machine Tools. (<https://kite.iitm.ac.in>).

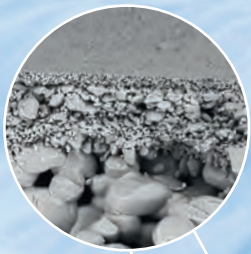
SURGE set up and maintained by HMT MTL Ltd- IISc Bangalore is a Technology Innovation Platform focussing on Machine Tools sector. (<http://www.surgeindia.in>).

Approvals accorded under Production Linked Incentive (PLI) Scheme for Promotion of Domestic Manufacturing

New Delhi, India: The Indian pharmaceutical industry is the 3rd largest in the world by volume. It has high market presence in several advanced economies such as the US and EU. The industry is well known for its production of affordable medicines, particularly in the generics space. However, the country is significantly dependent on the import of basic raw materials, viz., Bulk Drugs that are used to produce medicines. In some specific bulk drugs, the import dependence is 80 to 100%.

With an objective to attain self-reliance and reduce import dependence in these critical Bulk Drugs - Key Starting Materials (KSMs)/ Drug Intermediates and Active Pharmaceutical Ingredients (APIs) in the country, the Department of Pharmaceuticals had launched a Production Linked Incentive (PLI) Scheme for promotion of their domestic manufacturing by setting up greenfield plants with minimum domestic value addition in four different Target Segments (In Two Fermentation based - at least 90% and in the Two Chemical Synthesis based - at least 70%) for 41 products with a total outlay of Rs. 6,940 cr. for the period 2020-21 to 2029-30.

In total, 215 applications were received for



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the 36 products spread across the 4 Target Segments. Out of which, total 42 applications were approved by the Government with a total Committed Investment of Rs. 4,347.26 Crore and expected Employment Generation of around 8,792 persons. Since few slots remained unfilled for certain products, applications were invited again with the last date of submission as 31.08.2021. Total 24 applications were received.

Reforms in Fertilizer Sector



New Delhi, India: The Government has introduced Direct Benefit Transfer (DBT) system in Fertilizers from October 2016 and the Pan-India Roll out has been completed by March, 2018. Under the fertilizer DBT system, 100% subsidy on various fertilizer grades is released to the fertilizer companies on the basis of actual sales made by the retailers to the beneficiaries. Sale of all subsidized fertilizers to farmers/buyers is made through Point of Sale (PoS) devices installed at each retailer shop and the beneficiaries are identified through Aadhaar Card, KCC, Voter Identity Card etc. Further, the Government incorporates new and innovative fertilizers

from time to time in Fertilizer Control Order-1985 (FCO). Recently, Nano urea and bio-stimulants have been incorporated in FCO.

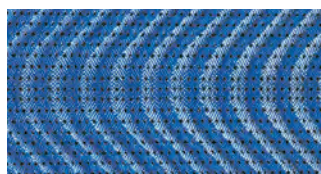
The Government of India (GOI) introduced New Urea Policy-2015 (NUP-2015) on 25th May 2015 with the objective of maximizing indigenous urea production, promoting energy efficiency in urea production and rationalizing subsidy burden on the Government for 25 existing gas based units. As per provisions of the NUP-2015, the energy norms of the all the

urea units had been revised for the year 2015-16 (from 1st June 2015 onwards), 2016-17 and 2017-18. Further, the units were categorized into 3 groups and each group was given target energy norm from 2018-2019. Due to energy efficiency, consumption of energy by the units has

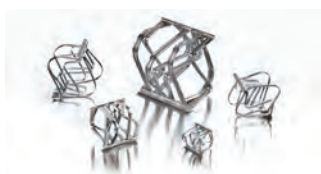
reduced resulting in overall saving in the subsidy outgo on the urea production.

Further, the GOI encourages balance use of fertilizer in conjunction with bio fertilisers and organic fertilizers on soil test based recommendation. The GOI has implemented Soil Health Card (SHC) scheme which not only give details of soil fertility status but also recommends the crop wise dosage of nutrients to be applied. Further, the GOI encourages the efficient use of fertilizers and have included neem coated urea in FCO. Neem coated urea has higher efficiency over plain urea. This may help in reducing both air and water pollution.

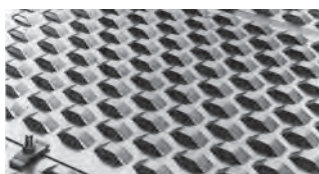
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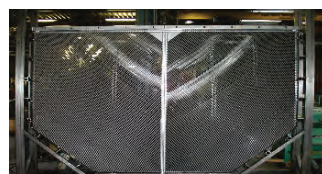
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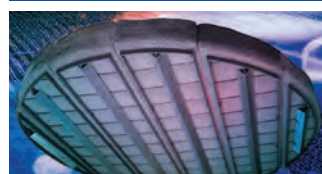
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Government approved Production Linked Incentive scheme for manufacturing of Advanced Chemistry Cell (ACC)



New Delhi, India: The Government launched the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) Scheme since 2015 on pan India basis to promote the use of electric vehicles in the country. Presently, Phase-II of FAME India Scheme is being implemented for a period of 5 years w.e.f. 1st April, 2019 with a total budgetary support of Rs. 10,000 crores. In addition, creation of charging infrastructure is also supported to address range anxiety among users of electric vehicles. The e-vahan portal (Ministry of Road Transport and Highways), the detailed list of electric vehicles and total vehicles on roads, state/UT-wise is at ANNEXURE.

Further, following steps have been taken by the Government for adoption of electric vehicles in the country:

The Government on 12th May, 2021 approved a Production Linked Incentive (PLI) scheme for manufacturing of Advanced Chemistry Cell (ACC) in the country in order to bring down prices of battery in the country. Drop in battery

price will result in cost reduction of electric vehicles.

Electric Vehicles are covered under Production Linked Incentive (PLI) scheme for Automobile and Auto Components, which was approved on 15th September 2021 with a budgetary outlay of Rs. 25,938 crore for a period of five years. GST on electric vehicles has been reduced from 12% to 5%; GST on chargers/ charging stations for electric vehicles has been reduced from 18% to 5%. Ministry of Road Transport & Highways (MoRTH) announced that battery-operated vehicles will be given green license plates and be exempted from permit requirements.

IndianOil Selects AVEVA Unified Supply Chain Schedule to Transform Refinery Operations



Peter Herweck, CEO, AVEVA

Mumbai, India: Indian Oil Corporation Ltd (IOCL), India's largest integrated energy major with presence in oil, gas, petrochemicals



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10 KL Twin Shaft Dispensor



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62 KL Limpeted Storage Tank

and alternative energy sources, has selected AVEVA, a global leader in industrial software, to drive its digital transformation and sustainability. As a key initiative under the banner of its digitalization project i-DRIVE, IndianOil aspires to transform its scheduling work process across nine refineries and one petrochemical complex in India for implementation of Refinery Production Scheduler. AVEVA Unified Supply Chain will enable IOCL to digitalize its refinery and naphtha cracker scheduling workflows, optimize blend scheduling to meet daily product dispatch plans and provide end-to-end visibility across its operations.

S.M. Vaidya, Chairman, IndianOil said, "Streamlining crude feedstocks with plant scheduling is a particular challenge for our industry, intensified by operational challenges brought on by the pandemic. By implementing AVEVA technology, we shall be able to enhance efficiency by using a digital system-driven scheduling approach for consistent and value-focused operations. Most importantly, the new relationship will allow our energy professionals to focus on the business through enhanced decision support."

"AVEVA enables oil and gas customers to improve plant performance and energy efficiency while shrinking operating costs. Built on transformative cloud, industrial IoT and artificial intelligence technologies, our solutions enable teams to visualize the entire value chain in real time, improving collaboration and enabling more precise and agile decisions that drive value throughout the supply chain. We look forward to our

association with an energy giant like IOCL and be an integral part of their transformational journey," said Peter Herweck, CEO, AVEVA.

Aramco and Larsen & Toubro to Collaborate on Manufacturing Sector Development



Dhahran, Saudi Arabia: The Saudi Arabian Oil Company ("Aramco" or "the Company") in collaboration with Indian conglomerate Larsen & Toubro (L&T) is developing manufacturing capabilities in the Kingdom of Saudi Arabia.

The companies have signed a Memorandum of Understanding outlining collaboration on L&T's efforts to establish the region's first Heavy Wall Pressure Vessels facility at Saudi Arabia's strategically located Jubail Industrial City.

The MoU is in line with the Aramco Namaat program, launched in September, which aims to tap into the vast opportunities available in Saudi Arabia to create value, as well as drive economic expansion and diversification.

Ahmed Sa'adi, Aramco's Senior Vice President of Technical Services, said: "This manufacturing facility, once completed, will provide a large number of skilled job

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opportunities for Saudi youth, localize the “know how” of heavy wall vessels in the Kingdom, and deploy the latest manufacturing technologies to serve the Kingdom and MENA region. We expect this facility to help Aramco and others in the Kingdom to increase localization and optimize capital cost.”

Mr. S. N. Subrahmanyam, L&T’s CEO, said: “We believe this is another significant milestone for L&T in the Kingdom and a strong testimony to our commitment to the development of the region. We wish to express our gratitude to Saudi Aramco for their guidance and support in the Kingdom.”

Chairman IndianOil elected President of World LPG Association



New Delhi, India: The General Assembly of the World LPG Association (WLPGA) unanimously passed a resolution to elect Mr S M Vaidya, Chairman, IndianOil, as its President during the ongoing World LPG Forum 2021 in Dubai.

Headquartered in Paris, WLPGA represents the global LPG network of 300+ members operating in more than 125 countries. The association’s primary aim is to add value to the sector by driving premium demand for LPG while promoting sound business and safety practices. The WLPGA team is supported and assisted by the Board of Directors and the Industry Council. The WLPGA Board comprises a President, a First Vice-President, a Treasurer, three Vice-Presidents and up to five other Board members. IndianOil is an ‘A’ category member of the World LP Gas Association (Criteria: Annual LPG Sales volume > 700 TMT) and also an Industry Council member.

Commenting on his appointment as the WLPGA President, Chairman IndianOil Mr S M Vaidya said, “The increasing footprint of LPG has transformed the lives of millions of people across the world. And as we are poised to put our foot on the accelerator of the energy transition, this cleaner fuel will have a more strategic role to play. I look forward to leveraging my enriching experience as the leader of India’s top energy major in driving the vision of WLPGA. Borrowing from India’s rich on-ground experience, I can confidently say that the World LPG Association will have a defining role to play to ensure a sustainable and greener energy future for the entire world”.



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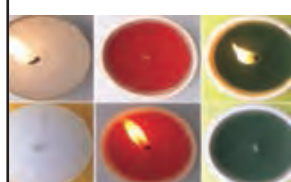
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Madhya Pradesh will become the Most Attractive State for Investment in the Nation and World



Bhopal, India: The Honorable Chief Minister of Madhya Pradesh, Shri Shivraj Singh Chouhan, addressed the inaugural session of the States' Policy Conclave 2021 through video conferencing, today. The event was hosted by the PHD Chamber of Commerce and Industry, New Delhi, and highlighted the role that the states can play in building Atmanirbhar Bharat.

During the event, CM Chouhan said, "Madhya Pradesh is leaving no stone unturned to fight Covid-19 under PM Modi's able leadership. We have intensified our preparations to rule out any possibility of a negative impact of the third wave." Thanking PM Modi for his clarion call to build Atmanirbhar Bharat, he said, "The idea of Atmanirbhar Bharat has inspired us to set a target to build Atmanirbhar Madhya Pradesh and contribute to PM Modi's dream."

Further elaborating on the efforts being taken by Madhya Pradesh government towards this end, he said, "We have set four major pillars on our way to building a self-reliant Madhya Pradesh. These are infrastructure, good governance, health & education, and economy & employment."

CM Chouhan also elaborated on the efforts undertaken by the MP government in demystifying rules and regulations in establishing industries. He said that the MP government is working towards optimizing the process of "Cost of Doing Business" along with simplifying the process of "Ease of Doing Business." With GIS based land allotment system, the MP government has also initiated an online process of land booking for industries. Further he said, "We have made huge gains in ensuring easy set-up of industries in the state. We welcome investors to Madhya Pradesh, as we move towards establishing a comprehensive network of MSMEs in the areas of furniture, textile, power loom, toy, jaggery, namkeen manufacturing and production."

TA'ZIZ and Reliance Launch Strategic Joint Venture for \$2 Billion Chemicals Projects in Ruwais

Mumbai, India: Abu Dhabi Chemicals Derivatives Company RSC Ltd ("TA'ZIZ") and Reliance Industries Limited (RIL), have agreed to launch 'TA'ZIZ EDC & PVC', a world-scale chemical production partnership at the TA'ZIZ Industrial Chemicals Zone in Ruwais. The new joint-venture will construct and operate a Chlor-Alkali, Ethylene Dichloride (EDC) and Polyvinyl Chloride (PVC) production facility, with an investment of more than \$2 billion. Representing the first production of these chemicals in the UAE, the project will enable the substitution of imports and the creation of new local value chains, while also meeting growing demand for these chemicals globally.

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in this new joint venture which will manufacture critical industrial raw materials for the first time in the UAE, supporting our national strategy to empower the industrial sector to become the driving force of a truly dynamic economy over the next 50 years."

Mukesh Ambani, said: "This

The TA'ZIZ Industrial Chemicals Zone is a joint venture between Abu Dhabi National Oil Company (ADNOC) and ADQ.

The project builds on ADNOC and Reliance's long-standing strategic partnership and is Reliance's first investment in the MENA region. The signing of the joint venture terms, which are subject to regulatory approvals, was witnessed by His Excellency Dr. Sultan Ahmed Al Jaber, UAE Minister of Industry and Advanced Technology and ADNOC Managing Director and Group CEO and Reliance Industries Chairman and Managing Director, Mr. Mukesh D. Ambani. The joint venture terms were signed by Mr. Khaleefa Al Mheiri, Acting CEO of TA'ZIZ and Mr. Kamal Nanavaty, President Strategy and Business Development of Reliance Industries Limited.

H.E. Dr. Al Jaber, said: "This strategic partnership with Reliance Industries builds on the strong and deep-rooted bilateral ties between the UAE and India and highlights the attractive and compelling value proposition offered by TA'ZIZ as we grow a globally competitive industrial ecosystem. We are delighted to partner with Reliance Industries

joint venture between Reliance Industries Limited and TA'ZIZ will further cement the long standing and valued relationship between India and the UAE. We are happy that we will be setting up the first projects in the vinyl chain in the UAE at TA'ZIZ Industrial Chemicals Zone, which is being developed into a global hub for chemicals."

Aramco Announces \$15.5 Billion Landmark Gas Pipeline Deal

Dhahran, Saudi Arabia: Saudi Arabian Oil Company ("Aramco") has signed a \$15.5 billion lease and leaseback deal involving its gas pipeline network with a consortium led by BlackRock Real Assets ("BlackRock") and Hassana Investment Company ("Hassana"), the investment management arm of the General Organization for Social Insurance (GOSI) in Saudi Arabia, in one of the world's largest energy infrastructure deals.

This represents significant progress in Aramco's asset optimization program and is the second such infrastructure transaction



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by Aramco this year after the closing of the oil pipeline infrastructure deal earlier in June 2021. Upon completion of the gas pipeline transaction, Aramco will receive upfront proceeds of \$15.5 billion, further strengthening its balance sheet. The deal unlocks additional value from Aramco's diverse asset base and has attracted interest from a wide range of worldwide investors, highlighting the compelling investment opportunity.

As part of the transaction, a newly-formed subsidiary, Aramco Gas Pipelines Company, will lease usage rights in Aramco's gas pipelines network and lease them back to Aramco for a 20-year period. In return, Aramco Gas Pipelines Company will receive a tariff payable by Aramco for the gas products that will flow through the network, backed by minimum commitments on throughput. Aramco will hold a 51% majority stake in Aramco Gas Pipeline Company and sell a 49% stake to investors led by BlackRock and Hassana.

Aramco will continue to retain full ownership and operational control of its gas pipeline network and the transaction will not impose any restrictions on Aramco's production volumes. Aramco is fully committed to sustainable practices and is an industry leader in reducing greenhouse gas emissions, which are among the lowest in the sector.

