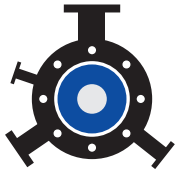


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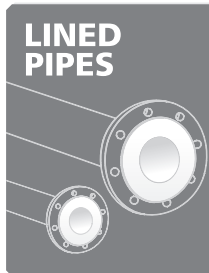
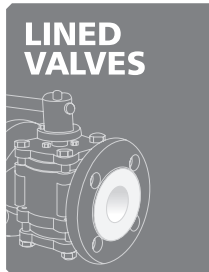
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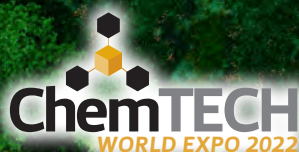
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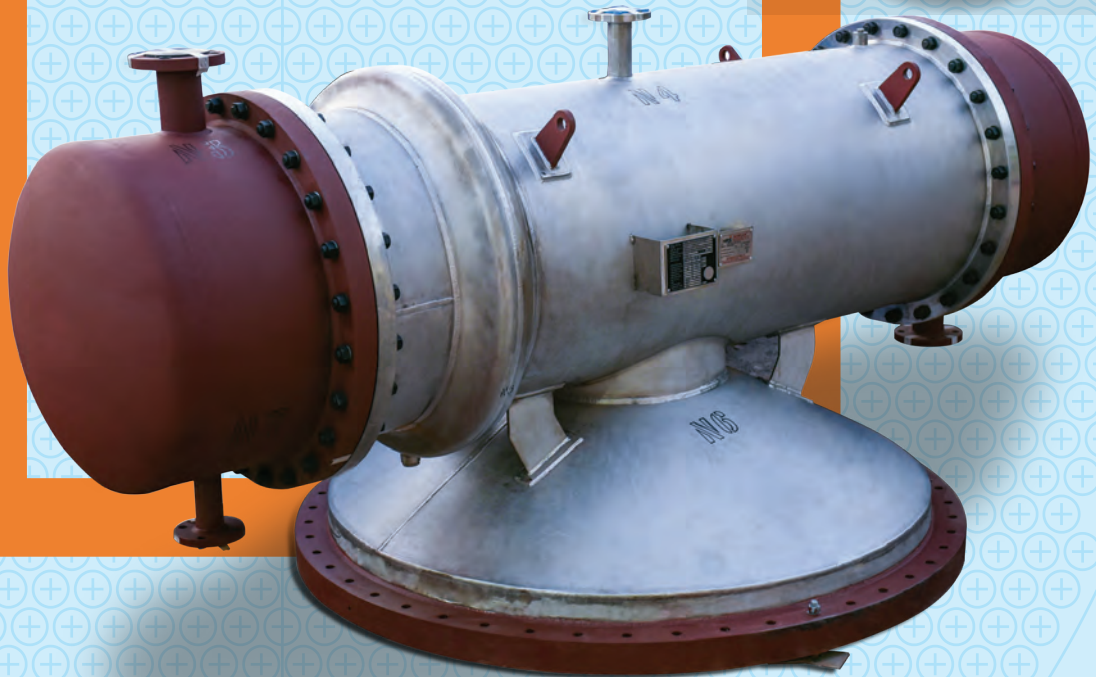
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## Ministry of Coal Allows 50% Concession in Revenue Share for Promotion of Coal Gasification



Union Minister Shri Pralhad Joshi

**Mumbai, India:** Union Minister of Coal, Mines & Parliamentary Affairs Shri Pralhad Joshi said that Ministry of Coal has allowed concession of 50% in revenue share for coal gasification. Speaking at an Investors meet in Mumbai, Union Minister Shri Pralhad Joshi also pitched for options like manufacturing Hydrogen from Coal to help India become energy independent. Earlier during the day Shri Joshi launched the closed / discontinued mines of Coal India Ltd. on revenue sharing model.

Investor's Meet on 'Coal Gasification - Way Forward' in Mumbai was organized by Coal India and FICCI. The Investor Meet cum workshop aims to encourage effective implementation of Coal Gasification projects and also to ensure ease of doing business in this area. Minister of State for Coal, Mines & Railways Shri Raosaheb Patil Danve said, 'Coal Gasification is the need of the hour and a step towards sustainable future. Union Minister Shri Danve added that the Government aims gasification of] 100 million

tonne coal by 2030. "This will generate jobs in both technical and non-technical sector," he added Coal gasification is considered as cleaner option compared to burning of coal. Gasification facilitates utilization of the chemical properties of coal. Union Minister Shri Pralhad Joshi encouraged the industry players to think about 'coal to Hydrogen'. During the event Shri Joshi launched a report 'Roadmap for Coal to Hydrogen,' prepared by Ministry of Coal.

Experts from Industry, consultants, researchers and stakeholders in coal gasification spoke during the event. Apart from Additional Secretary, Ministry of Coal, M. Nagaraju and Chairman CIL Pramod Agarwal and other industry leaders attended the program.

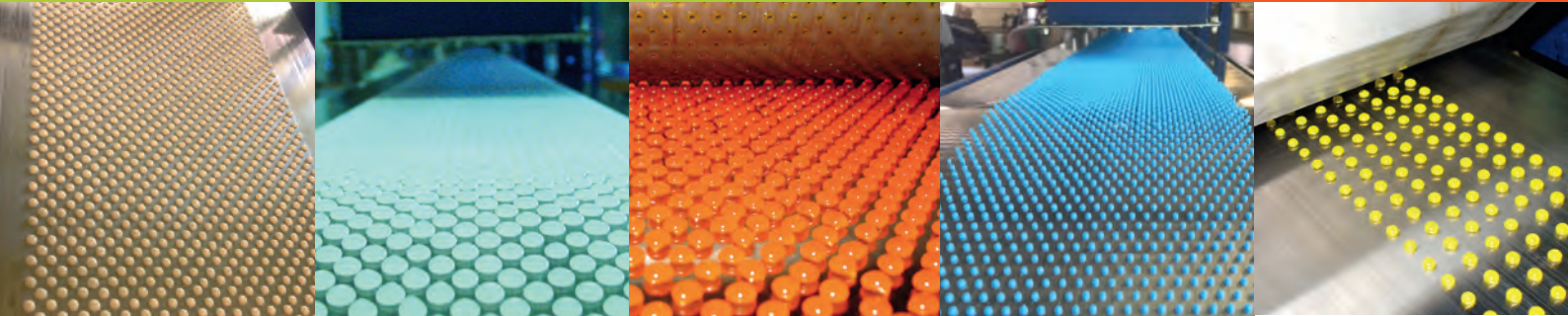
## Indianoil's Octamax Technology wins Country's Top Technology Award

New Delhi, India: History was made yet again when Octamax technology developed by IndianOil R&D swept the country's top technology award. The much-coveted award was presented by Dr. Jitendra Singh, Hon'ble Minister of State for Science and Technology (I/C), to IndianOil R&D team led by Dr. SSV Ramakumar, Director (R&D), and Dr. Madhusudan Sau, ED (Refining Technology), in a glittering event that saw the presence of India's top technocrats and luminaries from the domain of science & technology from across the country. Dr. Srivari Chandrasekhar, Chairperson, TDB & Secretary, Department of