Amin H. Nasser, Aramco President and CEO, said: "Today, we have reached yet another major milestone in our portfolio optimization program as we build towards a bigger and stronger gas business. It further underscores

our commitment to long-term value creation for our shareholders, while bringing in BlackRock and Hassana as partners demonstrates our unique value proposition and ability to attract leading global investors to Saudi Arabia. With gas expected to play a key role in the global transition to a more sustainable energy future, our partners will benefit from a deal tied to a world-class gas infrastructure asset."

Yokogawa Acquires PXiSE, a Developer of High-speed Control Software for Grids and Renewable Energy Assets



Tokyo, Japan: Yokogawa Electric Corporation announces it has acquired all of the outstanding shares of PXiSE Energy Solutions LLC., a San Diego-based developer of software that enables utilities and other grid operators to deliver reliable and stable power by managing renewables and distributed energy resources (DERs) in real time. Through this acquisition, Yokogawa will build on its capabilities in the monitoring and control of power generation facilities and assist customers in the power transmission and distribution sectors to meet their clean energy goals.

Renewable energy sources such as wind and solar PV are crucial for reducing greenhouse



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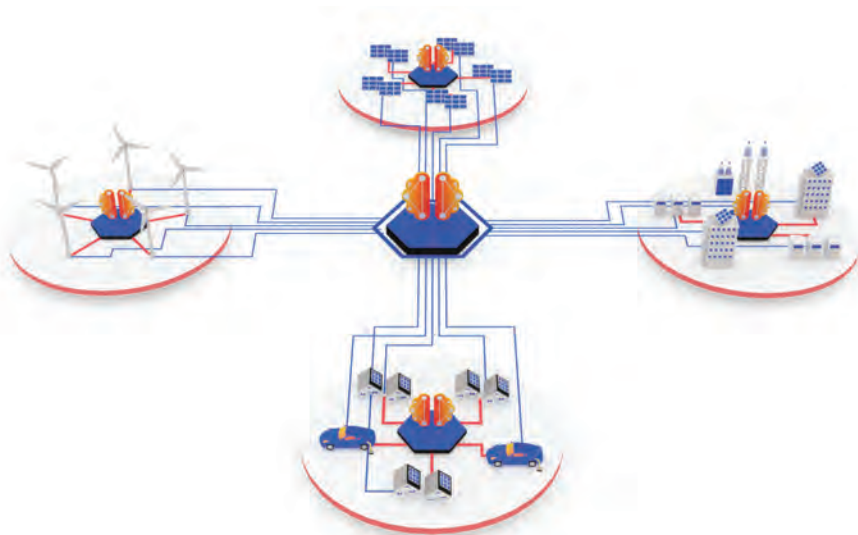
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PXiSE's Active Control Technology (ACT) is an automated grid control software platform that consists of hybrid power plant controls, microgrid controls, and a distributed energy resource management system, achieving holistic system optimization by enabling the integration of groups of DERs alongside traditional grid components. It can also maximize the efficiency and production

Integration of DERs and grid components through automated grid control

gas emissions, however the power generated is unpredictable as they are affected by the weather conditions. It also requires a much larger number of units distributed over a wider area to generate the same amount of power as a conventional power station. In addition, energy consumers themselves are becoming energy resources as they install solar power and battery storage systems. These factors are altering the very nature of the grid that utilities manage.

PXiSE (pronounced "pice") was started in 2016 based on the idea that real-time data from the grid combined with artificial intelligence could be leveraged to help utilities manage the rapidly increasing number of distributed energy resources that are coming online every year. Since proving this concept, the company has delivered more than one gigawatt of projects in the US, Asia, and Oceania, helping clients achieve both their grid management and emission goals. Prior to the acquisition, the company was a subsidiary of Sempra, a US-based energy infrastructure company, and was partially owned by a subsidiary of Mitsui & Co., Ltd.

of utility-scale renewable energy assets. The patented ACT delivers higher reliability than conventional power system monitoring and control systems due to its high-speed measurement and control, which enable seamless energy source transitions. Integration of external data sets and predictive forecasting support cost and profit optimization.

Integration of DERs and grid components through automated grid control

In the power sector, Yokogawa has decades of experience in delivering and optimizing control systems for conventional power plants around the world, and Yokogawa's controllers and industrial IoT software platforms support renewable power generation facilities as well as energy management systems for buildings, factories, and communities. The addition of PXiSE to the Yokogawa Group will enable the company to help global customers involved in power transmission and distribution to better manage the increasingly diversified energy supply chain, maximize the deployment of



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- IT Solutions
- Water & Waste Treatment Solutions

FACTS & FIGURES - CHEMTECH WORLD EXPO 2019

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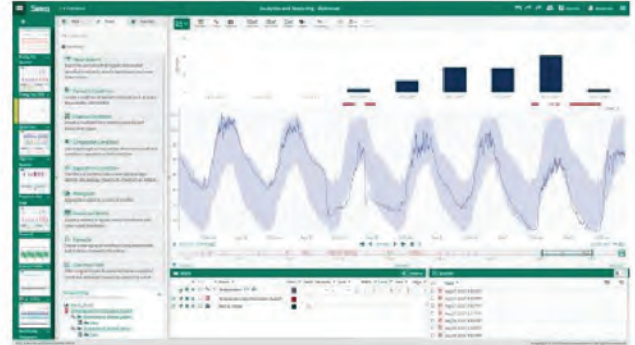
"We're thrilled to be joining Yokogawa Electric Corporation, whose deep expertise in power plant and industrial control systems is a natural complement to our innovative grid controls technology. Combined, Yokogawa and PXiSE expertise provides tremendous value creation for customers, the energy industry, and society," said Patrick Lee, CEO and cofounder of PXiSE Energy.

Solutions. "Our market growth will be greatly strengthened thanks to Yokogawa's global engineering, sales, service, and support network, and Yokogawa will be able to accelerate their expansion into the power delivery and distribution end-use sectors.

38 Together, we look forward to becoming worldwide renewable energy leaders, enabling the clean energy transition."

"Yokogawa believes that the decarbonization trend in the energy sector is one of the biggest challenges society has ever faced," said Koji Nakaoka, vice president and head of the Energy & Sustainability Business Headquarters and the Global Sales Headquarters at Yokogawa Electric. "PXiSE's highly innovative technologies address many of the issues related to the optimal production and integration of renewable and other energy sources, so we are extremely excited to welcome them to the Yokogawa Group. We look forward to being able to make this outstanding technology available to our customers around the world as soon as possible."

Seeq Announces Industrial Digitalization Agreement with Aramco



Seattle, United States: Deployment of Seeq software will expand production insights to support data-based decisions at Aramco. Seeq Corporation, a provider of manufacturing and Industrial Internet of Things (IIoT) advanced analytics software, has reached an agreement with Saudi Aramco to further expand its operational analytics strategy as part of the company's ongoing Digital Transformation program. The agreement will provide Saudi Aramco engineers and subject matter experts with Seeq's self-service analytics, predictive modeling data analytics, and visualization tools. Examples of how Seeq software can be used at Aramco include: -Automating error detection in multi-phase measurements -Catalyst deactivation rate prediction -Coking prediction -Corrosion rate analysis -Automated monitoring of Oilfield Advanced Process Control -Fleet-wide asset monitoring -Operationalizing predictive analytics models for sustainability insights "Seeq is empowering our engineers and subject matter experts with easy-to-use analytics tools to truly democratizing data science. We see this as a key element for scaling operational analytics across

the organization,” says Walid A. Al-Naeem, Manager of Process & Control Systems Department, Saudi Aramco.

“We are pleased to partner with Crucial Solutions & Services (CSS) to collaborate on Aramco’s industrial digitalization initiatives,” adds Lisa Graham, CEO of Seeq. “We will do this by leveraging big data, machine learning, and computer science innovations.” “Seeq will help Saudi Aramco reach new levels of process efficiency, production optimization, and interdisciplinary collaboration,” comments Sulaiman Alzuhair, General Manager and Founder of CSS. “We look forward to working closely with Aramco and Seeq.” Seeq recently announced closure of a \$50 million Series C funding round, led by global venture capital and private equity firm Insight Partners, including participation from existing investors Altira Group, Chevron Technology Ventures, Cisco Investments, and Aramco Ventures. The round brought Seeq’s total funding since inception in 2013 to approximately \$115 million.

ABS grants Alfa Laval the marine industry’s first approval in principle (AIP)

Texas, United States: Maritime classification society the American Bureau of Shipping (ABS) has granted Alfa Laval the first marine approval for operating boilers on methanol. Alfa Laval received an approval in principle (AIP) on 4 November 2021, based on extensive solution testing at the Alfa Laval Test & Training Centre.

Taking methanol beyond the main engines Methanol, which is liquid at ambient temperatures and carbon-neutral if produced



from green sources, is the next likely fuel step in decarbonizing the marine industry. While methanol can be found on a handful of vessels and is planned for many more, its use has so far been limited to main

engines. In the future, methanol operations will need to extend to boilers.

“Alfa Laval is looking at the full scope of methanol’s influence on board,” says Lars Skytte Jørgensen, Vice President Technology Development, Energy Systems, Alfa Laval Marine Division. “The most natural choice for boilers is to fire them with the vessel’s primary fuel, but methanol’s low-flashpoint nature and the differences in its energy density require a new approach to the burner and fuel supply systems. It was important for us to develop that approach, and we are proud to have it validated by ABS.”

Methanol boiler testing and approval in principle from ABS

Alfa Laval has been testing boiler operations with methanol since early 2021 at the Alfa Laval Test & Training Centre, where engine combustion tests with methanol are also underway. Tests have been conducted using a pressure-atomizing MultiFlame burner on an Alfa Laval Aalborg OS-TCi boiler, as well as a methanol valve unit (MVU) designed by Alfa Laval to meet the class requirements from ABS.

Tata Chemicals wins big at FICCI's India @75: Chemical and Petrochemical Industry Awards 2021

Mumbai, India: Tata Chemicals, one of India's leading science-led products and solutions companies, has been conferred with two awards at the FICCI-organised India @75: Chemical and Petrochemical Industry Awards 2021. First being the 'Heritage Company of India' and second being the Corporate Award for 'Excellence in CSR'.

The awards were distributed by Smt Anupriya Patel, Hon'ble MoS of Ministry of Commerce and Industry. Shri Mansukh Mandaviya, Union Minister for Health and Family Welfare, Chemicals & Fertilizers and Bhagwanth Khuba, Union Minister of State for Chemicals & Fertilizers, New and Renewable Energy also graced the event. Mekapati Goutham Reddy, Minister for Industries, Commerce and

Information Technology in the Government of Andhra Pradesh, and Thangam Thennarasu, Minister for Industries in the government of Tamil Nadu were also present. 'The 'Heritage Company of India' award was given to Tata Chemicals for its pioneering contribution to the chemical industry since inception.

Commenting on the awards, Mr. R Nanda, Chief of Human Resources and CSR, Tata Chemicals said, "We are delighted to receive two prestigious corporate awards from FICCI, recognizing us for Excellence in CSR in the Chemicals Industry and honouring us as a Heritage Company of India. These awards are a testimony to our 82 year old Tata legacy and our determination to serve the community combined with our core values. As a value-driven and science-led organisation, it has always been our goal to attain the highest quality standards while serving society through science and innovation."



"L&T's Hazira Manufacturing facilities renamed as 'A.M. Naik Heavy Engineering Complex'"



Mumbai, India: Larsen & Toubro, Indian multinational engaged in EPC Projects, Hi-Tech Manufacturing and Services, honoured its Chairman Mr AM Naik by renaming its manufacturing facility in Hazira, Surat as A. M. Naik Heavy Engineering Complex.

Mr SN Subrahmanyam (SNS), CEO & MD, L&T, said: "L&T's Board of Directors has unanimously decided to honour the role that its Chairman A.M. Naik has played in transforming the Company and, specifically in setting up the large facility at Hazira, near Surat, by naming it 'A.M. Naik Heavy Engineering Complex'.

A brief function was held at the facility on December 1st, 2021 in the presence of senior L&T executives and government officials. Speaking on the occasion, Mr. Naik said: "I am overwhelmed at this gesture by the Company's leadership team. I feel it is a wonderful acknowledgement of the contribution in transforming marshland into

a complex that can be described as the pride of the nation. Hazira is an affirmation that L&T will manufacture equipment for critical sectors of the economy and continue to make things that make India proud'.

Three decades ago, the site near the mouth of the river Tapi on which the facility is located was swampy wasteland which used to be inundated during high tides. Mr. Naik, then heading the Heavy Engineering and EPC projects businesses of L&T, saw in this marshland the water-front complex that would meet the Company's long-term aspirations to manufacture over-dimensioned and complex reactors and pressure vessels. Mr. Naik drove the change that led to a multi-phased expansion of the facility to incorporate a modular fabrication yard, and manufacturing of supercritical power plant equipment, nuclear forgings and a unique Armoured Systems Complex. The 750-acre facility with a 1.6 km long waterfront has exported large and sophisticated equipment to countries around the world including the U.S., Canada, and France.

Alternative to Animal Testing: Evonik Invests In Singapore Start-Up

Essen, Germany: Evonik has invested in start-up Revivo BioSystems to support the development and commercialization of a technology that uses a realistic 4D model of human skin for the testing of chemical, cosmetic and pharmaceutical compounds. The Singapore start-up's technology provides



Bernhard Mohr, Head of Evonik Venture Capital

an alternative to animal testing that is also quicker, more reliable and cost efficient.

"Our goal is to support emerging technologies that look beyond the way research is done today and accelerate more sustainable and ethical practices," said Bernhard Mohr, head of Evonik Venture Capital.

Revivo's organ-on-a-chip system simulates the interaction of human skin with the substance being tested. Skin tissues, which have been grown in a laboratory or a human skin sample, are placed on biochips which are supplied with nutrients and reagents. In this way the technology creates a micro-environment for the tissue models, which reproduce the architecture and functions of skin. For example, in contrast to other model systems, it mimics the function of blood flow allowing for analysis of both the localized and the systemic impact of compounds on the skin tissue. The platform thus creates a more realistic measurement of the interaction of, for example care products, and the skin.

In addition to testing under realistic

conditions, the company's system automates testing and sampling procedures. This provides a cost-effective way of carrying out screenings that are required in the regulatory approval procedures for new substances.

"Our investment in Revivo puts consumer safety first without compromising on animal welfare," said Yann d'Hervé, head of Evonik's Care Solutions business line. "With this alternative to animal testing we are proud to strengthen our position as a trusted partner for sustainable specialties." Many consumers prefer substances that have not been tested on animals and regulations have followed suit. More than 40 countries have passed laws to limit or ban cosmetics animal testing, including Australia, India, Israel, Turkey and the U.K.

Big initiative taken towards sustainability "Green Yodha": Schneider Electric

Mumbai, India: Schneider Electric, the leader in digital transformation of energy management and automation launched its sustainability engagement initiative in India, Green Yodha to encourage and support businesses, industries and individuals to come together and take concrete climate action. This urgent call to action intends to back the increased commitment of Indian government made at COP26.

India has a robust industrial infrastructure with a huge energy requirement. According to IPCC's Sixth Assessment Report, the country is the fourth-largest emitter of greenhouse



Anil Chaudhry, Country President & Managing Director at Schneider Electric , Greater India

gases and is still largely dependent on coal and oil. During COP26 Prime Minister of India, Mr. Modi announced that India will reduce projected carbon emissions by 1 billion tonnes (Gt) between 2021 and 2030. With these developments, Schneider Electric urges energy intensive sectors - cement, iron and steel, commercial & industrial buildings, non-metallic minerals and chemical to join forces to achieve the common goal.

Schneider Electric, ranked World's most sustainable corporation in 2021 by Corporate Knights, builds on its unique position as ESG practitioner and enabler as the digital partner of its customers in sustainability and efficiency to launch this initiative which will put in the spotlight people, organizations and practices that pave the way for effective decarbonization and an inclusive energy transition.

Congratulating Schneider Electric for the Green Yodha initiative, Shri Amitabh Kant, CEO, NITI Aayog said, "I am glad that

Schneider Electric has built a program like Green Yodha that aims to provide designed energy solutions to enable industries to use innovative technologies to become energy efficient and reduce their carbon footprint. We as a country need to unite to make a greener future reality and meet the SDG targets by 2030. I congratulate Schneider Electric for the Green Yodha initiative that is aimed at empowering all to make the most of our energy and resources, thereby bridging progress and sustainability for all."

Taking the pledge to be a Green Yodha, Mr. Madhav Singhania, Deputy Managing Director & CEO, JK Cement Limited said, "To protect our planet we have set strong targets of 75% Green Power and controlling CO2 emissions in cementous product to 465kg /ton by 2030. To enable this vision we are partnering with Schneider Electric's EcoStruxure Solution to optimize Energy & Fuel Consumption, seamless integration of all energy measurement tools, adoption of digitization solutions and an integrated one stop solution for Electrical Distribution, Control & Automation. We are proud to be a Green Yodha for the planet."

"I believe that the climate crisis demands committed leadership and universal action. It is our collective responsibility to lead by example and enact change. We congratulate Schneider Electric on the launch of the Green Yodha program. At UST, we are committed to transforming the lives and communities through technology. I am proud to say that UST is also a Green Yodha," said Mr. Alexander Varghese, Chief Operating Officer and Country Head-India, UST.

BASF is Accelerating the Implementation of its CO₂ Reduction Targets



Dr. Martin Brudermüller, Chairman of the Board of Executive Directors of BASF SE

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Mumbai, India: New project organization “Net Zero Accelerator” with reporting line to the CEO led by Dr. Lars Kissau, President Steering of cross-company activities in the areas of low-CO₂ technologies, circular economy and renewable energies Launch and acceleration of new emission reduction projects With a new project organization, BASF is bundling and accelerating its extensive cross-company activities to reduce its CO₂ emissions by 25 percent by 2030 compared with 2018 and become climate neutral by 2050. The unit, called “Net Zero Accelerator”, focuses on implementing and accelerating projects relating to low-CO₂ production technologies, circular economy and renewable energies. “With the new project organization, we are continuing

to accelerate and create more powerful structures within BASF to achieve our ambitious goals,” said Dr. Martin Brudermüller, Chairman of the Board of Executive Directors of BASF SE. “This further step demonstrates the determination to drive forward our transformation to a climate-neutral company.” The Net Zero Accelerator unit will be led by Dr. Lars Kissau (48) as President, reporting directly to the Chairman of the Board of Executive Directors. Under Kissau’s leadership, existing and new projects to achieve the CO₂ reduction targets will be launched and driven forward at corporate level worldwide in the future. The aim is to move the projects into the implementation phase over the next few years.

By pooling expertise around renewable energies, alternative raw materials and CO₂ Page 2 P384/21e reduction technologies, BASF will increase the speed of implementation and achieve scaling effects more quickly, thus making an important contribution to climate protection. In parallel, the operating divisions will continue to work on divisional projects to implement BASF’s ambitious CO₂ reduction targets. Ongoing cross-company projects managed by the new unit include BASF’s activities in the field of circular economy such as ChemCycling™ or CO₂-free technologies such as methane pyrolysis. Renewable energies are another field of activity. BASF has initiated various projects in this area and signed specific agreements in recent months.

ABB India wins in “Smart Factory” and “Manufacturing Excellence” categories at the Frost & Sullivan India awards



Bangalore, India: ABB's Smart Power factory in Bangalore commanded the manufacturing stage at the Frost & Sullivan's 17th edition of the India Manufacturing Excellence Awards. The factory bagged the Gold Award for manufacturing excellence in the Engineering Sector, Large Business, and is among the top three in the Smart Factory Awards category.

The award for manufacturing excellence won by ABB was based on 250 parameters including customer focus, orderliness, internal competence, and supply chain. The smart factory of the year award was based on multiple factors including, smart manufacturing & IIoT systems, AI & Machine learning, digital modelling for process layout et al.

Jayakeerthi A, Sr VP, Electrification Business, ABB India, said, "At ABB, we always believe in being curious about why things are done in a particular way and being courageous to challenge that. This assessment will help us in a great way in the coming years to upgrade

and upskill. Thanks to Frost & Sullivan for the time spent at our factory and I appreciate the patience to go into detail on all our processes. Special thanks to all our employees for the hard work and customers who were always there to support us."

The Smart Production lines consists of a network of interconnected workstations and machines through to IIoTs, which controls the processes. Industrial Robots working in tandem with mobile industrial robots ensures consistency in processes and timely transfer of finished goods. ABB's collaborative YuMi® robot working hand in hand with humans shows a glimpse of the future where man and machine coexist. The smart software takes stock of all sensors & machine data which is used for self-learning which improves precision of future tests.

Welspun Corp Ranked in the Top One-Third in the Steel Industry

Mumbai, India: Welspun Corp Ltd. (WCL), one of the world's largest welded line pipe manufacturing companies and part of the USD 2.7 billion Welspun Group, announced that the company has ranked 14th among the 41 companies included in its industry group (66th percentile) in S&P Global's DJSI Corporate Sustainability Assessment (CSA) (Score date: Nov 12, 2021). Welspun Corp's Social Dimension percentile is 75 and Governance & Economic Dimension percentile is 78, both in the top quartile for the steel industry. This marks a milestone for the company, which is a part of a growing



movement for ESG consciousness and transparency.

Over 10,000 companies across the globe were a part of the sustainability assessments this year. Each year S&P Global invites the largest companies to participate in the Corporate Sustainability Assessment (CSA) to gain deeper insights into their ESG performance relative to peer firms while providing the transparency that investors need on their progress towards sustainability. S&P Global ESG Scores are also the key factor for selecting companies for the Dow Jones Sustainability Indices (DJSI).

Commenting on this milestone, Mr. Vipul Mathur, Managing Director & CEO, Welspun Corp Limited said, "This reflects our ongoing efforts to strategically embed ESG drivers into our business. We are cognizant of the changing expectations of our stakeholders and would like to contribute positively in transitioning to a more sustainable and low carbon mode of operation. These scores will help us keep our sustainability roadmap future-ready."

Mr. Percy Birdy, Chief Financial Officer, Welspun Corp Limited said, "I am delighted that our efforts to strengthen Governance

have been recognized. We have an independent and diverse Board which has adopted several Policies in line with global best practices, a well-defined Code of Conduct and an effective Risk Management framework."

Cairn Oil & Gas Appoints Top Oil Leader as Chief Operating Officer

New Delhi, India: Cairn Oil & Gas, India's largest private exploration and production company, has appointed Martyn Smith, a seasoned oil & gas global leader, as Chief Operating Officer. Smith is joining Cairn with an extensive experience of 35 years in reservoir & petroleum engineering and subsurface geoscience disciplines.

Smith has been part of the leadership in global companies including British Petroleum where he led as the Global Head of Reservoir Development. He is joining Cairn at a promising time as the company seeks to double its capacities and contribute 50% to India's domestic crude production. He has worked in diverse oil & gas portfolios across various technical, commercial and research roles in Europe, Asia, the Middle East, North America and Africa. He holds a Bachelor of Science (Hons) in Geophysics from Cardiff University and has done his MBA from Henley Management College, UK.

Speaking on the company's new appointment, Prachur Sah, Deputy CEO, Cairn Oil & Gas, said, "We are delighted to appoint Martyn as our Chief Operating Officer. At Cairn, we are focusing heavily on hiring the best global

talent across levels of our organisation. Martyn is joining us at an exciting time as we pace ahead with the next phase of growth. He will work closely with the SBUs, focus on driving production volumes and help realize the full potential of our assets – from existing fields as well as new acquisitions under successive OALP and DSF bids. Martyn's global experience will add particular value to our goals of doubling production capacity and also recruiting the brightest minds in the industry to carve an efficient path to that end."

Speaking on his appointment, Martyn Smith, Chief Operating Officer, Cairn Oil & Gas, said, "Cairn Oil & Gas has made rich gains from successive OALP auctions and is now poised to realise its vision of doubling production capacities. Cairn hosts great potential, unmatched across the globe. With fresh investments and global technology tie-ups, the company is determined to augment capacities and secure energy autonomy for India. My goals here at Cairn will be to drive innovation, introduce new ideas and ease the adoption of modern-age digital technology for faster growth. I am thoroughly excited to join the company at this cusp of growth and work in India – as an oil & gas professional, this is an opportunity I am looking forward to." ■

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Transition Towards Low Carbon Future Minimize Burden on Environment

Video Link - <https://youtu.be/w5OWaOQk958>



Tarun Kapoor (IAS)

Secretary Ministry of Petroleum & Natural Gas, Govt. of India

"We see a huge demand increases in country, such as diesel, petrol, LPG, etc. The usage of E-vehicles/CNG- vehicles can decrease the demand as well as fuel price. Less production of those product which does not have more demand like, petrol and increase the production of those which has high in demand like LPG. The goal is to minimize the burden on environment"

Climate Change is Anthropological

Video Link - <https://youtu.be/o0RqXgdYNvY>

The screenshot shows a video conference interface. At the top, it says 'Chemtech INTERNATIONAL INTEGRATED ENERGY SHOW'. Below that, 'Oil & Gas Exploration Online Conference'. The main content area displays a 'Presentation Outline' with four items: 1. Energy Outlook, 2. Exploration opportunities along with Energy Transition, 3. Exploration Strategy Elements, and 4. Thrust Areas & Technology Interventions. On the right, there is a video feed of Mr. R K Srivastava, Director Exploration, ONGC Ltd. Below the video feed are icons for 'GS', 'SS', 'P', and 'OC'. At the bottom, there is a banner with the website 'www.chemtechie.com', copyright '© Jasubhai Media Pvt Ltd.', and email 'Email: sales@jasubhai.com'. The banner also features the 'Oil & Gas .IE 2021' logo and the 'Jasubhai' logo.

R K Srivastava

Director Exploration, ONGC Ltd & Chairman Oil & Gas World. IE 2021

"Higher greenhouse gas that is carbon dioxide, mainly concentration in atmosphere leads to new challenges to climate change pattern across globe. In this context, IPCC, created by the United Nations in 1988, first, came out with a report which conclusively set its agenda that climate change is anthropological that is manmade. United Nations Framework Convention on Climate Change that is UNFCCC. The world community has progressed over the years to Kyoto Protocol in 1997 as well as various conference of parties known as COPs, including the landmark."

SPECIAL FEATURE

International Integrated Energy Show

Oil Gas & Power.IE

25-27 October, 2021

Difficult to Attract Investor Interest in Oil & Gas

Video Link - <https://youtu.be/vcgKJhVzZhY>**Amar Nath**

Additional Secretary (Exploration)

Ministry of Petroleum & Natural Gas, Govt. of India

"We have started making milestone & activity chart on the same. Two components have come to in this picture is finance and technology, especially the digital technology. Now active investors have come in the picture as financing will be the difficult because the financiers have started moving away from oil & gas. Due to social media, society has become more conscious that they know we move away from the fossil fuel and have a green planet and this being influence by some of these events which are taking place such as floods, unseasonal rainfall, intensity of rains are also taking place, and some the areas still facing droughts."

Committed to Keep Carbon Emissions under Control

Video Link - <https://youtu.be/lbn-YX-yfBk>



Mr. P K Goswami
Director Operations, Oil India Ltd

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Pankaj Kumar Goswami

Director (Operations)

Oil India Ltd & Co-Chair, Oil & Gas World. IE 2021

We have a commitment to keep carbon emissions under control. The gas imports, which were in the range of almost 20% in 2010, as I believe have increased to close to 50% now. And with the LNG here and there and gas has become available everywhere in any part of the world. The gas is now being treated and available here in India. Also the new results which we have found, the new finds which are there are more on gas and we expect to increase our domestic gas production. The offshore industry in India contributes around 70% of oil and almost 78% or 76% of the gas production of ONGC."

SPECIAL FEATURE

International Integrated Energy Show

Oil Gas & Power.IE

25-27 October, 2021

Abiding with Environmental Obligations

Video Link- https://youtu.be/czSgnku_zxY

E S Ranganathan

Director Marketing, GAIL (India) Ltd &
Chairman Gas World Tech. IE 2021

"India has to become a low carbon economy company as per our assurance to a given and other environmental obligations. Over the two days, 22 subject matter experts have participated in five sessions broadly covering the availability and supply of LNG in India, the demand and new applications of LNG, the infrastructure and logistics associated with it, and also we discuss future fuels and alternate energies which are available and of course, the new technology interventions that will be required to make this a success."

Increase Share of Gas in New Applications

Video Link- <https://youtu.be/VI-Bz2skxYo>



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Gajendra Singh
Member PNGRB,
Ministry of Petroleum & Natural Gas, Govt. of India

"Gas is still developing sector in India so in upcoming years we have to increase the gas demand. We Need to reach all town & villages to develop this sector 30 % -40% Power is getting generated through gas in other countries but in India is generated through coal, there is significant increase in use of gas in upcoming fertilizer plants."

SPECIAL FEATURE

International Integrated Energy Show

Oil Gas & Power.IE

25-27 October, 2021

Critical to Tackle GHGs to Safeguard Next Generation

Video Link- <https://youtu.be/ikte8sTBVOU>

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Subramanian Sarma

Whole-time Director & Sr. Executive Vice President (Energy)
Larsen & Toubro

"Global warming is here and tackling the greenhouse emissions for the safeguarding of the next generation is important. India as a growing economy consumes one of the largest energy so aligning with the demand is essential. India is not a rich country but we need to afford rich energy, so we need to have affordable energy as much as clean energy. There are three major opportunity to reduce energy consumption per unit of output. Which includes utilizing the combination of use of technology, better efficiency, cost analysis that should help reduce consumption to attain cleaner technology like solar, hydro, nuclear which needs to commercialize."

Flexible Refining for Sustainable Growth

Video Link- https://youtu.be/Q5n5o2g_dpU



Dr SSV Ramakumar

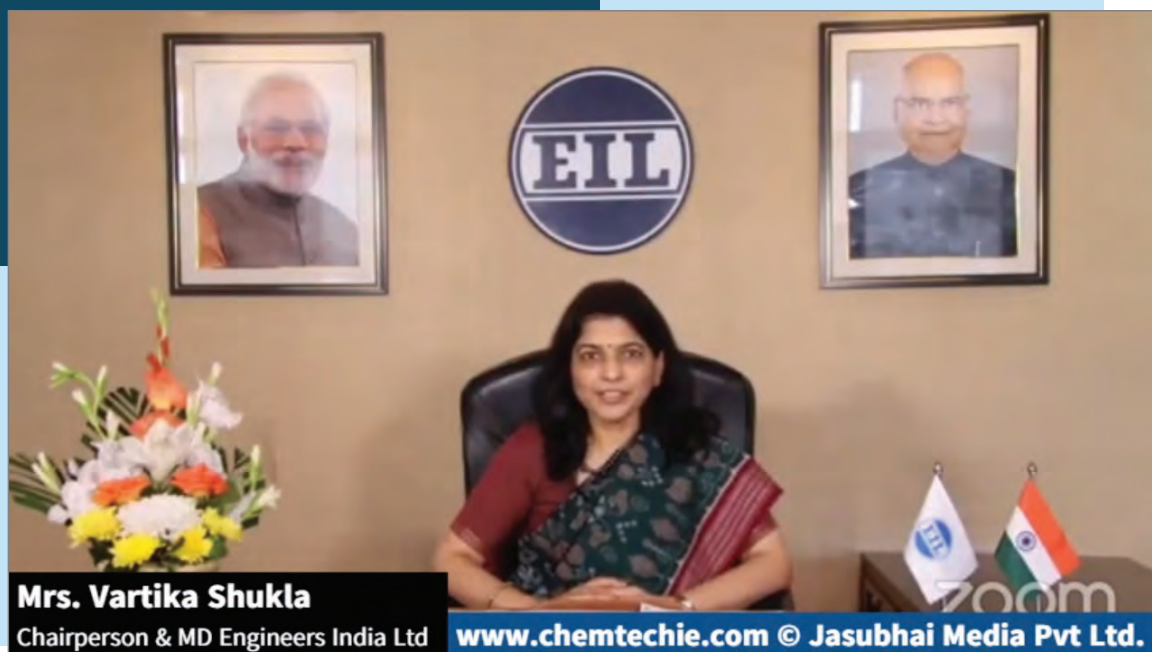
Director (R&D and P&BD)

IndianOil & Chairman Refining & Petrochemicals World. IE 2021

"The high point of these two days were the focused panel discussions of flexible refining technologies new technologies, and green hydrogen obligation which is an urgent matter of discussion for the refineries and biofuels which was moderated by IAP. Digitalization was also an important topic spoken by most of the leading digitalization solution providers. They participation touched on topics like the benefits of digitalizing, the refining segment and tools like Digital Twin and their benefits to the overall profitability of the refining."