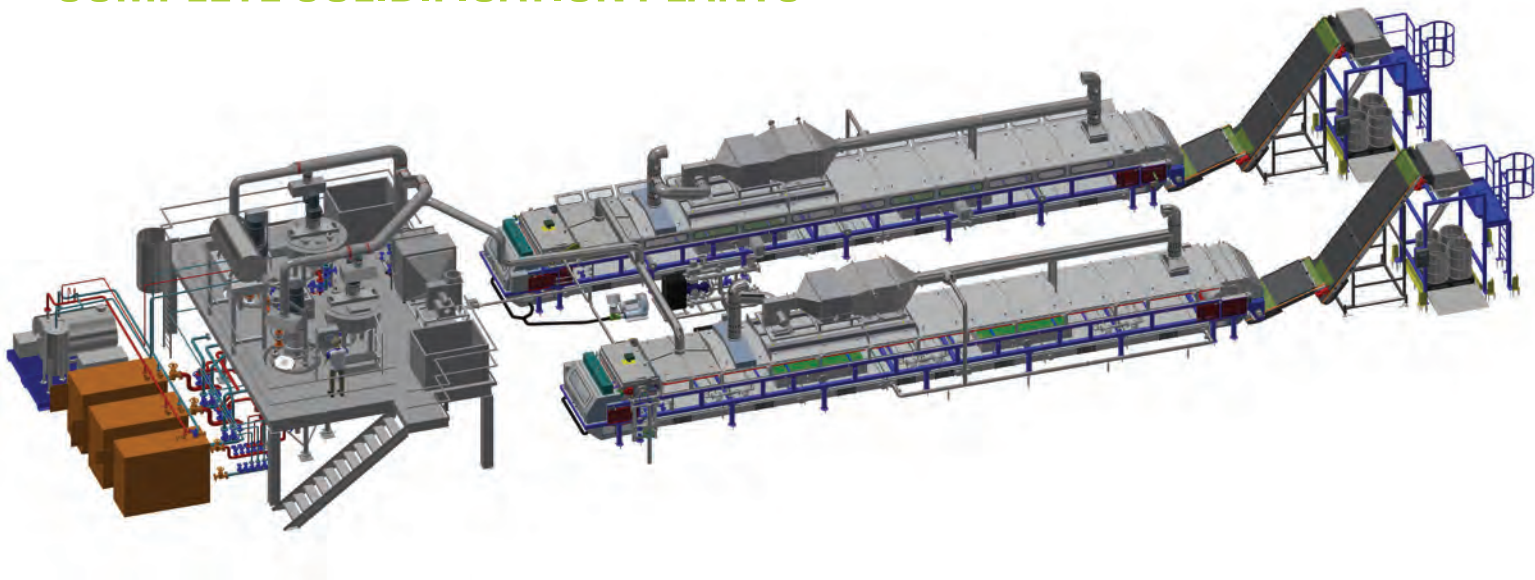
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Science and Technology, was also present.

IndianOil was declared winner of the coveted National Award-2022 under the category "Successful Commercialization of Indigenous Technology" for commercialization of Octamax® Technology. The recognition carries a cash award of Rs. 25 lakh and a trophy. IndianOil was adjudged first in the Category A of the National Awards alongside a medical devices company that also won this prestigious award for fluting stents. It is understood that IndianOil's entry withstood tough competition from technologies across domains / industrial sectors and competed against 300 technologies vying for the top honour.

Commending the recognition, Shrikant Madhav Vaidya, Chairman, IndianOil, said, "This National Award for our Octamax technology is a reaffirmation of IndianOil's commitment to Aatma Nirbhar Bharat. It validates our spirited journey from being a technology importer to a creator of cutting-

edge refining technologies. Innovating this pioneering technology has helped IndianOil produce the country's first 100-Octane petrol at our Mathura Refinery to power high performing new generation automobiles. The launch of this high octane petrol grade has catapulted IndianOil into the league of select countries such as Germany, USA, Greece, Israel, etc., that offer 100-Octane petrol."

## Fourth Quarter and FY 2021-22 results of Elgi Equipments

**Coimbatore, India:** Elgi Equipments Ltd, manufacturer of Air Compressors, announced the results for the fourth quarter and for the financial year ended 31st March 2022. Consolidated PAT for the quarter was Rs. 73.1 Crore compared to Rs. 43.4 Crore in the same period in 2020-21. Consolidated PAT for the financial year was Rs. 178.4 Crore compared to Rs. 102.5 Crore in 2020-21.

Consolidated sales for the fourth quarter

Business Unit Uhde

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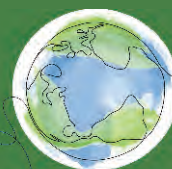
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Jayakanthan R , Chief Financial Officer,  
Elgi Equipments Limited

was Rs. 728 Crore as against Rs. 611 Crore in the corresponding quarter in 2020-21. Consolidated sales for the financial year 2021-22 was Rs. 2,525 Crores as against Rs.1,924 Crores in 2020-21. The standalone PAT for the fourth quarter was Rs. 60.6 Crore compared to Rs. 48.9 Crore in the same period in 2020-21. The standalone PAT for the year was Rs. 189.4 Crore compared to Rs. 105.1 Crore in 2020-21. The Board has recommended a dividend of Rs 1.15 per share (115%) for the year 2021-22, subject to approval of the shareholders.

The compressor business' performance in the domestic exceeded plan owing to strong demand and go-to-market initiatives. Barring Middle East, Africa, and Australia and South East Asian Countries that were affected by COVID lockdowns, other geographies registered satisfactory sales and market share growth.

## Somaiya Vidyavihar University Organised a National Symposium on Polymer Science and Technology

**Mumbai, India:** Somaiya Vidyavihar University organised a 2-day National Symposium Event on Polymer Science and Technology on 6th and 7th May 2022. It was in collaboration with the Society of Polymer Science India (SPSI) and the Department of Polymer Science, S K Somaiya College. The inaugural address was given by Prof. M M Sharma, FRS Institute of Chemical Technology, Mumbai. It was followed by keynote speeches from Dr. R A Mashelkar, FRS Former Director General, Council of Scientific and Industrial Research, New Delhi,, Ashwin Dani, Director, Asian Paints, Mumbai, Prof. S Ramakrishnan, Indian Institute of Science, Bangalore & Dr. Ashish K Lele, Council of Scientific and Industrial Research- National Chemical Laboratory, Pune.

A special feature of the symposium was the Festschrift Session commemorating the 75th Birthday of Dr S. Sivaram, Ex-Director of National Chemical Laboratory Pune. He is one of the founding members of the Society for Polymer Science India and has significantly contributed to the development of the Polymer Science discipline in India. Additionally, a special Endowment Lecture was organised by the Royal Society of Chemistry.

The symposium offered opportunities for academicians, researchers, and industrial practitioners in the diverse fields of Polymer Science and Technology to get together, present and discuss the recent academic and industrial innovations. Spread over two days, it featured plenary talks, invited lectures, discussions, and deliberations by eminent speakers from academia and industry across India.

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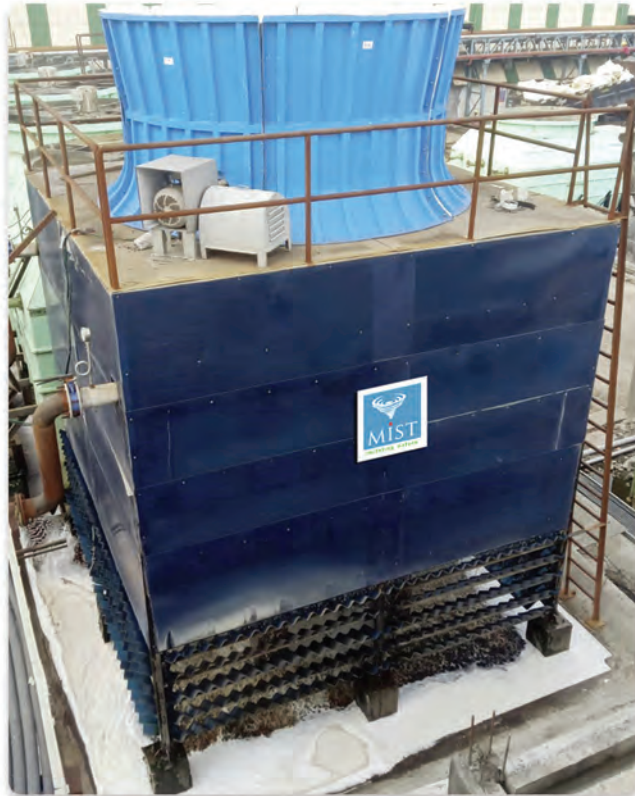
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## BASF India Limited Announces Full-Year 2021-2022 Audited Annual Results

corresponding period of the previous year.