Moving Gas Mix to 15% by 2030

Video Link- https://youtu.be/tApQ-jr_Zgs



Mrs. Vartika Shukla

Chairperson & MD Engineers India Ltd

www.chemtechie.com © Jasubhai Media Pvt Ltd.

Vartika Shukla

Chairperson & Managing Director
Engineers India Limited (EIL)

"We have committed almost Rs 24 trillion to the energy sector in building the national energy pipeline. The refining capacity, as I mentioned will grow to 440 MMTPA by 2030. We also aspire to move the natural gas mix to almost 15% by 2030. It is bridging the gap between both supply and the demand and we have huge investments which are made into the pipeline, enhancing per capita consumption of Petrochemical and in this framework this energy mix will have a huge share of renewables and we are seeing this movement happening in the nation."

Increase Energy Consumption to World Average

Video Link- <https://youtu.be/Z5l8tsn1ugw>



S K Moitra

Former Director Onshore

ONGC Ltd & Convener, Oil & Gas World. IE 2021

"The price of energy has always been going up for the last two, three months with significant increase in gas prices also. There are different schools of thoughts & perspectives about decarbonization between Western Europe, North America Asia Pacific and Middle East Asia. As a developing nation with growing population, the energy needs India's net energy consumption is low which has to increase to world average in all likelihood."

Enhance Indigenous Clean Energy Production

Video Link- <https://youtu.be/7ltkKb7y2KY>



Rajeev Mathur

President Policy & Growth

Cairn Oil & Gas & Convener Gas World Tech.IE 2021

"To get the zero carbon economy we need to get clean energy the natural gas is the clean energy source. If we produce in our country it's usage can be increased. Renewable energy will play large role in future."

Largest Nuclear Power Generating Site to be built in Maharashtra



Union Minister of State (Independent Charge) Science & Technology; Minister of State (Independent Charge) Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh said, the Government has accorded 'In-Principle' approval of the site at Jaitapur in Maharashtra for setting up six nuclear power reactors of 1650 MW each in technical cooperation with France which would make it the largest nuclear power generating site with a total capacity of 9900 MW.

In a written reply to a question in the Rajya Sabha, Dr Jitendra Singh informed that the project is proposed to be setup at Jaitapur site in Ratnagiri district of Maharashtra. He said, presently techno-commercial discussions to arrive at the project proposal with M/s. EDF, France are in progress.

In a separate written reply to a question

in the Rajya Sabha on nuclear power capacity, DrJitendra Singh informed that the present installed nuclear power capacity in the country is 6780 MW and the share of nuclear power in the total electricity generation in the country is about 3.1% in the year 2020-21. The Minister said that Nuclear power is clean and environment friendly, apart from having a huge potential to ensure the country's long term energy security on a sustainable basis. The nuclear power plants have so far generated about 755 Billion Units of electricity saving about 650 Million Tons of CO₂ emission.

Dr Jitendra Singh said that the net zero targets are expected to be met through a combination of various clean energy sources including nuclear power. In this context, the present nuclear power capacity of 6780 MW is planned to be increased to 22480 MW by 2031 on progressive completion of projects under construction and accorded sanction. More nuclear power reactors are planned in future.

Smartchem Technologies to invest 2200 crore in Global Scale Technical Ammonium Nitrate Plant

Smartchem Technologies Limited (STL), a 100% subsidiary of Deepak Fertilisers and Petrochemicals Corporation



Sailesh Mehta
Chairman & Managing Director
Smartchem Technologies Limited

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Limited (DFPCL), a trusted chemicals and fertiliser manufacturer in India, performs ground-breaking ceremony and foundation stone laying of its Technical Ammonium Nitrate (TAN) complex at Gopalpur Industrial Park on 9th December 2021. Honourable Chief Minister of Odisha, Shri Naveen Patnaik laid the foundation of the project in presence of Chairman & Managing Director of Smartchem Technologies Limited, Sailesh Mehta, and. Dibya Shankar Mishra, Minister of Energy; Industries; Micro, Small & Medium Enterprises.

The project at Tata Steel Industrial Park, Gopalpur is being built with an investment of Rs 2,200 crore and

will have a capacity of 377 KTPA. The plant has the best-in-class technology from Casale, that will ensure that it is the safest plant with lowest possible emission. The project is expected to be completed by August 2024, 50% of the engineering work is already completed and the piling work will begin from January 2022. It is strategically located near the major mining hubs and the Gopalpur port to capture domestic demands and tap into export opportunities.

Technical Ammonium Nitrate, being an international commodity, this project will put Odisha on the map for international recognition. On project completion and commencement, Odisha will become a key source of TAN to the entire Eastern Belt where majority of Mining and Infrastructure growth is foreseen in future. It will generate employment for 1,500 people during the project phase and 325 people during the operation phase. It also holds the possibility of attracting investment in ancillary units like explosive manufacturers, manufacturers of LDPE/HDPE bags and liners, among others. It is part of DFPCL's initiative to be closer to the end user and add maximum value to them, by being a solution provider and reduce the supply deficit and reduce the resultant import substitution of more than Rs. 4500 crores.

GHCL Ltd. Signs MOU to invest 500 Crores in Tamil Nadu



R S Jalan, Managing Director, GHCL Ltd

GHCL Limited India's leading Chemical & Textile Company signed a MoU (Memorandum of Understanding) with the Government of Tamil Nadu for investing Rs.500 Crores in the state. The MoU was signed by Mr. M. Sivabalasubramanian, CEO (Yarn Division) GHCL and Ms. Pooja Kulkarni IAS, MD & CEO, Guidance, Industries Department, Government of Tamil Nadu in the presence of Shri. M. K. Stalin, Chief Minister of Tamil Nadu during the Investment Conclave held on 23rd Nov at Coimbatore.

As per the MoU, GHCL will set up 40000 ring spindles in Manaparai, Tiruchirappalli district to produce synthetic and synthetic blended yarn to

cater to knitting and weaving segments. It will also install another 40000 Ring Spindles with 24 Knitting Machines in Paravai, Madurai district to produce 100% cotton yarn and knitted fabrics. The company also plans to develop an EHT (extra high tension) power transmission facility in Manaparai location to ensure uninterrupted Power supply.

In order to fulfill its commitment towards sustainable business practices and reduce its carbon footprint, GHCL Ltd has proposed to set up a 20 MW Solar Power park near Musiri, Tiruchirappalli district. At the moment 52% of the energy requirements of GHCL's yarn business is fulfilled from renewable resources. Once the project is completed, almost 70% of GHCL's Energy requirement for the spinning business will be from renewables.

Commenting on the occasion, Mr. R S Jalan, Managing Director, GHCL Ltd. said "We are humbled and proud to be a part of Tamil Nadu's growth story which is befitting our long term association with the state. This MoU, will help us to create value for the community and is in accordance with our strategic growth plans and sustainability targets. Going forward, we will further enhance our energy portfolio to fulfil almost 90% of our energy requirements from Renewable sources."

Trelleborg Report Reveals the Latest Insights in Energy Transfer



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Richard Hepworth, President , Trelleborg's marine and infrastructure operation

Trelleborg's marine and infrastructure operation has launched a new research report titled 'The Flexibility Factor: Energy Transfer Insights,' which reveals the latest trends in LNG fueling. The growing global climate crisis is necessitating the search and need for cleaner energy choices. The changing market dynamics is driving evolution and growth within a number of sub segments such as liquefied natural gas fueling. Accelerating LNG fueling to meet sustainability demands requires LNG infrastructures that can cope with the demand to berth more LNG-powered vessels safely and efficiently.

Richard Hepworth, President of Trelleborg's marine and infrastructure operation, says: "In recent years, ports have gradually responded to increases in demands for LNG bunkering facilities. Now, with initiatives to reduce the carbon footprint in the marine supply chain triggering huge growth in the LNG industry, the sector has entered a mature-market phase. Trade no longer centers solely on long-term contracts accompanied by a level of predictability, but instead has broadened out to include spot contracts. "This shift in market dynamics – combined with unprecedented levels of ship and bunker vessel building – brings a need for operational flexibility. However, LNG operators must also be able to adapt to a variety of business models and operations – safely, effectively, and reliably across multiple jurisdictions. Our new research report reveals how to do this while responding to existing and emerging opportunities in the LNG value chain." ■

Leveraging Technology for a Low Carbon Future



Industrial emissions account for more than 30% of GHGs out of which petrochemical & chemical industry accounts for 8%. According to Deloitte, overall about 40% of chemical industry's long term emission targets could at least theoretically be achieved by maximizing energy & resource efficiency, using bio / waste based feedstocks and running materials in circles to prevent them from leaking to the environment.

Transformation to low carbon economy would entail transformation in the way companies operate and what they offer and most importantly utilize carbon efficiently to produce value added products & reduce emissions.

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The 56th Anniversary issue brings insights into the **Low Carbon Pathways** to ensure sustainable growth of industry through the interviews of industry leaders on sustainability strategies. **The Cover Story "Leveraging Technology for a Low Carbon Future,"** touches various topics like adopting advanced automation & digitalization as an enabler for decarbonization through exploring low carbon pathways, adherence to regulatory norms, improving efficiencies across operations & manufacturing, effectively managing supply chains, and R&D to bring the research quickly to the market.

'Innovation is the Key to Sustainability and Lasting Competitiveness'



Samir Somaiya

Chairman & Managing Director
Godavari Biorefineries Ltd.

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What are the key aspects & priorities for sustainability strategy & low carbon technologies on the radar of your organization?

Sustainability is about environmental, social and financial sustainability. Godavari Biorefineries has always been at the forefront of sustainability strategy and implementation. We have the Biopreferred certification from the USDA, the Bonsucro certification, Responsible Care and many others.

Biorefining is the business of converting biomass into Foods, Energy, Biochemicals, Biomaterials and more. Godavari Biorefineries makes sugar, ethanol, electricity, bulk and specialty chemicals,

and other products. 30% of the company's business is foods (sugar etc), the rest is chemicals, electricity, ethanol and other products.

- **Supply Chain:** Godavari Biorefineries works with more than 20,000 farmers to source its key raw material which is Sugarcane. In our drive for more sustainable sugarcane sourcing, we have signed an MOU with KIAAR to work with farmers to research and demonstrate to them - intercropping of other crops with cane, use of drip to reduce water consumption, use of remote sensing and satellite imagery for better information, use of soil testing to better understand soil input needs, and use of traditional inputs

such as Jivamruth and Panchagavya. The combination of all these techniques will result in higher yields, more than one crop as a source of income, lower input costs (per value of output), reduced water consumption, and finally better soil health to be fertile not only in this year, but for the future. Overall, these technologies will reduce the Carbon footprint of the farm as well. It is important to understand this, since using renewable resources is fundamentally different from using fossil resources. By definition, there will be less fossil resources once extracted. This is not the same for biomass. If grown well, there can be equal or more biomass every year, from the same piece of land.

- **Raw Materials:** Sugarcane and ethanol are the primary raw materials of the company. Most of the ethanol we source is also from renewable resources. More than 75% of Godavari's raw materials are renewable. When we compare this with targets set by many international companies, we see that we are achieving a high degree of renewable chemicals in our supply chain.
- **Electricity:** Godavari exports more than 75 million units of renewable derived power annually. All this electricity is derived from sugarcane

bagasse. The production of power from sugarcane bagasse generates atmospheric Carbon Dioxide that is once again absorbed by sugarcane as it grows. Godavari also purchases more than 9.5 million units of power in Maharashtra. From a company viewpoint, Godavari Biorefineries produces 7 times more green power than its purchase of power.

- **Biofuels:** The Government of India announced a large ethanol blending programme a couple of years ago. This programme has the triple goals of meeting India's energy security, addressing climate change and ensuring farmer income security. The sugarcane surplus in the country was finally seen as an 'energy' asset. We at Godavari Biorefineries pioneered the conversion of Heavy molasses and later sugarcane juice/syrup to ethanol to meet the large demand and expanded our ethanol facility from 200 klpd to 400 klpd, and are currently expanding further to 600 klpd. This will be one of the largest ethanol facilities in the country.
- **Biochemicals and Co-Creation with Customers:** We at Godavari Biorefineries believe that innovation is the key to sustainability and lasting competitiveness. Many of our customers are making commitments to lower their carbon footprint. We

have skills in the physical, chemical and biological conversion of biomass, to make products that could be 'drop-ins' (direct substitute of a fossil chemical) that our customers purchase. Sometimes, the customer would like to work with us, to co-create a product that could have superior properties than the fossil product we aim to substitute. The chemicals are often specialty in nature and have to address a specific performance or have a particular property for an end use application. The development of these products needs research and development in our own labs and collaboration with our customers. In this manner, we are working to co-create greener products with many customers in India and overseas.

- **Social Responsibility and The Somaiya Group:** The Somaiya Group has long stood for social commitment and giving back to society. Somaiya Vidyavihar is an Education Society working with more than 39,000 students. Many of these students study in schools in rural Karnataka and Maharashtra. Somaiya Vidyavihar University is located in Mumbai. The K J Somaiya Hospital and Research Centre is a 550 bed teaching hospital in Mumbai. The Girivanvasi Pragati Mandal works for the upliftment of

tribal communities. KitabKhana is a bookshop, a place to open our minds and be a window to different worlds and different times.

Tell us about your company's goals and how it plans to implement low carbon technologies across the portfolio to handle Scope 1, Scope 2 & Scope 3 emissions till 2030?

We are doing a study currently to analyse our carbon footprint. Once the baseline is understood, we will better understand what goals to set for ourselves and where we should draw our boundary. We have two manufacturing facilities, and as I mentioned earlier, in one of the sites (in Karnataka), most of the electricity we produce is from Biomass and therefore we have very low Scope 1 emissions. Similarly, we mainly purchase electricity in Maharashtra. We are currently installing a new boiler and turbine there that will reduce our scope 2 emissions there. ■

Sustainable Management Practices and other Growth Strategies



Ajay Popat

President

Ion Exchange (India) Ltd

Ajay Popat has been strategizing growth and leading Ion Exchange's successful implementation by nurturing concepts and Innovations. He talks about robust processes and technologies and various key aspects of Ion Exchange's sustainability strategies.

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What are the key aspects and priorities for sustainability strategy and low carbon technologies on radar of your organization? Tell us about the goals you have set for your organization over the next 5 years for the roadmap to achieve net zero?

The key aspects of Ion Exchange's sustainability strategy is based on the purpose of our business i.e. to conserve the planet's most precious resources

through total water and environment management solutions. This is being undertaken by providing state-of-the-art sustainable technologies and solutions for managing liquid, solid and gaseous waste generated by industries, institutions, homes and communities – both urban and rural. Thus eliminating contributors which lead to adverse climate changes and help create a positive impact on people's lives and the environment.

Ion Exchange realizes that clean

environment is critical for human existence and has been investing in advanced and efficient technologies to replenish water used in its manufacturing process. We have a robust and innovative waste management strategy targeted to reduce, reuse and recycle water and all kinds of waste. Our factories make all efforts to reduce the water footprint by efficient water usage in non-product applications such as cleaning activities, gardening, and for domestic purposes. Certification under ISO 14001 ensures system adherence to environment protection guidelines and periodic reporting of compliance to senior management. Emissions generated are within the permissible limits given by CPCB.

An example is the Green Manufacturing practice followed at our resins manufacturing plant at Ankleshwar. This is the largest resins manufacturing unit in India. Ankleshwar being an industrial area having a cluster of chemical units with inadequate treatment of chemical waste generated by them; the water table and natural water source is heavily polluted. Our facility has an effluent treatment system treating waste streams to acceptable levels for discharge. Our commitment to recover water from the effluent and reduce the load on the environment led us to initiate a first-of-its-kind project to extend the treatment of effluents by a series of state-of-the-art and sophisticated membrane systems. Manufacture of ion exchange

resins generates waste streams with a lot of bio-degradable and non-bio-degradable chemicals. So, a combination of robust processes and technologies are being used to withstand the complex chemicals and convert them into harmless compounds suitable for treatment in membrane systems and to meet the sustainability and costs requirements. These initiatives have helped to reduce fresh water consumption in the plant as well as reduce the discharge of waste in the environment. There have been continuous up gradations to this process and innovations in water reuse. We are now looking at Rainwater harvesting at the plant.