"BASF India Limited registered a robust March quarter with sales and profits before



**Mumbai, India:** BASF India Limited registered sales of Rs. 130,997.3 million for the financial year ended March 31, 2022, as compared to Rs. 95,583.4 million in the previous year, representing an increase of 37%. The Company reported Profit before tax (before exceptional items) of Rs. 7,473.6 million as compared to Profit before tax (before exceptional items) of Rs. 4,378.7 million in the previous year.

For the quarter ended on March 31, 2022, the Company registered sales of Rs. 33,895.6 million, as compared to Rs. 28,055.8 million for the corresponding period of the previous year, an increase of 21%. Profit before tax (before exceptional items) stood at Rs. 1,785.1 million for the quarter that ended on March 31, 2022, compared to Profit before tax (before exceptional items) of Rs. 1,706.1 million for the

exceptional items exceeding the previous quarter and the corresponding previous year quarter," said Narayan Krishnamohan, Managing Director, BASF India Limited

## BGGTS Completes 25 Years of providing Power Services Excellence in Gas Turbine Technology

**Hyderabad, India:** BHEL-GE Gas Turbine Services (BGGTS) Private Limited, a 50:50 joint venture between Bharat Heavy Electricals Limited (BHEL) and General Electric (GE), completed 25 years of offering integrated solutions for all gas turbine technology that cater to diverse market needs. Established in 1997 and located in Hyderabad, BGGTS is significantly contributing to a self-reliant India.

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Aligned to GE's 'In-Country For-Country' approach, BGGTS provides advanced engineering and repair services to power plant operators in South Asia including India, Bangladesh, Sri Lanka and Mauritius.

BGGTS is a classic example that showcases the transfer of advanced technology by a hi-tech industrial company like GE through a partnership with an India-based power infrastructure leader like BHEL – having extensive local footprint. Over the years, the facility has been responding to growing market needs through a bouquet of offerings such as engineering, after market spares, repair services, inspection & maintenance services, remote diagnostics & monitoring and more - providing quality after-market services for gas turbines to customers in the power sector.

## **GMM Pfaudler & Pfaudler Group: Now a Unified Global Entity**

**Mumbai, India:** GMM Pfaudler Limited, has undertaken a major rebranding exercise. This comes at a time when GMM Pfaudler is ready to take to the global stage its successful acquisition of a majority stake in its parent company, Pfaudler International.

The new brand identity has been developed to suit the vision of the now global entity. Consideration for the inspiration of the logo is largely attributed to the global capabilities of GMM Pfaudler coming together under one roof and thus allowing the group to position itself as a unified global brand. The new identity is the visual culmination of GMM Pfaudler's global strengths coming together that rightly captures the constant endeavour

to keep moving forward. All employee, customer, and stakeholder touchpoints, globally, will be reflective of the rebranded GMM Pfaudler identity.

All the existing technologies, systems, and services around the globe will now come under one umbrella - GMM Pfaudler. Pfaudler will continue as the global brand for Glass-Lined Technology, Normag for Lab & Process glass, Mavag for Filtration & Drying, Mixion for Mixing Technology, Interseal for Sealing Technology, and Edlon for Fluoropolymers. A newly created brand, Equilloy, has been identified for the Alloy Process Equipment and Heavy Engineering business within the Group.

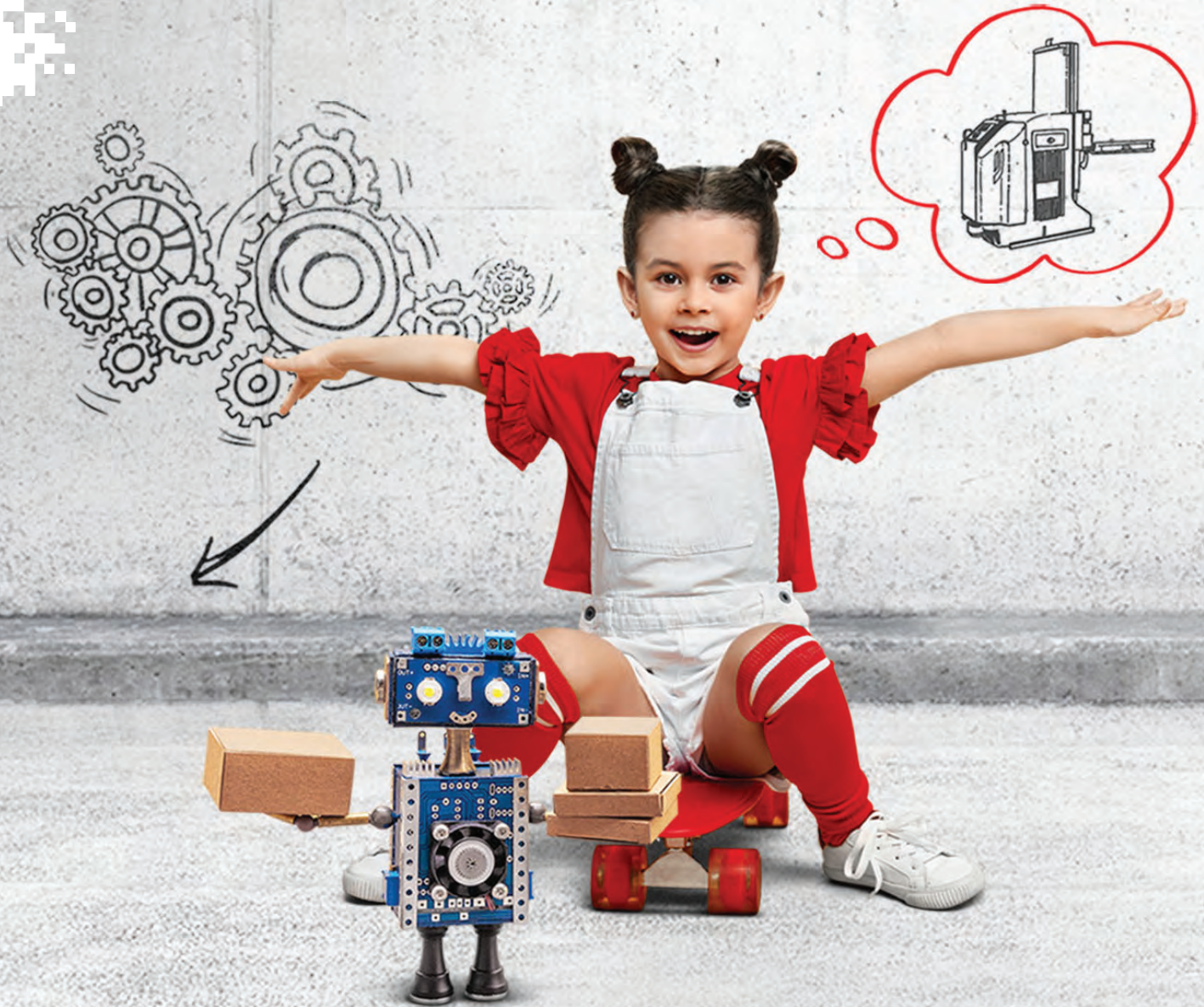
## **Honeywell Technology Solutions Celebrates Two Decades of Innovation in Madurai**

**Madurai, India** Honeywell Technology Solutions (HTS) is celebrating the 20th anniversary of its Madurai center this year. Founded in 2002, HTS Madurai has engineering capabilities for design, development and testing of cockpit systems, and mechanical and environmental controls for aircraft and autonomous vehicles serving global original equipment manufacturers (OEMs). The center also develops technologies related to building security and access control and various other projects for Honeywell globally.