Priorities in the sustainable strategy include investment in advanced technologies to replenish water used in the manufacturing process and increased use of renewable and green energy for reduction of energy and water footprints. Innovative and robust waste management strategy targeted to reduce, reuse and recycle water and all types of waste. This will be undertaken through greater adaption of cleaner and efficient technologies for waste management to lower our carbon footprint and meet the sustainability goals following the Circular Economy concept.

Ion Exchange has an extensive protocol/mechanism to test our products for their impact on the customers and the environment. Measuring, monitoring and

improving impact across the lifecycle of products and operations will continue to be another key factor of the strategy to achieve our goal to create a positive impact on nature and people's lives and transform Ion Exchange into a water positive operation. Besides this, an important part of our sustainability strategy is to ensure the well-being of our employees as well as the communities whom we serve.

Tell us about your plan to implement low carbon technologies across the portfolio to handle Scope 1, Scope 2 & Scope 3 emissions till 2030.

In order to implement low carbon technologies Ion Exchange plans to implement the following across Scopes 1, 2 & 3 emissions till 2030.

Scope 1: (Direct emissions from owned or controlled sources, Fuel combustion, Company vehicles, Fugitive emissions):

Ion Exchange will undertake a fuel switch towards more environment friendly fuel or source of power e.g. HSD to Natural Gas, adoption of Electric Vehicles in place of Diesel/Petrol vehicles.

Emissions generated by the factories are within the permissible limits given by the CPCB and the same is monitored on a continuous basis. Process optimization and efficient management of utility equipment is undertaken to reduce natural gas consumption (energy).

Scope 2: (Indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company): We will be increasingly depending on the use of renewable power from Solar PV and undertake improvements in energy efficiency (electrical and thermal) for our various operations as well as for our products and projects. Besides this, in order to reduce the indirect emissions from the generation of purchased electricity, steam, heating and cooling Ion Exchange also plans to use energy efficient equipments, replacing incandescent light bulbs with LEDs, tri-generation (heating, cooling and air-conditioning) technology, vapour absorption air-conditioning, pyrolysis, green hydrogen and automation along with demand side management.

Scope 3: (Includes all other indirect emissions that occur in a company's value chain, purchased goods and services, Business travel, Employee commuting, Waste disposal, Use of sold product, Transportation and distribution (up and downstream), Investments, Leased assets and franchises):

For indirect emissions that occur in the value chain, Ion Exchange encourages green procurement which includes use of paper waste in packing, reuse of packaging material besides supplying products in reusable/ returnable plastic containers which are used several times thus minimizing plastic waste. We also

supply products in bulk containers such as jumbo bags instead of plastic bags and tanker loads in place of barrel packaging. Ion Exchange encourages its vendors and service providers (including MSMEs) to adopt environmentally responsible, sustainable and quality management practices.

With regards to business travel we promote the use of online video-conferencing in place of physical travel (wherever feasible) for meetings as well as interviews. For employee commuting; vehicle pooling is recommended. Other plans under scope 3 include; improving the lifecycle of products, recycle of products, reuse of waste disposal by downstream industry, rain water harvesting, tree plantation, zero liquid discharge at our various factories as applicable.

Ion Exchange has a sustainability policy with regards to transportation such as shipment through low-carbon footprint mode (e.g. railways is used wherever feasible to transport bulk consignment) and use of local transportation facility is undertaken.

Ion Exchange through its CSR arm - Ion Foundation also works closely with various urban and rural communities around its factories and offices with respect to sustainable management practices. These projects/ programmes are implemented through our employees and partners.

Periodic feedback is taken from the beneficiaries as well as partners. Ion Exchange believes in investing in a long-term sustainable, socially responsible, profitable business which takes care of the interests of its stakeholders, customers, employees and the community at large.

Tell us the major challenges and cost implications for implementing low carbon technologies? How do you plan to address these?

Challenges and cost implications for implementing low carbon technologies include: technology maturity, high cost of technology, availability of local resources, etc.

The mitigation strategy includes - innovation and an increased emphasis on R&D with respect to development of efficient, technologically advanced and cost effective products and solutions, opting for low cost carbon financing, strategic investment as well as partnership and collaborations.

How will this affect the company's operations and what new products will be offered to the company?

This will help create real value for the company by contributing to business growth as innovation in products and services will provide an additional revenue stream through meeting environmental and/ or social needs. Cost savings will be accrued by cutting waste, reducing

energy and minimizing hazards and vulnerabilities. Reputation and brand image for the company and its products will increase. There will be better compliance; all this will lead to value addition for our stakeholders, customers and employees. A well implemented sustainable strategy will attract, motivate and help retain the best talent within the industry. This will also ensure that we remain the technology and market leader in India while strengthening our position in the global market. Ion Exchange's aim is to transform the Company's business strategy into a sustainable business strategy in line with our Vision – To be the leader in our business which is so vital to people's lives and the environment.

Ion Exchange is privileged to manage water and the environment for more than five decades. Providing sustainable solutions that contribute to a circular economy is the key objective of the technologies, innovative products and solutions developed by us. We are confident that we will continue to add value and promote sustainable development using our strongest assets- technological expertise, manufacturing capabilities, innovations and strategic foresight. ■

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'Shift In Demand and Investment towards Greener Solutions'



Rajesh Kamath

CEO & Managing Director
tkIS India

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What does Energy Transition mean for the EPC industry? Please share your views on:

Kind of shifts this will lead to across the EPC industry value chain

Anticipated changes in project complexities

The industry is moving towards decarbonisation - Green Energy & Chemicals. For e.g. Refinery, Fertiliser,

Steel sectors are planning for Green Hydrogen Value chain and downstream applications. India is planning for 500GW of Renewable power by 2030. Typical complexities of EPC business are exacerbated primarily due to changing nature of sector by rapid energy transition. We know that many consultants/ Contractors globally have joined hands with Green Technology providers to offer integrated sustainable solutions. Over the next 3-5 years, as the newer business

model transformations are forthcoming due to acceleration in energy transition, more and more EPC opportunities are expected as well.

So with the energy transition clearly happening, it becomes imperative for EPC players to adapt to the new environment and upcoming changes towards Greener solutions. Adaptation of these sustainable technologies shall evolve over time as the end consumers are primarily exploring new value chains and diversifications. At present these newer technologies are mainly sourced from outside India, and therefore EPC contractors will have to consider the challenges related to global supply chain. This may improve once the technologies are available in India.

With respect to the anticipated changes in the project intricacies, every EPC project is complex, involving a tight-rope functioning of different stakeholders. Limitation of manufacturing capacity since there are few OEMs with specific large scale orientation in emerging technologies, increasing competitive pricing for upcoming energy value chains, and additionally bringing agility in construction with stringent time schedules are challenges to be overcome. So, moving towards sustainable processes per se would increase the inherent complexity of the project.

To address the climate emergency, many project owners will have to reconsider / are already reconsidering the pre-planned projects to align with the obligation to reduce emissions & comply with the stricter environment norms. How has this impacted the projects that are already at the stage of implementation and will affect the future projects?

Absolutely! Fortunately, many of the project owners are becoming conscious about the climate emergency and have started inquiring about the “decarbonization goals” in the tenders. Steps to introduce energy efficient, environmentally suitable processes are already being looked into by many of the reputed global licensors of these technologies, and I must say that we can see the inclination of most of our clients to implement projects based on these technologies that adhere to the norms. In fact, in the recent past, tkIS India has been involved in executing cleaner fuel quality projects for the refinery sector and contributing to various energy improvement programs.

Against this background, it is envisaged that the future energy demand will mainly be channelized via renewable sources to the extent possible. Considering the uptick in the climate conscious scenarios, many of the design and sourcing shall also need

to be oriented accordingly. The criteria for selection of suppliers, sub-contractors and agencies will necessarily be accounting the environmental aspects of design.

New Greenfield or larger Refinery expansion projects are likely to opt for greener solutions/green value chain integration. These projects which are being implemented presently are planning incremental steps towards environment friendly processes within allowable scales, since you are aware EPC contracting is akin to walking on thin ice.

I am sure a robust process is in place that looks into different parameters such as environmental impact assessment and the licensor emission data while granting an environmental clearance for the new project. So its impact on new projects is envisaged gradually.

Which technologies will set the tone of decarbonization in the immediate future in context with India & for the future to lead to Net Zero eventually? Tell us about:

New path breaking projects bagged by your organization

Key focus areas & targeted markets for your organization.

Keeping in tow with the sentiment towards adoption of sustainable processes, tkIS now offers green chemical portfolio.

This is one of our primary focus areas. Green Hydrogen is gaining importance worldwide as an energy carrier and CO₂ free feedstock for the chemical industry. As a result, demand is rising for industrial electrolysis plants, arguably the optimal way to produce green hydrogen.

thyssenkrupp's ability to offer Green Hydrogen technology plays a major role in providing an alternative to fossil fuels as it will help the transition to low emissions and work towards a clean, healthy environment. Green Hydrogen is acting as a sector coupling towards industrial power-to-x applications, includes downstream Green Ammonia and Green Methanol. Especially Ammonia is not only used in fertilizers, but one of the best available long-distance energy carriers. It can be transported using the existing infrastructure, as it is the second-most traded chemical in the world.

Various projects are under developmental phase and few of them are under implementation using our green technologies. Our first reference of green hydrogen is in operation since April 2018 at the test facility "Carbon2Chem" in Duisburg, Germany. We also have an Engineering & supply contract with CF Industries to deliver a 20 MW water electrolysis unit for the production of green ammonia at the Donaldsonville manufacturing complex in Louisiana, USA.

Few Green Methanol and Carbon capture projects are also under finalization.

Please share your thoughts on the impact of this trend on downstream chemical processing industry which continues to depend on the Oil & Gas industry for feedstock despite significant discussions on shifting to green chemicals for quite some time. What kind of opportunities are expected to open up for engineering services & capital goods sector?

The opportunity lies in the problem. Chemical industry can play a pivotal role in implementing the solutions that we need, and as I mentioned, our green chemical technologies are a step in that direction. India's energy demand is rising at unprecedented pace. It is estimated that India's oil demand will rise by 50% from its current consumption by 2030. We cannot keep pace with the rising energy demands of India, although we are experiencing the shift towards Greener solutions and sustainable technologies and renewable power generation growing multifold.

In all boardrooms and shareholder meetings, sustainability and energy transition is taking center stage of discussion. Therefore, I definitely see a shift in demand and investment towards greener solutions. Considering the adoption of upcoming green value chain technologies and their economics, the

realization of industrial scale projects will progress gradually.

Refining industry shall continue to expand. However, the major focus and thrust shall be towards the downstream petrochemicals. Expansion in the Steel industry is also on the horizon as the end consumption by infrastructure and automotive are thriving. However, the new expansions in industry shall remain focused on decarbonization. With the stringent environmental norms, plants may also need modifications, undergo revamps and install state of the art monitoring systems. This will eventually result in the opening of various opportunities, not only for the service industry who can cater to these clients and support the engineering, but also for process equipment manufacturers.

How are you driving the change in your organization across skills development, digitalization & expansion of technology portfolio?

Global trend towards adoption of Green Chemicals and integrated sustainable value chains drive the need towards upskilling. Therefore, we, at tkIS keep our employees engaged with global projects.

Our technology expert and specialists provide on-the-job trainings and skill enhancement for our employees. We also enhance the global R&D efforts by

engaging key specialist of local employees in new simulations. At tkIS, Engineering designs are being executed on upgraded software to adapt to the new thinking and optimization.

Furthermore, based on the evolving customer requirements, we are analyzing the Digitalization opportunities for tkIS India and implementing appropriate solutions e.g. connected ecosystem and use of IoT, advance analytics to transform problem solving approach. In addition, our modularized green technology offerings are Industry 4.0 compliant. Further automation can be augmented to suit to client specifications and needs. We organize trainings from time-to-time based on the requirement from individual disciplines. These may be software trainings, technology training through industry experts, team building sessions that we keep doing while employees are working on the job. This also keeps them in tandem with the recent trends in the industry.

What are your views on changes in investment space & opportunities for Indian EPC players in India & globally?

After the lull period due to the pandemic, surely the opportunities for Indian EPC players have increased tremendously. This can be attributed to the expansion plans taken up by the oil majors as well as some leading private companies.

Considering the energy transition scenario, the investment opportunities in India are expected to pick up in medium term. Public sector spending is estimated to increase in line with the COP26 target announcements towards decarbonization. This shall provide a good space for investments for Global players. With the number of investments coming up in a variety of products, India is inching towards self-reliance and this has resulted in more employment opportunities. I must say that these are the most interesting times when clients with their growth mindsets are exploring, experimenting, investing in newer solutions and emerging technology projects.

What are the biggest gaps that need to be addressed for Indian EPC services providers & allied capital goods sector to leverage the opportunities to become global procurement hub in the true sense?

Considering the growth trajectory due to the emerging technologies and the phase of energy transition, there is dire need to have manufacturing set-ups in India by global companies. India requires focus on improving capabilities in R&D of emerging technologies and ramping up domestic manufacturing.

From a standpoint of Global Technology licensor & OEMs, a middle ground needs to be attained to understand whether the

manufacturing set up needs to be put up after a sustained demand is established or the manufacturing setup needs to be put up to create the sustained demand. We expect that the existing demand shall rise sooner in India and Government's policy framework of self-reliant India would pave the way.

What are your suggestions on Regulatory & policy level support for EPC and allied sectors?

Considering the ecosystem for sustainable and green technologies, I feel there is a viability gap which needs to be addressed by the Government and certainly Industry is aiming at specific policy incentives toward these areas; especially in Fertiliser sector which is heavily dependent on subsidies. For example, there is a lot of traction for Carbon Capture & Utilization, but there needs to be a carbon taxing or incentives to support the ecosystem. Similarly, there also have been some discussions around the Renewable power generations and likely conversion of Power Purchase Agreements (PPAs) with Green Hydrogen Purchase Obligation which needs to be rolled out in phased manner to bring larger scale projects on stream.

As is expected in any sector, the presence of competition is always a good motivating factor. However, it is also important that the competition is equally-abled and skillful. Therefore, my first

suggestion would be to have a qualifying criteria designed in such a way that the experience of the EPC players is captured in the truest sense. The dilution of the qualifying criteria may invite inexperienced contractors who may not be able to sustain the pressure of executing an EPC project, and in the process harm the project and also a deserving candidate.

Policy support is needed to upgrade the commercial terms in line with Global contracts e.g.- sole weightage towards L1 criteria need to be re-evaluated. Another policy that can really work in favor of the contractors is to make the payment terms front-loaded. Back-loading the payments creates a lot of strain on the EPC contractors resulting in negative cash-flow, making it difficult for the contractors to bear the load. I am also of the opinion that efforts are also required in making the commercial terms and conditions that are within the tender favoring both the customer and the contractor equally. ■

Future of Energy Transition Synergized with Engineered Solutions



Dinesh Pissurlenkar

President, Asia
Worley

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What does Energy Transition mean for the Service industry? Please share your views on:

- **Kind of shifts this will lead to across the Service industry value chain**
Anticipated changes in project complexities

The world around us and our industry are changing more rapidly than anyone imagined. As the world transitions to an electrified, low-carbon and distributed energy system, the production, transformation, storage and consumption of energy will continue to change as well. This is largely a response to climate change, but is also driven by technology, market and social evolution.

We have a responsibility to shape and support the future of our markets in the energy transition, and Worley is a key part of the solution. It will take world-class engineering, scale and delivery, and operational expertise to solve the global challenges posed by climate change, resource efficiency, waste management and the call for a more circular economy. To achieve the mid-century net-zero emissions ambition will require the delivery of engineered solutions at a pace and scale that is historically unprecedented in global terms. It will require an ecosystem of approaches and it impacts all our customers across the industries we serve.