With an eye on the future, Honeywell is planning to invest in additional laboratories, equipment and engineering talent which will further enhance and broaden the center's



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capability in aerospace, building technologies and sustainability initiatives that support technology development projects for Honeywell.

Samuel Pratap, president, Honeywell Technology Solutions, said, "Honeywell was among the first companies to establish a high-end, global technology development center in Madurai. Currently, local engineering talent constitutes about 90% of Honeywell's existing workforce at the center. "Our Madurai center has helped develop local talent – many of whom have taken on global leadership roles."

## RadiciGroup acquires Ester Industries' Engineering Plastics Business

**22 Gandino, Italy:** RadiciGroup is continuing to strengthen its internationalization strategy. Through its High Performance Polymers business area – a multinational manufacturer and supplier of engineering polymers based on polyamide, polyester and other materials – the Group has invested approximately EUR 35 million in the acquisition of the Engineering Plastics business of Ester Industries Ltd., an Indian company founded by the Singhania family in 1985 and currently listed on the Bombay Stock Exchange.

Besides engineering polymers, Ester Industries Ltd. has a strong market presence in polyester packaging films, a business the Indian firm intends to continue and strengthen.

In addition to High Performance Polymers, RadiciGroup has two other business areas: Specialty Chemicals and Advanced Textile

Solutions. The Group is led by brothers Angelo, Maurizio and Paolo Radici, the third generation of an entrepreneurial family who, in just over 80 years in business, have transformed a small Italian firm into a global industrial giant capable of offering innovative products with advanced technical characteristics that are manufactured with respect for people and the environment.

## Aramco and PTT Deepen Energy Cooperation in Thailand



**Dhahran, Saudi Arabia:** Saudi Arabian Oil Company exploring further collaboration with Thailand's national oil company PTT, as it expands its downstream presence in Asia. The two companies signed a memorandum of understanding at a ceremony in Bangkok on May 11.

The companies aim to strengthen cooperation across crude oil sourcing and the marketing of refining and petrochemical products and liquefied natural gas (LNG). Other potential areas of activity include blue and green hydrogen and various clean energy initiatives.

Ibrahim Al-Buainain, Aramco Vice President

## Process Industry's Gateway to Indian Market



## 31<sup>st</sup> International Exhibition and Conferences

**4-7 March 2024**

**Venue:** Bombay Exhibition Center, Goregaon (East), Mumbai, India

### Concurrent Events



### Scope for ChemTECH World Expo 2024

- Plant Machinery & Industrial Consumables
- Engineering Consultants
- OEMs for Chemicals & Pharmaceutical Processing Equipment
- Metals & Metallurgy
- Bioprocessing Equipment
- Construction Services Providers
- Plant Maintenance Services Providers
- Logistics & Supply Chain Solutions Providers
- Instrumentation & Process Control
- Industry Automation (Process & Factory)
- Systems Integration & ERP Solutions Providers
- Water & Waste Water Treatment Consultants
- Environment Solutions Providers
- Waste Management Consultants
- Financial Institutions
- Fire & Safety Solutions Providers
- Material Handling Solutions
- Certification Bodies
- Welding Solutions
- Quality Health & Environment Solutions
- Analytical & Laboratory
- Packaging Materials, Machinery & Systems
- Business Consultants

### Scope for Specialty Chemicals World Expo 2024

- Agrochemicals Intermediates
- Adhesives & Sealants
- Agrochemicals & Crop Protection
- Bulk Drugs & Intermediates
- Enzymes
- Colorants, Dyes & Pigments
- Cosmetics & Personal Care Ingredients
- Hygiene & Cleaning Chemicals
- Laboratory Chemicals
- Surfactants
- Water Treatment Chemicals
- Catalysts
- Electronic Chemicals
- Flavours & Fragrances
- Contract Manufacturers

### Scope for Biopharma World Expo 2024

- Materials Processing
- Pharma Ingredients
- Plant Engineering, Process Plants & Equipment
- Laboratory & Analytical Solutions
- Process Measurement & Inspection
- Sterilization & Clean Room Solutions
- Biopharma R&D And Manufacturing
- IT Solutions
- Pharma Machinery
- Water & Waste Treatment Solutions

### FACTS & FIGURES - CHEMTECH WORLD EXPO 2019

612	18962	18	85	923	2150
EXHIBITORS	VISITORS	COUNTRIES	SPEAKERS	DELEGATES	STUDENTS

## Benefits for Exhibitors

- ✓ **Business Interactions:** Meet over 800 exhibitors from across the entire value chain of the chemical process industry
- ✓ **Strategic alliances:** Interact with the entire supply network across the Chemical, Pharma & Biotechnology sectors from a single location
- ✓ **Market analysis:** Evaluate the Indian consumption market and get feedback with over 25,000 visitors walk-ins over 4 days



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Sales, Trading and Supply Planning, said: "Today represents an important step forward as we deepen and broaden this relationship to achieve greater cooperation across a wide range of activities, from sourcing crude oil and marketing refining and petrochemical products and LNG, to exploring blue and green hydrogen and progressing other clean energy initiatives."

## Avantor and Avantor Foundation Guide Students with STEM Programming



**Mumbai, India:** Avantor, Inc and its philanthropic arm, Avantor Foundation continue to advance STEM education in a new program for students in India. Through an Avantor Foundation grant, the American India Foundation (AIF), an organization dedicated to improving the lives of India's underprivileged, is establishing the STEM Intervention through the Digital Equalizer Program. This program will enable an

environment of learning that emphasizes conceptual understanding. As part of this program, Avantor employees will be volunteering at the area schools to mentor and inspire students to pursue STEM careers.

"We believe that science has the power to change lives for the better," said Christophe Couturier, Executive Vice President, Asia, Middle East & Africa at Avantor. "Our support of the education system in India will empower students with a greater

understanding of the scientific approach and the ability to face challenges in the real world. Through the Foundation support and associate volunteerism, we are driving science for

goodness in the community."

The program launch took place at Dhanaji Nanaji Choudhary Multipurpose High School and Junior College, Dombivali, Thane, Maharashtra, where Avantor India Managing Director, Amit Sehgal inaugurated the first STEM lab set up in the school and officiated the program roll-out.

## SABIC launches new upcycled LNP™ ELCRIN™ iQ resin

**Riyadh, Saudi Arabia:** SABIC, a global leader in the chemical industry, introduced LNP™ ELCRIN™ WF0061BiQ resin, a novel material that uses ocean-bound polyethylene terephthalate (PET) bottles as a feed stream for chemical upcycling into polybutylene terephthalate (PBT) resin. Ocean-bound plastic is mismanaged waste that originates within 30 miles (50 km) of the coast and is likely to end up in the ocean. The new grade is the latest addition to SABIC's extensive portfolio of chemically upcycled LNP ELCRIN iQ materials, which help support circularity while serving as potential drop-in replacements for virgin PBT resins. LNP ELCRIN WF0061BiQ resin is a candidate for consumer electronics applications such as fan housings in computers and automotive seating, as well as electrical connectors and enclosures.

"We're continually expanding our LNP ELCRIN iQ portfolio – and the PET waste streams used to produce these materials – to help divert more plastic from the oceans while helping our customers incorporate recycled materials in their products, achieve their carbon neutrality goals and meet consumer demands for greater sustainability," said Sanjay Mishra, GM Technology & Footprint, Specialties, SABIC.

## Evonik extends Strategic Distribution Partnership with Vimal Intertrade and Nordmann

**Mumbai, India:** To best serve the emerging Indian and surrounding markets, Evonik has chosen a new distribution setup for its VISIOMER® Specialty Methacrylates to efficiently support the diverse market needs. The first part is to award exclusive distribution rights for methacrylates for non-coating applications to Nordmann's India Branch. The new distribution setup will enable faster reaction and flexibility to changing customer needs outside of the coatings market, as well as support new market trends and novel applications.