To address the climate emergency, many project owners will have to reconsider / are already reconsidering the pre-planned projects to align with the obligation to reduce emissions & comply with the stricter environment norms. How has this impacted the projects that are already at the stage of implementation and how will it affect future projects?

The energy transition and sustainability pivot are fundamentally changing our customers' notion of value. Our customers are making sustainability commitments and are backing them up with roadmaps and investments.

To achieve the aims of the Paris Agreement and limit warming to 1.5°C, we need our essential industries to use an increasing proportion of low-emissions energy. Lowering the carbon footprint through decarbonization technologies will be critical and Worley is helping our customers to do this via our 'Decarbonization' pathway. We help our customers to meet their sustainability goals with our knowledge, digital enablement, and technology. Our key enablers include our aligned operating model, digital and technological enablement, talent engine and knowledge management, values and leadership principles, customer centricity and capital discipline.

Which technologies will set the tone of decarbonization in the immediate future in context with India & for the future to lead to Net Zero eventually? Tell us about:

- **New path breaking projects bagged by your organization**
- **Key focus areas & targeted markets for your organization.**

The future of energy depends on a range of technologies and people working together to reduce the carbon intensity of industrial processes. Today's energy transition is unstoppable, and the scale and pace of change needed is extraordinary, presenting unique challenges for the world's biggest energy, chemicals and resources businesses. Integration of technology into energy and carbon-free solutions will be valued differently by customers, with an expectation of technology-enablement at all levels.

We need to rapidly change processes, develop new technologies and create entirely new value chains fast. The final net-zero tapestry will be made up of threads we're already using – current technology and processes that work well – and threads we've not even discovered yet.

Worley's technology businesses, ventures

and digital products help our customers turn industry challenges into solutions. Our Comprimo® and Chemetics® teams are leading providers of technology and solutions for all parts of the sulphur chain and play a key role in helping customers reduce emissions. We've completed and are involved in first-of-a-kind projects in areas including carbon capture, use and storage (CCUS), low-carbon fuels, low-carbon hydrogen, and battery materials around the world. To learn more, please visit Worley.com to find out more about our recent wins and project success stories.

Please share your thoughts on the impact of this trend on downstream chemical processing industry which continues to depend on the Oil & Gas industry for feedstock despite significant discussions on shifting to green chemicals for quite some time. What kind of opportunities are expected to open up for engineering services & capital goods sector?

The chemical sector is currently the largest industrial consumer of both oil and gas. And even in a net-zero scenario, the International Energy Agency (IEA) considers that hydrocarbons will still be required for chemicals production.

The dual challenge of supplying chemicals to a growing population while addressing net-zero targets is complex. A change in thinking and approach to how assets are developed, delivered, and operated

is needed. Where the chemical industry will be focused and where opportunities are expected is on decarbonizing processes, feedstocks and digital enablement. A value-based approach is required to maximize the impact that digital technology can bring across the asset's life. This shift could pave the way to capturing the true value of asset data, enable more efficient operations and help to accelerate emission reductions in the chemical sector.

How are you driving the change in your organization across skills development, digitalization & expansion of technology portfolio?

To prepare for the future, we have undergone our own business transformation with the purpose of delivering a more sustainable world.

Digital is the key enabler to achieving this and recent structural changes at the executive level of our organization include the creation of the Information & Digital Delivery group. This group combines the talents and capabilities of our Digital, IT and Project Delivery teams as the enabler of data-centric delivery and advanced digital solutions. There is a skill shift happening, but the capability developed through decades of experience within the workforce remains critical for the future of the energy, chemical and resources markets. Intrinsically 'human' skills – critical thinking, creativity, strategy

and technology management and upkeep, among many physical and technical skills are vital.

We're working on a range of programs and opportunities to equip our people and attract new talent with the skills needed to operate in the emerging industry context. And collaborate effectively not just with each other, but also with new technologies. For example, we recently pioneered a global digital passport, a gamified approach to learning with bite-sized learning opportunities, events, and conferences. Just 3 months after launch almost a third of our global office-based workforce had achieved some level of digital accreditation through this program.

We're also identifying the right opportunities to support our people in transitioning their skills into low-carbon sectors. For example, supporting our craft workers in the upstream oil and gas sector to take on new challenges in carbon capture and storage or offshore wind projects. Or oil refinery workers navigating their career transition into biofuels and hydrogen production.

What are the biggest gaps that need to be addressed for Indian EPC services providers & allied capital goods sector to leverage the opportunities to become global procurement hub in the true sense?

For India to be seen as a core sourcing hub and an indispensable part of any

strong procurement strategy, we need to do a lot more reforms across sectors to ensure high-growth conditions are in place so opportunities can be generated and leveraged. It also means we need better investments in infrastructure, like ports and power and the ability to acquire capital at lower cost than other countries.

Businesses need to evolve and develop a long-term value creation mindset coupled with a strong performance-oriented culture. These can create stakeholder value in the long-term. This implies adopting a forward-looking approach to investment with accountability to all stakeholders. Simultaneously, what's also needed is continuous customer-centric innovation, operational excellence and scalable platforms, strong corporate governance and trust-based brands that attract capital, customers, and employees from all over the globe. ■

Skillset gap – Niti Aayog



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Hiring of skilled Project Managers and Professionals - Challenges need to overcome by India and Indian Institutions, Employers, Vocational & Professional Service Providers, NGOs in stiff competition

India will need more than 70 lakh skilled Project Managers and Professionals in the next 10 years for its Infrastructure sector.

This projection is provided by NITI Aayog in its publication, the Indian Infrastructure Body of Knowledge (InBOK) which has been created in collaboration with Quality Council India to establish a framework for effective implementation of Program and Projects in India

Are there enough engineers in India to fill up these positions? Apart from their engineering degrees are they well

equipped with objective and career-oriented internship, skilful training, exposure and amenable experience in the offing geared up to compete with Artificial Intelligence and Robotics soon?

Rashid Hussain, Author, Advisor, Project Director, Course Director, Lead Tutor, FIDIC expert, Executive Director 3C Corporate Consulting Contracting (www.3ctrng.com) having 35+ years robust Contracts and Project Management exposure in Middle East (Aramco/Exxon-Mobil/Dodsal/ETA) and India (Tatas) is pleased to briefly discuss, analyse, highlight grey areas and appropriate recommendations for all Indian Engineers and Professionals to fill up the requisite positions and take India forward - 'SAB KA SAATH SAB KA VIKAS SABKA VISHWAS SAB KA PRAYAS...'

In a country like India, the government is heavily investing in infrastructure development, and so there is a need for well-trained engineers and professionals who are needed not only to construct but maintain

already existing express highways, flyovers, tunnels, railways, metros, airports, etc. Civil engineers are greatly needed to undertake such tasks.

The following stream of engineering is in demand:

- Mechanical Engineering
- Computer Science/IT
- Civil Engineering
- Electronics and Communications
- Electrical Engineering
- Chemical Engineering
- Textile Engineering
- Aerospace Engineering
- Biotech Engineering
- Metallurgical Engineering

Sr.No.	Engineering Subjects	Students' intake for 2016-2017
1	Mechanical	480,000
2	Computer Science	310,000
3	Civil	280,000
4	Electronics & Communications	240,000
5	Electrical	210,000
6	Aerospace	8,000
7	Biotech	7,000
8	Chemical	Less than 5,000
9	Metallurgical	2,000
10	Textile	Less than 1,000

Need of the Hour – Technology Skills Development

Recent employability report has found that over 80 percent of engineers in India are unemployable as they lack the technological skills required by employers now.

Every year, thousands of engineering graduates pass out of college, but only a tiny handful of them are trained in the skills that employers need now. The employability report is based on research conducted on engineering students from India, the US and China.

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“It has been found that a low proportion of engineers take up projects beyond curriculum and do internships. Further, there is a lack of faculty talking about industry application of concepts in class or students getting exposure through industry talks,” which is highly critical objective in making a career of an aspiring engineer.

80% engineers are unemployed: How can we prepare engineers for the jobs of tomorrow?

Main highlights about engineering from the employability report:

The report stated that only 3.84 percent

of engineers in the country have the technical, cognitive and linguistic skills required for software-related jobs in start-ups.

Only 3 percent of engineers have new-age technological skills in the areas which are booming now such as artificial intelligence, machine learning, data science and mobile development.

Thus, only 1.7 percent of engineers have the skills needed to work in new age jobs.

The report provides the primary reasons for low employability of India's engineers - only 40 percent engineering graduates do an internship, while a mere 7 percent students do multiple internships. Apart from a lack of internships, engineers also have low employability because only 36 percent do projects beyond their curriculum. Thus, they don't always build the skills to solve problems in a variety of situations.

Another problem adding to low employability of engineers is that the subject is taught in a very theoretical manner in colleges -- 60 percent faculty doesn't talk about application of concepts in the industry and only 47 percent of the engineers attend any industry talk.

US, China have 3-4 times more engineers than India who know how to code is almost four times than

Indian engineers. When compared with engineers in China, Indian engineers show better potential in writing correct code. However, the proportion of engineers who cannot write compliant code in India is almost three times the Chinese engineers who cannot do so, according to the report.

Thus, there are several factors making Indian engineers so starkly unemployable across industries.

How preparing your children today for 21st-century skills will help them for future jobs that don't exist yet. Most schools and colleges are preparing children for skills that will soon become obsolete. Here's what 21st-century skills are and how students can learn them today.

The workplace dynamic is changing faster than ever before in the 4th industrial revolution and thanks to the incredible advancements being made by automation aided by artificial intelligence, this rate of change will only increase with the passage of time.

Many skills that had been considered valuable a decade ago, are considered obsolete today and there is no doubt that many valuable skills of today will be obsolete in a few years. We are now preparing for jobs that didn't even exist before. Many jobs that are valuable today will likely be automated in the not-too-

distant future and only people with skills that are irreplaceable by automation will thrive in a future economy that's shaped by disruptive technologies.

Future of work will need highly skilled human employees to do what AI and Robots cannot execute. With increased AI-use and automation in job sectors, employees will need to train and re-skill themselves to take up responsibilities that require the human touch.

Automation is a worldwide phenomenon today and is impacting work all across the globe. As per a World Bank report, the proportion of jobs threatened by automation in India is 69 per cent year-on-year.

Sectors like automobiles, pharmacy, and IT & ITES are in their transition periods and are adopting technologies for better governance which is impacting and reshaping the workforce.

This change is driving both companies and employees to advance their skills. The fear of losing jobs because of the new automation trend will fade out if one focuses on fixing their skills gaps through 'training.'

Enrolment in reskilling programmes offered by various bodies and companies can prepare employees for their future.

Collaboration between companies, players in educational, vocational system and government will create an ecosystem for millennials to upskill and reskill the talent that the market currently needs. Training must become a regular part of every employee's career growth. Such intervention will not only prevent employees from losing their jobs but will also help them climb up the career ladder.

Robots are coming to take away your jobs: Tips to save your career from the automation takeover

Technology is a job creator rather than a job destroyer

Technology should not just be considered as a disruptor but also as a creator of various employment opportunities. For example, there is a dearth of people who possess the knowledge and capabilities to properly build, fuel and maintain technologies within an organisation. Such professionals can help build a company's AI for the progress of businesses.

To mitigate such a shortage of talent, businesses should enforce training and reskilling of their employees towards the required technology. Moreover, some of today's common jobs are evolving into more specialised trade jobs such as user experience designers, inventory

management and logistics specialist, issue redressal specialists etc. Hence, with technology coming in with full force, a huge market of niche jobs are being created which are waiting to be tapped upon.

Training and re-skilling is the key

The battle between 'technology is easing our job' and 'technology is taking away our jobs' has been going on for ages. But a study by economists, suggests that rather than destroying jobs, technology is a "great job-creating machine"

With the help of technology, all routine and monotonous jobs should be automatized. People should use this opportunity to up-skill or re-skill their talent to reach higher career status, where their skills and talent is put to better use.

Couple of conglomerates in India too works towards helping candidates and associates, up-skill their talent and make a mark in the corporate world.

Question of the future: How are companies utilising technologies to their advantage

Over the next couple of years, the question will no longer be of the change in the workforce due to technology intervention

but on how companies have used this technology to their advantage.

With the invention of AI/Chatbots, the employees now have an option to take up responsibilities with higher skill values which require human intervention and intelligence.

The future of today's corporate world lies in automating the regular monotonous tasks with the help of technology and emphasising on up-skilling human talent and intelligence through training.

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A large number of jobs will be automated within the next 20 years but few people realise it. Will you be able to keep your job? With these tips, you can.

Food service and manufacturing are predicted to be the first job industries which would be taken over by robots and AI for the most part. If some industries get highly automated, the other fields are bound to get affected too. Employees need to re-skill themselves and fast!

"Recently, the Indian banking system has seen the beginning of the revolution. Robots also make burgers and do all kinds of middle tasks, leaving behind only entrepreneurship or a temporary staffing. Artificial intelligence manages investments, handles everything like insurance claims and basic bookkeeping, and performs basic HR.

It is your soft skills which will become extremely valuable when AI, automation or robots enter the job market. With the high pace at which new technologies are coming to the fore, we need to ask ourselves whether our work could be done by a robot. And if it can, we need to get worried.

The main jobs which will face a great automation risk include factory workers, drivers, cashiers, waiters and customer service personnel.

Which jobs are safe from automation and robots?

Creative jobs such as those of artists, designers, hairdressers, writers etc are safe as automation cannot replace true creativity

Those jobs where humans display their skills such as that of a sportsperson, singer or dancer will be safe as no one would enjoy robots competing against each other or marvel at a completely artificial voice

Jobs requiring empathy such as those of counsellors or therapists will be retained by humans. This category could also include to some extent teachers, vets, dentists, fitness trainers, police officers, fire-fighters etc

Jobs where you would need to cater to specific bits of knowledge such as that of tour guides or florists cannot be taken up by robots

Jobs which involve creating, maintaining or fixing automation or AI technology would also be safe from robots

This shows that while some jobs will be eliminated, many employees will find

themselves becoming overseers to AI

Here are a few tips on how you can protect your job from automation and robots:

Be aware of how much automation risk you face

Do adequate research in your job field to understand if you should be worried about AI or robots taking over your job. List your skills and check whether any of them could be done by robots. Job skills which deal with people or need you to innovate and come up with new ideas are less likely to be automated. So, focus on enhancing these soft skills to safeguard your job from robots or automation in future.

Understand partial automation

It is quite possible that only a part of your job, such as inputting data and info onto spreadsheets, will be automated, which can actually boost your productivity. Often, employees spend a large chunk of their allotted work hours doing menial, routine jobs which do not utilise the human mind adequately. These routine jobs will be dealt with by using automation software, AI and robots. You need to make sure that your top job skills are polished and possess a human touch.

Work beyond your job description

To make yourself more valuable to your

company, have a decent idea on how the rest of the departments work. Understand the goals of the company and increase your area of expertise so that if your job is under the threat of being taken over by automation, AI or robots, you have other options to bank on.

Look for a career move

If per chance you realise that your job will definitely be taken over by robots or automation and there is nothing you can do to change that, start looking for a different job which uses slightly different job skills that cannot be automated. Re-skill yourself accordingly - you can go for short certificate courses or sign up for a free course on Coursera, EdX or yet another MOOC website. Some companies also provide tuition reimbursement to employees looking to enhance their skillsets further.

The automation wave would definitely help push forward human productivity to a great extent and the increasing proliferation of AI and robots is actually a great boon. "Artificial Intelligence is making technology more helpful and intuitive. And this is most evident in the smart-phone market. A phone that can learn your language, count your calories, answer your questions or recognize what a things look like.

How Internationalisation of top Indian universities will be beneficial

The Indian Institute of Technology in Delhi (IIT-D) is planning to open two campuses in Egypt and Saudi Arabia as part of a global outreach and expansion of top Indian institutes including the elite IITs that will boost the higher education sector.

Such an expansion overseas of top Indian universities will have multiple positives. For one, it will build a strong Indian education brand to help the 'Study in India' aspiration become a reality, and improve the financial health of Indian institutions which in turn will reduce public institutions' dependence on government grants. Besides, it will give a leg up to Indian institutes when it comes to global rankings, a prickly issue and a subject of constant debate in the academic world.