For the coatings market, Evonik's Specialty Methacrylates product line will continue its long-standing and successful strategic partnership with Vimal Intertrade as an exclusive distributor of its products.

"We're convinced that the reorganization of our distribution business in the Indian Subcontinent will enable us to respond better, and most importantly, much faster to the needs of our customers in the region benefiting from Nordmann Group's and Vimal Intertrade's experience of these specific markets," says Martin Trocha, Head of the Specialty Methacrylates Product Line at Evonik. Business Manager Indian Subcontinent Pranjali Dharmadhikari adds: "With this setup, we're strengthening our position as a leading solutions provider for VISIOMER® Specialty Methacrylates and, along with our distribution partners, are ensuring individual and prompt support for our customers."



## Yokogawa to Release Equipment/Quality Predictive Detection Tool for SMARTDAC+ Paperless Recorders and Data Loggers



**Tokyo, Japan:** Yokogawa Electric Corporation will release the Equipment/Quality Predictive Detection Tool. This addition to the OpreX™ Data Acquisition family is an AI-based tool for building equipment and quality anomaly predictive detection systems for GX series, GP series, and GM series SMARTDAC+™ paperless recorders and data loggers. With this software, even users who are not AI specialists will be able to build their own equipment and quality anomaly predictive detection systems for manufacturing sites. It will help them improve production efficiency by identifying equipment defects and deteriorating quality in their plants and other facilities at an early stage.

Equipment/Quality Predictive Detection Tool

for SMARTDAC+ Development Background

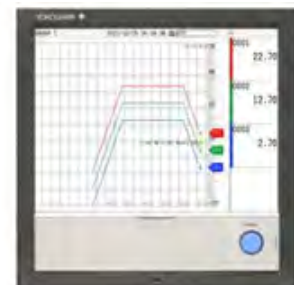
Recorders and data loggers are used at production and development sites in all kinds of industries to collect, display, and record data on voltage, current, temperature, flow rate, pressure, and other variables. As a leading company in this field, Yokogawa has provided many customers with data consulting services and technologies such as machine learning that can help them predict problems with plant equipment and product quality, and analyze and identify causes.

In recent years there has been a rising demand for AI-based solutions to improve production efficiency in plants. However, the hurdles for the application of AI are high as this requires significant expertise in specialized fields like data science. To address this need, Yokogawa has developed the Equipment/Quality Predictive Detection Tool, an easy-to-use AI-based software application for the recorders and data loggers that are commonly used in industry. To use this tool, no specialized AI expertise or consulting is required.



Equipment/Quality Predictive Detection Tool

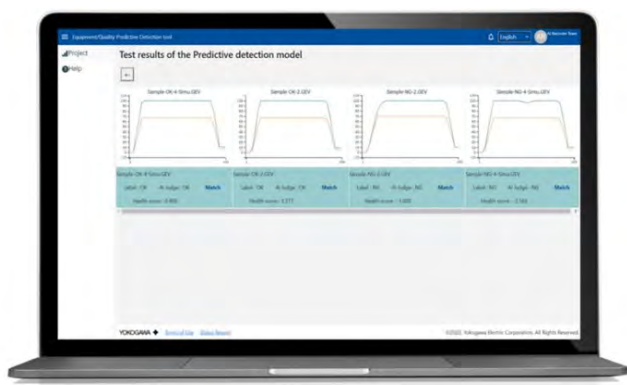
Predictive detection model



SMARTDAC+

Deteriorating  
health

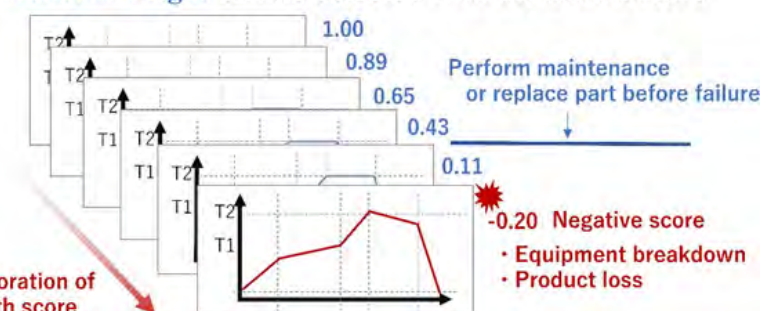
A predictive detection model can be created by importing past data into the software and simply flagging it as normal or abnormal, without needing to rely on an AI expert or consultant with knowledge about machine learning, algorithms, etc. Data recorded with Yokogawa and other companies' products can be used. Simulations can be run in advance to see how the AI assesses the data.



Simulation using a predictive detection model

By loading the predictive detection model created by this software into the SMARTDAC+ on site, an equipment and quality anomaly predictive detection system can be constructed. The degree of equipment deterioration can be confirmed before failure by checking the health scores. These health scores enable operators to be informed by alarm or e-mail when equipment needs maintenance, minimizing the likelihood of an unexpected breakdown that can impact production activities.

**Abnormal signs can be detected with the health score**



## AspenTech Completes Emerson Transaction, Expanding High-Performance Global Industrial Software Leadership

**Bedford, United Kingdom:** Aspen Technology, Inc announced the completion of its transaction with Emerson Electric Co the addition of Emerson's OSI Inc. and Geological Simulation Software (GSS) businesses to AspenTech. As part of the close of the transaction, Emerson has contributed \$6.0 billion in cash to AspenTech, which will be received by AspenTech shareholders, in exchange for a 55% stake in AspenTech. In addition, Emerson and AspenTech have entered into an enhanced commercial partnership that will enable AspenTech to penetrate new and existing markets. The Company now employs more than 3,700 people located in 62 offices across 41 countries.

AspenTech offers customers a highly differentiated industrial software portfolio with the capabilities to optimize the entire asset lifecycle across a wide range of industry verticals. With this new set of solutions, AspenTech is now increasingly well positioned to help customers solve for the complexity of the dual challenge: meeting the increasing demand for resources from a rapidly growing population in a profitable and sustainable manner. ■



## GACL & Gail Signed Term Sheet for Setting up a 500 Kld Bioethanol Plant



Harshad R Patel, IAS, MD, GACL

Gujarat Alkalies and Chemicals Limited (GACL) and GAIL (India) Limited (GAIL) have joined hands to set-up a Bioethanol plant of 500 KLD capacity. A Term Sheet for setting up a Bioethanol plant in Gujarat was signed by Shri Harshad R Patel, IAS, Managing Director of GACL and Shri R K Singhal, ED (BD & E&P)



R K Singhal, ED (BD & E&P), GAIL

of GAIL, in the presence of Shri M V Iyer, Director(Business Development) of GAIL, at New Delhi.

This step is taken in response to the Hon'ble Prime Minister of India's call for 'Atmanirbhar Bharat'. The Hon'ble Prime Minister has launched a Roadmap for

20% Ethanol Blending in Petrol by 2025, with a view to reduce import of crude oil and save valuable foreign exchange. This plant will be using corn/broken rice as feedstock with eco-friendly technology with a likely production capacity of 500 KLD Bioethanol, which will be used for blending in petrol. As by-products from this plant, 135 KTPA Protein-rich Animal feed and 16.50 KTPA of Corn Oil while using corn as feedstock are also expected to be produced.

Dahod, Panchmahal, Aravalli, Mahisagar and Sabarkantha are major corn-producing districts in Gujarat and hence, the project is likely to come up in this part of Gujarat. Corn is also produced in nearby states of Gujarat viz. Maharashtra, Madhya Pradesh and Rajasthan. A Detailed Feasibility Study through a third party is in progress for the project.

## JMC bags orders worth Rs 2,348 cr

JMC Projects has bagged new orders worth Rs 2,348 crore including orders worth Rs 155 crore received in March 2022. The company has won orders in water supply projects worth Rs 2,193 crore and in B&F projects worth Rs 155 crore. ■

## An Alpha Capability, Technology & Ability Process Equipment Manufacturer



### Hussain Shariyarr

Sr. Vice President & Business Head,  
Godrej & Boyce Mfg. Co. Ltd., Process Equipment Division.