Policy push: The New Education Policy 2020 promotes internationalisation of higher education and bats for making India a 'study abroad' destination. "High-performing Indian universities will be encouraged to set up campuses in other countries and, similarly, selected universities, for example, those from among the top 100 universities in the world, will be facilitated to operate in India," according to the NEP. It also underlines that there has to be a push to promote India as a destination for affordable yet quality education.

India and Automation

India too needs to join the rest of the world in pushing its way forward in the field of artificial intelligence. "China has progressed in AI-based research; India should also view AI as a critical element of national security strategy. India needs to be prepared for the digitalised future. Establishing AI-ready infrastructure, digital services and digital literacy is thus necessary to prepare India's jobs and skills markets for an AI-based future. The bold urban initiative by government called 'Smart Cities' is also giving a hint to the public to stay ready.

The skills, experience and insight that a human being can provide are irreplaceable. Soft skills are the skills of the future. Machines and robots would only be taking over those jobs which are suitable for them. Time is not far when the robots' takeover workplaces and hence it is necessary to know how humans are required to handle them. AI is no more a toddler. Many AI researchers believe that the day will ultimately come. The question is, are humans ready for it?"

Here's how you can stop your best employees from quitting the job

With young employees always looking out

for job satisfaction and switching jobs at the drop of a hat, companies are figuring out how to retain their top performers.

The young workforce taking over the job market now is easily dissatisfied. Their main criterion is not job stability but rather job satisfaction along the prospect of innovation and growth. The Millennials, people born roughly between the years 1980 and 2000, grew up coming to terms with the advent of personal computers, Internet, smart-phones and the technology boom. So, what they require from their job circuit is quite different from what the previous generation wanted.

As the Millennials are a big part of the global workforce at present, various organisations are rethinking their projected work environment so as to be able to retain their employees better and provide them the work culture they are looking for.

What is the primary deciding factor for whether an employee sticks or leaves?

"Lack of clarity results in lack of trust," A study conducted by ITM in 2011 on this issue, she says that it is the treatment meted out to employees in the first month of their employment that determined if they would stick around.

These could be as trivial as awareness of basic policies related to travel, office timings, leave, attendance, reporting, medical etc.

Employees need to be integrated into the company culture and this is a critical task for the leaders of the organisation, stressing that the orientation and onboarding process cannot left to an e-learning system to deliver; it should not be automated.

These sessions should be necessarily conducted by employees who are in the organisation for more than a year and walk the new employee through all the processes and policies. They should be available for answering all the 'stupid little' queries," etc.

How do you make an employee stick to an organisation?

The employees of the present generation will not settle for a job that doesn't utilise their skills or inspire their passion. They need to be validated and empowered so that they can be a constant driving force of the company. The management needs to take steps to ensure that employees are updated and on board with company policies, intentions and actions. Unless the employee knows what exactly the company is asking from him, he won't be able to give his 100 per cent.

Organisations usually identify high potential employees and design measures to ensure retention. However, high potential employees can also be a double-edged sword. "If they get dissatisfied, research has shown they can disconnect up to 50 per cent more than an average performer in the same situation. "No organisation can afford to lose such high productivity, especially the high pots."

Following are few ways to make an employee stick to an organisation:

Recognizing high performers early on their career and linking their personal goals with corporate goals will allow them to work on company problems, keeping the fire on.

Many companies today incubate entrepreneurs and entrepreneurs' skills. Few companies have appointed career stewards whose job is to identify and direct their career of high potentials

Delivery expectations are changing. With the changing technology, business context, and situations, employees need to remain updated on the latest developments and sharpen their skills.

Research shows that 70% of today's performers lack of critical attributes essential to their success in future

roles. Three attributes are required for top performers to sustain – ability, engagement and aspirations. Organisations can validate these attributes by remaining in touch with employees and through continuous evaluation.

The HR needs to get a sense of how employees plan to rise up the career ladder and in what ways the organisation can assist them. A question like “What would cause you to take up a job with another company? Can throw light on various characteristics and aspirations of a particular employee

- 92 The management of high performers should not be delegated downwards. Managers have a tendency to hoard or collect the higher performers instead of sharing. This results in the drain-out of such performers as they do not see the organisation giving them any long-term career growth. When the employee leaves, the HR ends up doing post facto analysis rather than proactive retention. Hence monitoring of the management and employees by the CEO as well as the HR goes a long way in retaining and re-skilling employees.

The HR and management should not be overcautious when it comes to allowing potential candidates to fail. It is said that true leadership development takes place only under stressful situations. A good

example would be in sports. Irrespective of the coaching, equipment, environment, crowd or money, the sports person delivers only when he or she is challenged with the stress of beating the opponent.

Having delivered their performance, employees expect differentiation in recognition and reward. They no longer want to bear the brunt of the non-performance of others and being averaged out.

Conclusion

The shift from being management-led to being employee-led can change the growth game of an organisation. An organisation which is led by the needs of its employees rather than the wants of its management is bound to harbour a positive environment, with more scope for innovation and exponential growth for deserving.” ■

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Digital Transformation Driving New Perspective in Engineering

The present age industrial scenario has undergone radical changes with ever-changing business environment requiring high level of expectation with reference to product customization, high precision, delivery time. This requires a collaborative approach between specialized partners connected within a framework. Industry 4.0 and 5.0 have ushered in a new platform adopting latest technological tools, analytical platform, big data creation and analysis in a framework of fast, secured and broadband communication network. The engineering industries has to tailor their Way of Working to adopt to these changes with new technology-

based tools, continuous competency development and creating a synergy between working teams and the new generation engineering tools.

Engineering Consultants role is to address and provide a structured engineering solution from the concept stage till the plant is completed, passing throughout phase-wise change management to address various foreseen or unforeseen challenges. While the earlier approach towards an assignment was driven with mostly known and very few unknown challenges, a standardised process and a time-proven Way-Of-Working (WOW) could be successfully adopted. However present-day assignments have a new dimensional challenge driven by Industry 4.0 and 5.0

developments and their roadmaps.

The present era characterised by Industry 4.0 faces unprecedented challenges with focus on continuous changing demand, customisation of solution, fast and error free deliverables at competitive price. Thus, for sustainability, organisation need to proactively adopt the technology driven approach under the umbrella of Industry 4.0 & 5.0 model. The theme for Industry 4.0 is connectivity, while Industry 5.0 speaks on collaboration between man and machine with enhanced use of Cobots or collaborative Robots. Thus, Engineering approach as well need to be aligned with this theme. Industry 4.0 have also set up process of Industrial Internet of Things or IIOT, where all connectivity or data transaction are done under Cyber-physical network. As the present-day business is data driven, secured connectivity and collaborative approach establishes sustainable process to carry out business.

Digital transformation, by using digital technology, on the other hand connects all aspects of the project scenario and enables, connectivity, instant updating, analysis, benchmarking with Industry reference, visibility of

all ,Key performance indicators, KPI's and their enablers and thus allows a firm basis to formulate , analyse , midway correction driven by changed requirement and feedback, connectivity with various OEM's and integrating their special requirement and establish a homogeneous platform.

Thus, digital transformation, if successfully adopted will act as the driver for re adopting Engineering Process and Decision-making perspective and will pave the way for a sustainable working platform.

Challenges and expectation for Engineering Industry

The engineering Industries today primarily focus towards two types of business scenario, the first being the Capex – the green field projects and the other being the Opex- Brown field Projects with plant retrofitting. Both the domains have their own characterised opportunities and risks for which Engineering Consultants need to have the total knowledge of the business process, access to the pertinent technological tools and data base to deliver a sustainable solution. While the approach and solutions for both Capex and Opex projects are different, they

both have one point in common -Industry 4.0 driven strategy for use of disruptive technology and strong communication backbone for connecting all stakeholders for effecting a customised solution for each stages of all assignments. Both Industry 4.0 & 5.0 era have come with their own challenges, but they have also set up a platform to combat with the continuous changing requirement driven by changing priority of short-term and long-term demand. For sustainability the Industries need to continuously customise their product adhering to changing market demand, quality and time line. The early producers get niche market and with competitive pricing and quality remain sustainable.

While deciding to set up a new greenfield project, the first assessment, the consultants need to do is whether the plant investment will be viable, i.e. will give a continuous expected return of the investment. For this assessment of new demand, product lifecycle, market volume and scale of production need to be adequately assessed. Also, flexibility in the product line for continuous customisation of the product line from the standpoint of changing demand or adopting changes in the operating process by introducing time appropriate new technological

interfaces like advanced automation and Robotic collaboration to enhance better precision, faster production, improved safety, total visibility, and changing environmental requirements.

Before starting with the engineering, a phase-wise planning for implementation need to be ascertained for which the Plant layout and Infrastructural consideration are the utmost. Thus, a precise planning in the layout and inside plant logistics have become the most challenging aspects. As the plant during its lifecycle may require lot of customisation to account for demand-based product specification changes, the impact for the changed requirement need to anticipated and proper area for new construction and corridor for changed material movement including the change in Part or whole of the production process. Other consideration is adopting new Utility due to new changed requirement. So far it had been very clear that soon a fleet of Robots and Human Operators will be running not only the shop floor but will collaborate and handle the entire zone of operation starting from acquiring information of new customers , new changed requirement, market volume analysis with time , competitive costing requirement, handling delivery

partners, managing inventory, in plant operation and connectivity with all stakeholders through creation of customised dashboard for user specific application. For the next generation projects, communication backbone shall act as the principle utility for operation of the plant.

It is thus imperative that the new generation plants, require improved and reliable connectivity in plant process, both inside the plant and intra plant, even with geographically distributed assets. Connectivity with other stakeholders for analysing trend in future demand, analysis of associated industries, plant and equipment performance improvement with analytical tools, like asset performance management for improving plant availability, planned maintenance and preventing unplanned breakdown. This necessitates, big data, data analytics, secured data, Enablers driving Customisation possibilities, better visibility of the process and associated related logistics and infrastructures. The full-fledged launching of 5G network will contribute as the principal primary enabler.

Renee Bassett in his Article in ISA Intech writes:

“Network services provider Nokia is teaming up with industrial equipment maker Omron and NTT Docomo for what is said to be one of the first 5G trials involving the Industrial Internet of Things (IIoT). IIoT is considered one of the top use cases for 5G, enabling things like the remote monitoring of production assets and the use of autonomous drones for delivery of emergency services.

The three companies are testing the feasibility of operating a layout-free production line staffed by 5G-enabled autonomous mobile robots (AMRs) working alongside humans. 5G is expected to be a boon for industrial robotics, because the AMRs will get the high-speed, low-latency connectivity needed to communicate with production line equipment and bring components to an exact spot.”

Thus, the industry is poised to create a secure, fast and reliable communication backbone driven by 5G.

While addressing the Brown field projects the challenges are found to be aging assets comprising Civil and Structural buildings, which are sometimes in a dilapidated state, the plant and equipment are not with the state of the Art technology and as a result require, thorough reengineering

to create , products with high quality , improved safety standards, compliance with all latest regulatory norms, asset performance management with remote diagnosis of the state of the plant and equipment and improve their availability. With all these retrofitting the plant can again be viable and sustainable.

While working on the plant, for which all engineering information are not available, technology driven approach by adopting 3D laser scanning with geo-referencing, Drone image are the main tools available, that together with the Engineering BIM platforms available at the design office will translate the scanned information to a 3D Platform, for the As-Is condition of the asset. With this As-Is Model, the engineered solution is being provided in the 3D Platform, which are error free, checked for most optimised cost, ensuring constructability and safety. As, the work involved are multidisciplinary, the 3D engineering is being done in various 3D platforms and merged again in a common base so that the merged solution may be delivered. This requires creating a process where the scan data are read and integrated in the various BIM platform and after conversion an established protocol for checking back the created 3D model with the scan image, to make the

engineering error free. Thus, in the Asset Integrity model for the retrofitting tasks, a structured Way of Working or protocol need to be defined for data acquiring, conversion to engineered model and 360degree quality checks for error free construction model and drawings. All these processes are executed in the Digital platform, creating a Digital Landscape for the Plant.

Digital Integration thus creates a platform to establish a new approach to continuously customise project specific Way of Working enabling a structured approach to analyse the specific requirement, connectivity with the associated data of the other infrastructural process and the logistics by the associated enablers. The project enablers that are also required to be associated may be classified as

a) Industrial Internet of Things (IIOT) driven process to acquire data from the various sensors through edge devices and using the cyber-physical interface to create storage for big data in the cloud / other storage, data management and security , creating cloud-based Analytics and continuously updating and presenting effectively for decision making . The IIOT platform

establishes a digital connectivity.

b) Adoption of Man Machine collaboration with Autonomous Mobile Robots (AMR) with 5G Backbone, for eliminating human operational risks , better precision, faster execution, personification of products and minimal wastes. Thus, engineering considerations should establish proper corridor for robotic interface with digital connectivity for precise time sequenced man machine parallel and safe operation.

c) Enabling a connected process between plants, supply chains, original equipment manufacturers (OEMs), customers, and stakeholders to ensure quality, availability of production, feedback, and customization of products to ensure a continuity of process through a digital platform.

d) Ensuring the system requirements to ensure an error-free cyber-physical platform, with strong and continuously upgraded security standards. Engineering consideration will consider the enabler for successful project execution and sustainability.

Extensive usage of Industry 4.0 driven technology in engineering industry

In today's scenario, BIM softwares showcases palpable and legit images of the assets for better understanding of Client's requirements and to promptly and effectively produce solutions. Engineering/ architectural firms are involved in producing engineering drawings that are mostly generated through BIM platforms. BIM also enables/aids in visual demonstration,

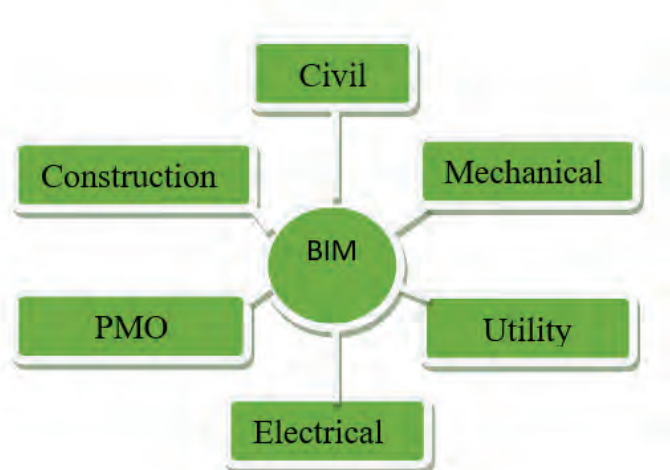
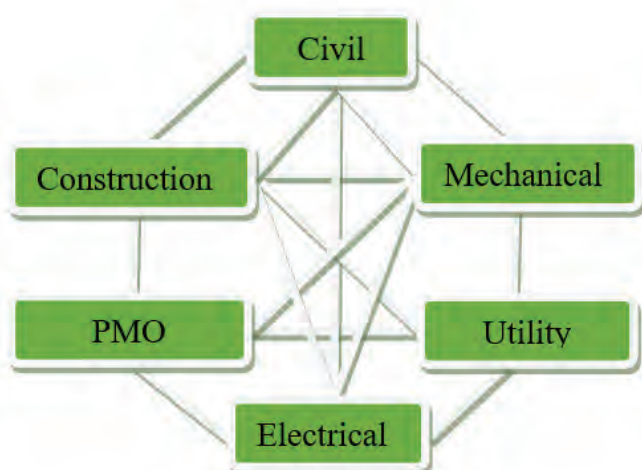


Figure 1: Traditional process versus BIM process

assistance in planning and utilisation, cost computation, scheduling and sequencing, prefabrication and operations, amalgamation of contractor and supplier model, system coordination, layout and fieldwork and maintenance. Complete simulation of construction activities prior to execution at site enables the stakeholders to have a grasp of the challenges that may crop up in future. The main key factors that affects the quality of a project are: engineering interfaces, equipment, materials, methods, site conditions These can be well planned and controlled in advance by this new approach of engineering.