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#### **Global heavy engineering market and India's position as buyer and supplier for critical process equipment.**

With the rapidly growing market for Refinery and Petrochemical projects, India has grown as one of the primary focus markets for all the global companies including leading EPCs, Process Licensors & even the Equipment manufacturers. India has always been a region with high potential and with the Indian Government's focus on Self-sufficiency

& mitigating costly imports across all sectors, an even higher potential for accelerated growth has been fuelled. Close to \$200 Bn will be invested across India during the next decade in Refinery & Petchem projects.

Indian PSU & Private Refinery Owners seek out the best Technology with competitive prices; shorter project execution time & adherence to the norms & regulations for their projects. The Global companies keenly look to establish a foothold in India and



these organizations are establishing or expanding their offices within India to support the demands of the Indian Buyers.

Indian EPCs and End Users count on Indian Process Equipment manufacturers for major projects and look for global manufacturers only for special requirements that the Indian manufacturers cannot supply. Moreover, Indian buyers especially the PSU are now focused on purchasing from Indian Manufacturers as they also align with India's mission of Atmanirbhar Bharat policy- "Make in India".

30 Godrej&Boyce has been supplying since the early 2000s for global projects and we have the rich experience of working with the world's leading End Users, Process Licensors & EPC Organizations historically more than 80% of our Equipment Sales are for the Export market. Over a period of time, we have grown our reputation as one of the world's leading manufacturers coming out of India. At Godrej, we firmly believe in Make-in-India; For-the-World.

**Market demand for critical process equipment across Oil & Gas, Refineries & Petrochemicals sectors globally and in India?**

We are evidencing an increasing trend, especially for a shift towards Renewable energy projects including the setting

up of new Solar & Wind Power Projects globally. This growth mainly will contribute to the Net-Zero targets set up by countries. The oil and gas industry both literally and figuratively fuels the global economic engine.

The overall investment for new global projects is mainly expected to be focused on the capacity additions to meet the demand. While Europe & North America are quickly moving towards Net-Zero, new investments in Refineries & Petrochemical projects are mainly expected in the growing economies like India, Asia-Pacific & Africa. The overall annual investment in new global projects is expected to remain constant Y-o-Y in the near future and therefore the overall demand for the critical process equipment is expected to remain almost the same.

**Your observation on changes in demand patterns from customers as the industries need to move to decarbonization**

Keeping in view the Net-Zero focus, Decarbonization across the entire spectrum is the need of the hour and globally we are seeing increased emphasis in every project and policy decision.

Hydrogen is slowly emerging as an alternate fuel which could have a long term impact on the energy sources.

Green Hydrogen is expected to be a future energy source, however, Blue Hydrogen can be broadly seen as a stop-gap arrangement till the Hydrogen generation cost of Green Hydrogen becomes competitive which is expected to be around 2030. Pilot Green Hydrogen will lead to largescale Hydrogen projects.

With the current trends, Demand for Oil is expected to peak around 2028 and gradually dip after. The drive toward decarbonization is a significant trend seen across the Refinery sector. Many countries have implemented Regulations/initiatives limiting Carbon emissions and investment in new technologies to improve the output fuel quality and reduce emissions.

**What are some opportunities for Indian manufacturers as the Govt. of India, especially after the PSUs have been mandated to procure a significant part of supplies domestically?**

India is expected to double its refining capacity by the early 2030s and the Petrochemical Sector is expected to double by 2025. Hence the opportunities for the Indian Manufacturers are abundant. Major ongoing projects are IOCL Panipat Refinery Expansion, Numarligarh Refinery Expansion, CPCL Nagapattinam Refinery, etc.

Purchase Preference to the manufacturers/services providers (linked with LOCAL CONTENT). The introduction of the PPLC allowing only sourcing from Indian Manufacturers up to Rs. 200 Cr for PSU requirements augurs well for the Indian manufacturers. Also, there are a limited number of high-end manufacturers to meet all the critical requirements for these projects within India and this is expected to bring a huge opportunity to the Domestic Projects. Safe to say, the Indian projects will cater to all the growing needs of the Equipment manufacturers. Moreover, the PPLC also requires the Indian Manufacturers to source up to 50% of the Raw materials from Indian suppliers. Indirectly this policy helps in the development of the Indian Raw material suppliers, and this will result in the development of the overall Indian economy.

**Globally how has sentiment changed towards India and what are some challenges that Indian capital equipment manufacturers have to address to be highly competitive globally as even production in China is gradually getting expensive due to increasing costs for labour and power?**

Indian manufacturers have created a footprint in the Global Market by being at par with Global manufacturers in terms of Quality, Safety & Delivery. This has been widely acknowledged across



the global Industries and this can be seen from the extent of supplies for the critical global projects from India. For example, Godrej Process Equipment has supplied to 35 countries and we will be supplying critical process equipment to the Philippines, Mexico & Israel this year. This shows the reach &

acceptance for Indian manufacturers globally.

From a Buyer's perspective, Global EPC companies are either establishing new offices or expanding their offices in India. This indicates that India is not only looked upon as a destination for future markets but also a hub for providing Design, development processes and suppliers of Critical Equipment.

As a Supplier, Indian manufacturers have the capability, technology and ability to supply to the global projects, but European suppliers are preferred mainly due to the rich Past Track Record they possess and the global clients at times prefer a safer option to proceed with companies with whom they have worked in the past.

### **Insights into manufacturing facilities and capabilities**

Godrej Process Equipment has two state-of-the-art manufacturing facilities, one in Vikhroli, Mumbai, Maharashtra and another at Dahej, Gujarat. Both the

facilities have self-owned Jetties for the equipment dispatch. The company has an annual capacity of 30000 Tonnes.

Godrej Process Equipment has all the design activities carried out in-house by our experts with an updated design and analysis software like HTRI, ANSYS, Creo, PV-Elite, etc. We are one of the first companies in India to introduce advanced manufacturing techniques Electro Slag Strip Cladding (ESSC) process, Orbital welding, Narrow groove tandem wire Submerged Arc Welding (SAW). It is worthwhile to note that more than 80% of our Welding activities are automated. Also, we were one of the first Indian companies to start using Non-Destructive Testing (NDT) techniques like Time-off-Flight Diffraction (TOFD) & Phased Array Ultrasonic Testing (PAUT). We use high-end and latest machines for manufacturing at our premises.

### **How does the acquisition of YUBA & ELOAIRE fit into the growth strategy?**

The acquisition of Yuba & Ecolaire for the supply of Feed Water Heater and Surface condensers respectively was a strategic & timely acquisition. G&B's acquisition of the YUBA and ECOLAIRE brands in 2018 for Feed Water Heaters and Surface Condensers has enabled the business to expand its design-led offerings for process equipment in the power sector.

This acquisition also gives an advantage as a Technology Owner and manufacturer for these products and has helped us to explore new markets in the power sector and increase our footprint. Godrej Americas Inc. based out of the USA is a subsidiary company of G&B principally focused on the offerings of Yuba & Ecolaire brands and we have 2 offices in the USA (Tulsa & Bethlehem). Acquisition of Yuba & Ecolaire technologies has helped us establish our presence in the USA & helped enhance our reach in the USA. We have already supplied Yuba & Ecolaire products to Singapore and will be supplying Russia & Philippines this year.

### **Current projects the company is working on and future projects**

Currently, we are working on 3 global projects in the Middle East and 4 domestic projects. We will be supplying to the Philippines, Mexico & Israel this year, which will take our overall supplies to 38 countries. We are executing our largest orders for the supply of Steam Generators for the 700 MW PWR (Pressurized Heavy Water Reactor) Nuclear Power Plant for the Nuclear Power Corporation. This order will strengthen our position as a Critical equipment manufacturer for Power Sector. We are also manufacturing a large size Column for a key customer which will be our heaviest equipment

which weighs close to 1000 MT. We have also recently received a major order for the supply of critical equipment for a Green Hydrogen Project in the Middle East.

### **Expansion plans, technology tie-ups and future investments**

We have developed a World-class and state-of-the-art manufacturing facility at Dahej with a self-owned Sea-going jetty at Dahej, Gujarat. There is an overall investment of about Rs. 200 Cr for the construction of this facility and we have future plans to invest an additional Rs. 250 Cr. Phase 1 of our Plant is complete and is in operation. Phase II expansion of our Dahej facility is in progress and recently we have completed 2 extended manufacturing yards with an approx. area of 5000 sq.m each for catering to the large ODC equipment. Dahej Manufacturing facility has the latest machines, infrastructure and skilled team and we look at Dahej as a manufacturing hub to cater to the large & Critical equipment. Through this ongoing expansion, we are planning to double our manufacturing capacity at Dahej. ■



## Emission Control for Pumps Design



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**P**ump design is a continuously evolving process and as energy demand in Industries increase, various components in standard pump design are modifying themselves to handle the demand of the customer. The usages of extremely caustic acids and harmful gas in Refinery means there is even a stronger focus on pump reliability and its components. The gradual shift of Oil & Gas to Petrochemicals and allied products means various components of the standard pump design are being modified to keep pace with upcoming technology shift.

The Ministry of Environment and Forests notification in 2008 and 2018 have already set up stringent parameters for Fugitive Emissions control for pumps that its requirement to be monitored quarterly for leakages. Even small leakages not only result in an energy wasteful pump but could also result in a catastrophic consequence if not addressed immediately.

The primary weakness of any pump design has always been its ubiquitous sealing component. Whether they are dynamic seal or static, the design used earlier by Pump Manufacturers is slowly

evolving to incorporate new technology materials. For e.g., for long Mechanical Seals are preferred to Braided Packings for Pump design. In fact, many believe packings are inefficient because of high frictional losses. Much of this perception is based on outdated products and not on modern types that use sophisticated synthetic yarns combined with complex lubricants. In a study conducted by Fluid Sealing Association, USA between new technology braided packings and mechanical seal the energy efficiency figures for packing were much lower than mechanical seal. Even when the leak rate is extremely low, as in the case at 6 bar and 1500 rpm, the friction recorded was the same as that for the mechanical seal at a lower pressure. Hence in modern pump design the Mechanical Seal are slowly being replaced with new age braided packing where applicable.

Similarly, the humble Spiral Wound Gasket has been a standard across Oil & Gas projects due to its excellent blow out properties and its unique construction. However, as technology has evolved, so did various drawbacks of the design. Most OEMs have themselves evolved from Flat face/Raised Face static designs to Tongue and Groove for better emission control. The SWG role in these designs is limited and its fragile handling is seen as a constraint.

### Case Study on Pump Design

A specialized pump was ordered by a major refinery in India for usage with an extremely caustic media. The Pump also had to adhere to extremely strict Fugitive Emission Testing as per international guidelines to reduce environmental pollution & increase efficiency. This would also allow the Refinery to adhere to all future pollution control norms.

The pressure and temperature parameters are usually on the lower side when compared to traditional Oil & Gas refining, but the criticality was the hazardous media. The catalyst too that used in the manufacturing process has a reactivity to Expanded Graphite material. This meant a move away from the standard design of Spiral Wound Gaskets or Semi-Metallic Gaskets. The Static Seals had to be specially designed for this Pump design keeping in mind, the corrosive nature of the application. The Sealing material selected for this application was a specialized Modified PTFE of recommended thickness 2mm.

This manufacturing of these Modified PTFE is different from traditional moulded or skived method. In accordance with DuPont® guidelines, these bidirectional Modified PTFE Sheets come in different fillers like Silicates, Glass Beads or Barium Sulphate. Each of these fillers have certain properties as per application



demands. For e.g., Glass Beads fillers are used where Glass Lined Joints and Barium Sulphate is recommended when in contact with highly alkaline media.

As per DuPont® guidelines, Modified PTFE Seals are recommended for maximum thickness of 2mm. With the earlier standardization of pump design with tongue and groove with depth of 3.2mm, the current Pump designs had to be completely modified to incorporate the humble seal.

By the time PGE were contacted, the equipment had already been casted and designs were all frozen. We hence had limited option in offering a solution. We pride ourselves on being a suitable partner with technical expertise to help with design calculations. We worked out the necessary surface stress required by the seal first and backward calculated the changes required in the current design to incorporate these modifications. A casing trial was modified as per our design calculations and taken for testing. Our technical team was involved and present during the testing stage itself. We supervised the Seal installation, and the test methodology unique to the Pump Manufacturer specifications. The Pump Casing modified design was successful and the Pump could easily incorporate the new age material.

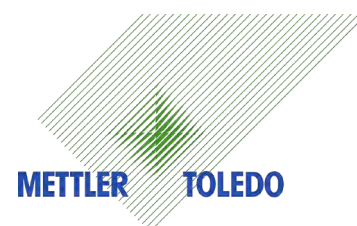
### The Future Ahead

The developments were so revolutionary that the changes and reduction in thickness also meant the overall Pump casting was reduced since higher bolt stress was no longer for these new age Seals. The cost savings for this project was immense and a leading Pump Manufacturer in India was able to re-design, develop and supply a critical Pump for an Indian Refinery. However, this same leading Pump Manufacturer also now has another future proof design in their arsenal for all upcoming Petrochemical Projects. ■

### For more information

[www.pgeindia.com](http://www.pgeindia.com)  
[info@pilotgaskets.com](mailto:info@pilotgaskets.com)

## SevenDirect™: Straight to the Point



METTLER TOLEDO announces the launch of a new family of pH, conductivity and ion concentration meters.

Developed for a wide range of applications, SevenDirect benchtop meters provide accurate measurements of almost any sample. Their ease of use, data handling options and robustness will delight discerning users.

**Mastered in No Time:** The intuitive user interface on the generous 7" touchscreen facilitates the measurement process by avoiding unnecessary steps and focusing on the most important information. On-screen instructions guide through the calibration process while the integrated help system provides immediate support. The EasyPlace™ electrode arm ensures precise placement of the sensor.

**Tracks Your Records:** The instruments support GLP compliance by storing timestamps, sample-, sensor- and user IDs with every measurement. Settings are protected from unwanted changes by a two level user management. Automatic

data transfer to PC or printer minimizes transcription errors. The guided verification process provides a straightforward way to check system performance with a clear pass / fail indication.

**Tough Enough:** The SevenDirect meters feature a closed connector compartment to prevent corrosion and a replaceable protective cover to keep the instrument safe from dust and spills even with sensors attached (IP54 in-use).

SevenDirect can be expanded with a range of suitable accessories. The EasyMix™ magnetic stirrer homogenizes liquid samples, ensuring more reproducible results. It can be controlled directly by the instrument and fits to the EasyPlace electrode arm. The updated EasyDirect pH PC software simplifies results handling and easy plotting of measurement data. ■

### For more information

[www.mt.com/veh-fraud-prevention-ve](http://www.mt.com/veh-fraud-prevention-ve)  
Toll Free -1800 22 8884 / 1800 10 28460  
Email: [sales.sales@mt.com](mailto:sales.sales@mt.com)



## Decarbonization: The Net-Zero Transition



**Hari Ravindran**

Senior Vice President of Technology & Operations, KBR

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*Mr. Ravindran joined KBR in 2012. Based in Houston, US, Mr. Ravindran is responsible for the delivery, growth and development of KBR Technology's market leading products, services and technologies for refining; petrochemicals; ammonia, syngas & fertilizers; and inorganics industries.*

**Through its digitalized, energy-efficient, clean and sustainable processes, KBR is driving energy change in favor of circularity to create a carbon-free environment for current and future generations.**

In an effort to reduce carbon footprint across the board and decouple the improvement of quality of living and

economic growth from carbon emissions, KBR has been leading the drive for sustainable technologies, including digitalization. KBR delivers science, technology and engineering solutions to governments and companies in 34 countries. Based on its 100-year legacy and culture of innovation, KBR's Technology business unit provides efficient, sustainable solutions for refinery,

olefins, chemicals, inorganics and fertilizer industries.