Changing role of Engineers amidst Digital Transformation

In the ongoing realm of digitalisation in the engineering sector, present day engineers are expected to comply with constant altering customer requirements and are required to swiftly and precisely comprehend third party designs. When manufacturers provide distinctly coherent 3D data of every element, it becomes much more convenient for the engineers to analyse the same. New approaches to 3D engineering tools aid completion of repetitive standard tasks quickly compared to conventional 2D CAD environment and thereby enable

engineers to combat ever increasing challenges. The essence of digitalisation is digitally capture, processing, exchange and rapid access to comprehensive data. Compared to conventional 2D working framework, the actual project work in 3D engineering takes lesser time. Digitalisation is speeding up project work since employees, positioned at several locations across the globe, are coordinating and communicating easily through video/audio conferences as per project requirements. Adoption of effective communication skills through online medium plays a vital role for engineers.

Thereby, the basic knowledge of core IT skills is becoming a pre-requisite for engineers. Employees having basic grooming in 3D engineering and in-depth knowledge in the core system shall prove to have a clear-cut advantage over others. IT specialists having knowledge in 3D engineering are getting recruited by several organisation for further development of the software's thereby leading to new job opportunities.

With more and more complexities developing in construction work, engineers are slowly getting involved in production planning as well. Thereby, in future, engineers will have to take

up production management and other coordination tasks as well.

Conclusion

New technologies including information technology, digitalization and communication technology are shaping up the working profile of consulting engineers w.r.t the methodology with which they shall deliver value added customer service. Information and communications technology lying at the core of the Industry 4.0 revolution, together with artificial intelligence will serve as a pillar in next generation engineering.

Acknowledgement

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References:

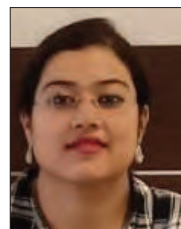
- Technology-driven Asset Integrity Management Perspectives by Sugata Bandyopadhyay and Shalini Bandyopadhyay published in InTech June 2021.
- Why New Generation Industries Will Merge Toward Digital Transformation by Sugata Bandyopadhyay in ISA Interchange.
- Book on Building Information Modelling from Construction Management Library by Ingibjörg Birna Kjartansdóttir, Stefan Mordue, Paweł Nowak, David Philp, Jónas Thór Snæbjörnsson.
- How digitalisation is changing the world of engineering 9. January 2019 | Digitalisation in Engineering, Item Blog.
- A global standard for industrial interoperability with common data models by Stefan Hoppe in InTech November/December 2019

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Dellmeco Solid Block AODD Pumps for Fine Chemical Industries



Industrial chemical production consists of three major categories. Commodities chemicals (aka bulk commodities), specialties chemicals and fine chemicals. Fine chemicals are high-purity chemicals produced in small quantities under stringent quality control. Commonly, used as an ingredient and building block for Pharmaceuticals, fragrances, additives, and pigments, solar panel and semiconductor industry.

These are way more expensive to produce than bulk chemicals because of complex and changing chemistry. Low tolerance on manufacturing specifications combined with high production cost necessitates strict measures in the production process to ensure precise quality. The slightest variation in purity may result in lot rejection by the end-user and subsequent loss in revenue while the negative impact on manufacturing reputation is inevitable.

Pumps are one of the major equipment



Fig 1: Dellmeco employee conducting Hydro Test of Pump

which can influence the overall production process. To ensure uninterrupted production without any breakdown, the reliable operation of pumping systems is of utmost importance. Safety is the main selection criteria while handling highly toxic and dangerous material to avoid any potential health consequences and environmental impact. Pump handling flammable chemicals should be FLP and ATEX certified to meet statutory norms.

Let us analyze the suitability of various types of pumps based on the working principle.

Centrifugal Pumps

While centrifugal pumps are cost-effective and readily available, they are not particularly suitable for the process industry as centrifugal operation creates turbulence in the pumped liquid which may cause alteration in chemical properties. The presence of mechanical seals or packings makes them prone to leakage. Leakage can be reduced by using a double seal, however, the cost is high and additional maintenance is required. Another option is a magnetic drive centrifugal pump with zero leakage. Magnetic coupling has limitations on transferable torque, which in turn limits their use to low viscosity liquids. Again, the cost is the main restraining factor.

102 Positive Displacement Pumps

Gear pumps lack efficient and reliable operation, degrading gear teeth due to continuous meshing result in loss of efficiency and fluctuating flow. leakages from mechanical seals and packings are inevitable. Lobe pumps are prone to product slippage at low viscosity products, resulting in compromised production rates. PD pump maintenance is more

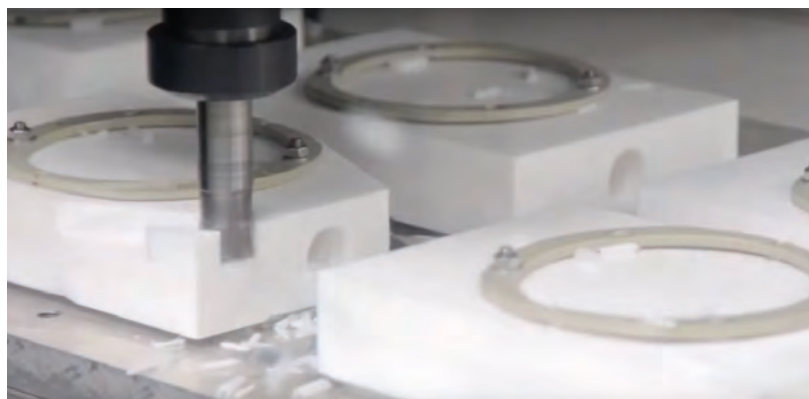


Fig 2: Plastic Body Dellmeco Pump under automated machining

and construction is bulky compared to available options of AODD pumps.

Air operated double diaphragm (AODD)

AODD pumps are popular choices due to their simple and safe construction operation, and suitability to handle flammable, corrosive, thick and thin liquids of different viscosity levels. reciprocating motion of flexible diaphragms ensures gentle handling of liquid, liquid with small solid particles can also be pumped. The absence of a mechanical seal ensures leak-free operation. Single model of AODD pump can be used for a wide range of flow and head requirements as per different system design, just by changing the input air pressure discharge flow and head can be altered. AODD pumps are portable solutions that eliminate the requirement of electric motors and complicated speed control mechanisms like VFD or gearbox. Additionally, setup and operation of FLP electric motors are in itself a risk in hazardous areas. Whereas AODD startup is much simpler, priming is not required, the pump can be started and run dry, and suction lift is up to 8-9 meters.

Fire hazard is reduced as there is no electric involved, pump body can be grounded to dissipate static charges while handling any flammable liquids.

Why Dellmeco?

As we have seen above, the AODD pump is an obvious and logical choice in the process



Fig 3: Fresh lot of Dellmeco ZTT Series, Dellmeco ZTT pump can be made from conductive Teflon and be used for almost all liquid.

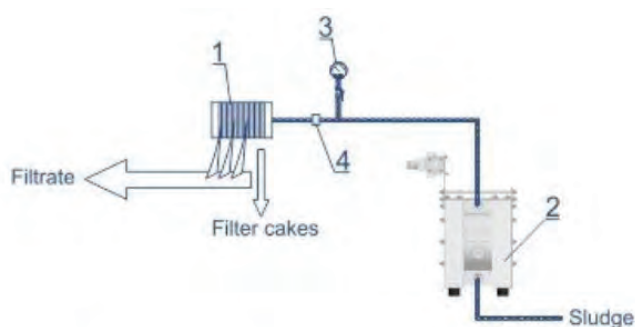
industry transfer application. Let's briefly go through the unique advantages that Dellmeco solid block AODD pump offers over conventional injection moulded counterparts.

Plastic body Dellmeco AODD pumps are CNC machined which ensures tight tolerances, Injection-molded plastic pumps can have small cavities or crevices in the body where liquids can accumulate and potential leak paths can be created.

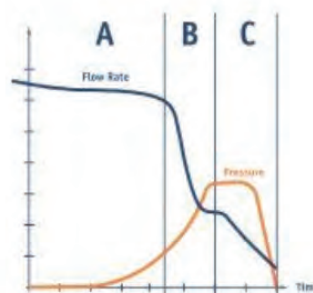
Solid block Pump is made out of a single piece that is machined, hence they are inherently stronger and have higher pressure ratings. Dellmeco AODD pump can operate up to 8 bar air pressure compared to competitors 6.5 bar. Under normal operation with 4 - 5 bar air pressure, higher pressure rating increases durability and delays

common wear and tear.

During their operation, injection-moulded pumps can also vibrate or bounce more than solid-body models due to lower-dimensional integrity, which can loosen pipework and increase the chances that a leak path will form. Dellmeco pumps have 180 degree rotatable Inlet and outlet connection manifolds to help to accumulate existing pipeline work misalignments.



Part no.	Name
1	Filter press
2	Filling and pressure maintenance pump
3	Pressure gauge
4	Bursting disk



Typical operating cycle of filter press

A – High capacity filling allowing filter cake formation.
B – End of filling, filtration resistance, capacity reduction.
C – Pressure maintenance, filter cake formed, high filtration resistance,

Fig 4: Schematic diagram of Dellmeco HP pump with Filter Press System

Dellmeco conductive PTFE pumps are unique due to their suitability to almost all types of chemicals, single pumps can be used for handling a wide range of acidic, caustic and solvents solution and flammable and non-flammable chemicals. Dellmeco ZTT series pump unleashes the possibility of using the common pump for different applications, the plant can interchange pumps during an unexpected breakdown. Also overall spare management will improve.

High-Pressure Applications

Another interesting application in the chemical industry is Filter Press. As the filter cake gets fully developed, resistance to flow increases and develops high discharge pressure. Dellmeco high pressure (HP) option is an especially designed compact booster that can be directly mounted to the pump. It is capable of doubling the delivery pressure, for example, with an available air pressure of 7 bar the pressure can be up to 14 bar. ■

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The New RE-SORT Metal Separation Unit: Sesotec



The plastics industry is faced with the challenge of producing their products in a manner that is at once circular and highly efficient. Increasing material efficiency is a crucial step towards achieving this goal. In addition to its negative impact on the environment, loss of good material also means productivity losses for plastics manufacturers and processors.

Initiatives such as “Zero Pellet Loss” aim to prevent the waste of plastic granulate. The project identifies three processing stages where the majority of granulate loss occurs: unloading in the silo area, bag and granulate container handling, and via conveying lines and equipment.

But many plastic granulates are also lost within production itself. For example, metal separators used to protect processing equipment detect and eject contaminated material. This material must be disposed of, which means additional costs and loss of value. All the while, analyses have shown that the rejected material usually contains a considerable volume of good material in addition to metal foreign bodies.

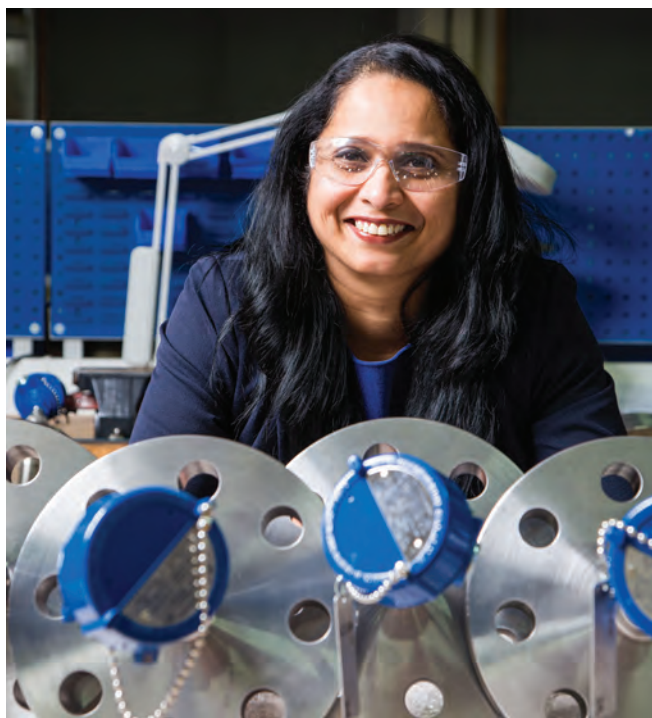
The new metal separation unit from Sesotec, RE-SORT makes it possible to clean contaminated plastic granulate – regardless of the contamination source. With magnetic and non-magnetic metal contaminants reliably removed, these plastic materials can then be recovered for reentry into production.

The material is fed into the separation unit via a hopper. A vibrating chute separates the material, which then passes through the EXTRACTOR magnet system and the RAPID-VARIO FS metal separator. Thanks to a calibrated combination of dosing, magnets, and metal separation, it is possible to recover as much as 98% of the good material. The purified granulate can then be processed further. This increases both the profitability and the environmental friendliness of the entire operation.

Contact:

www.sesotec.com/emea/en/lp/resort

Engineering Experts Manufacture Pioneering Flow Meter Technology



Pioneering advancements made to one of the world's most commonly used flow meters will dramatically improve fluid flow measurement readings across a wide range of industries. Venturi flow meters are used extensively in the measurement of gas and other low viscosity fluids, such as hot water, solvents and fuels, and are a proven technology due to their ease of use and robustness.

A team of flow and temperature measurement experts at McMenon Engineering Services, based in Cumbria, have now adapted the existing technology to improve the accuracy of measurement readings of high viscosity fluids, for example bitumen, glycerin and syrup, to be used across more sectors, including

drilling, heavy fuel oil and even food and drink.

In partnership with TUV SUD National Engineering Laboratory (NEL), McMenon was awarded grant funding through the UK Government's Analysis for Innovators scheme to develop a solution which records more accurate data for liquids with higher viscosity levels, particularly as these fluids tend to include abrasive particles which often damage conventional flow meters. Dr Craig Marshall, product development director at McMenon, said: "This technology is a real game changer globally in measuring gas and fluids, and a real feather in the cap for McMenon. "Venturi flow meters are used across the world, and we have created a solution that is very robust for the application and won't suffer a lot of wear and tear.

"By offering technology without calibration, it will lower the cost of the process by around 50 per cent too." McMenon's chief operations officer, Shiby Bernard added: "Working with NEL, we have tested the High Viscosity Venturi to a high standard and we are so proud of the results and excited to bring such advanced technology to the wider public. "This product is another example of McMenon's commitment and drive to develop ground-breaking technology which is safer and more efficient than other alternatives on the market."

Contact: sales@mcmenon.com.

Industry's Broadest Family of Natural Gas Submetering Thermal Flow Meters



Engineers will appreciate how the wide selection of high-performance, low-maintenance, long-life, natural gas submetering thermal flow meters from Fluid Components International (FCI) offers them basic to advanced feature sets and with comprehensive agency approvals, including, Div1/Zone1 and SIL ratings, to measure local gas usage.

The submetering of natural gas usage at plant or facility distribution points provides greater insight in the understanding of point-of-use fuel consumption and accountability, operational requirements, emissions and operating costs. No matter whether the application is simple campus, facility or plant heating, or complex industrial processes including ovens, burners, or boilers, etc., there is an FCI thermal flow meter series suitable for the task.

The compact FS10i Flow Meters are ideal for insertion or inline natural gas line submetering tasks. Like all FCI thermal meters, they provide Div2/Zone2 compliant, direct

mass flow measurement requiring no pressure, temperature, or other components.

The ST51 Series Flow Meters are designed as a low cost, compact yet rugged, Div1/Zone1 rated solution for accurate, repeatable flow measurement of natural gas, bio-methane, and air. This insertion-style flow meter is available in probe lengths for installation into pipe diameters from 2.5 to 24 inches (63 to 610 mm).

The ST75 Series Flow Meters provide a low cost, compact, yet rugged solution for accurate, repeatable direct mass flow measurement. These in-line (spool-piece) style meters have no moving parts and are for use in pipe diameters from 0.25 to 2 inches (6 to 51 mm). They feature wide 100:1 turndowns and come standard with dual 4-20 mA outputs and a 500 Hz pulse output.

The ST80 Series Flow Meters offer a high performance, rugged instrument with ultra-reliable, feature-rich electronics, and FCI's fast response time, Adaptive Sensing Technology™ (AST). They feature the industry's most extensive selection of application-matched flow sensors, including FCI's new "wet gas" flow element, a broad choice of process connections, and industry's widest selection of outputs to provide a truly superior solution for industrial processes and plant applications.

The ST100A Series Flow Meters are industry's most advanced thermal gas instrument. They include feature-and-function-rich electronics and sensors, ultra-rugged IP67, Div1/Zone1 transmitters, and superior 0.75% of reading accuracy.

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