Decarbonization or CO<sup>2</sup> reduction is going to play a crucial role in the future of technologies and will help realize ESG initiatives of the industries. And to give a 360-degree view of KBR's decarbonization initiatives as reflected in all its technology offerings, Hari Ravindran, KBR's Senior Vice President of Technology and Operations, based in Houston, answers the most poignant questions about the organization's breakthrough technologies. He explains how KBR is driving carbon neutrality and circularity through clean refining, ultra-low carbon emission olefins cracker, plastics recycling, energy transition, biofuels, clean ammonia technologies, and more.

**To begin with, could you please tell us how has the process industry evolved with regards to CO<sup>2</sup> reduction?**

The process industry, over the years, has been focused on CAPEX and OPEX, reliability and asset on-time performance with various excellence models evolving. But, in the last decade, we have seen the shift in focus towards energy-efficient, clean and sustainable processes with the growing awareness for the need to take care of our environment and our planet. The first patent for CO<sup>2</sup> – and sour gas components such as H<sub>2</sub>S — was issued in the 1930s using Amines.

While Amine solutions have been used for capturing H<sub>2</sub>S, it wasn't till the late 1970s that this technology was used to capture CO<sup>2</sup>. Since then, CO<sup>2</sup> capture was to serve CO<sub>2</sub> utilization in the chemical industry.

Today, recognizing the impact of CO<sup>2</sup> on climate change and our immediate environment, we are actively working on reducing the carbon footprint of existing operations and capturing CO<sup>2</sup> for utilization and storage.

It is to be noted that the biggest process emitters are coal-fired power generation, natural gas-fired power generation, cement industry, refineries, steel industry and petrochemical complexes. KBR is currently focusing on how every technology can be made cleaner and safer for the earth, for us and our future generations. For this, KBR is driving forth its three-horizon-based strategy, which is a forward-looking timeline strategic plan – horizon one being the current time, that's our generation; horizon two being that of our children and horizon three for our grandchildren.

This view of the strategic horizons enables us to envision the importance of what we are doing with the evolution of technologies for process industries and how it impacts our future generations.

**How is KBR leading the way and providing customers with early-mover advantage?**



KBR continually evaluates and offers technologies to allow the customers to transition to newer fuels such as green  $H^2$ , green  $NH^3$ , and renewables, reducing the carbon footprint, fostering efficiency improvements and capturing and utilizing  $CO^2$ . KBR identifies breakthrough technologies and works with the developers to help commercialize the technologies. We are constantly leveraging our expertise in speed to the market and for commercialization of new technology with specific focus on sustainable and clean and circular technology solutions.

#### **Can you please share some examples of KBR's $CO^2$ -reducing technologies?**

The Amine capture technology is over a 100 years old and while further development of this technology is feasible, KBR is also evaluating a newer absorbent technology and equipment to further improve the  $CO^2$ -capture efficiency. While storing is a function of the site-specific geology, KBR has been for several years pursuing  $CO^2$  utilization technologies to "fix" the carbon molecule in chemicals such as Methanol, Acetic Acid, Polyols, Carbonates and even carbon black.

#### **What is it that makes these decarbonization technologies unrivaled and one-of-a-kind?**

Primarily the focus has been to reduce the net carbon output and then in addition, the unique feature of the utilization technologies is the source of

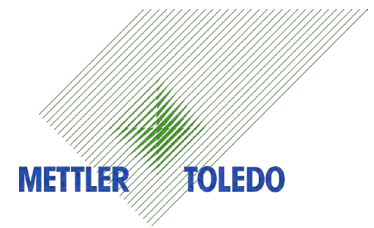
$CO^2$ , a product of either a pre- or post-combustion process. Beyond that, while some of the technologies are unique and quite a few are one-of-a-kind. The primary reason is that  $CO^2$  is a very stable molecule and requires catalysts and processing conditions that are unique.

#### **Finally, what other advantages do customers gain when they choose to work with KBR?**

Through our people, we at KBR, bring together an unparalleled knowledge of the industry, an understanding of processing and operations, subject matter expertise, engineering talent, catalyst technology, equipment and module manufacture and digitalization for commercializing of sustainable technologies.

The core strength of KBR are its people, who enable an environment of innovation, teamwork and excellence that not only offers technologies but a full spectrum of service capabilities that help the customer evaluate options, select the best available technology, license, engineer and procure, digitalize, operate, maintain, and upgrade the units. This is how we maintain sustainable value for ourselves, our customers and the environment. ■

# How to Obtain a Clean Laboratory Balance



**C**leanliness of laboratory balance is of utmost importance as otherwise it can seriously affect the quality of results. This article outlines specific procedure to clean balances. Many factors contribute to obtaining reliable weighing results which always fall within process specifications. One factor which is often overlooked, and which can have a major influence on the quality of results, is simply the cleanliness of the measuring instrument being used. Especially with balances, the risks of sample (cross) contamination can be large whenever cleaning guidelines are not strictly adhered to.

## General recommendations for cleaning

- Depending on your laboratory guidelines, the frequency for cleaning of equipment may differ. Make sure that your SOP specifies the frequency for balance cleaning, and that these intervals are carried out for each instrument according to instructions.
- Frequency: in many laboratories, the rule of thumb is to check the balance on sight. If it is obviously dirty, clean the balance before weighing. Otherwise the minimum recommendation would be to clean the balance at least once per week.
- Where toxic samples are being weighed, the recommendation would be to clean the balance immediately after each weighing.
- The use of aluminum foil (or similar) placed around the weighing pan to protect the balance from becoming dirty is not recommended; it typically makes it more difficult to clean the surfaces thoroughly, and more difficult to perform a visual check.
- Observe the following when cleaning
- The balance should be completely disconnected from the power supply
- Ensure that no liquid comes into direct contact with the electronic parts and its AC adapter



- Never completely dismantle a balance for cleaning– there are no components inside the balance that require cleaning. In case of repair, contact a service technician.
- Under no circumstances use cleaning agents containing inappropriate solvents or abrasives; the use of such agents can result in permanent damage to the surfaces or the balance itself.

### Which Detergent can be Used for Which Part?

The reference Table below offers guidance on which cleaning agents can be used for each part.

Cleaning made easy with the MS-TS, ML-T, ME-T balances

METTLER TOLEDO has developed cleaning procedures of balances as easy and rapid as possible. Since cleaning can be a procedure that needs to be repeated as frequently as each measurement, time spent cleaning should be kept to a minimum. Cleaning your balance becomes a task which takes seconds to complete. The MS-TS QuickLock draft shield dismantles in seconds without any tools. With QuickLock glass panels, which are also available for ML-T, the glasses can be removed easily. The ME-T draft shield can be removed with a screwdriver. The parts requiring the most cleaning

Models	H <sub>2</sub> O		Isopropanol		Ethanol 70%		Acetone		Hydrochloric acid (3%, 1Mol/L)		Sodium hydroxide (20%)		Peracetic acid (2%)	
	ML, ME Balance	MS Balance	ML, ME Balance	MS Balance	ML, ME Balance	MS Balance	ML, ME Balance	MS Balance	ML, ME Balance	MS Balance	ML, ME Balance	MS Balance	ML, ME Balance	MS Balance
Wind ring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pan Support	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Weighing Pan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Draft shield	✓	✓	✓	✓	✓	✓	•	✓	✓	✓	✓	✓	✓	✓
Top Housing	✓	✓	✓	✓	✓	✓	•	✓	✓	✓	✓	✓	✓	✓
Bottom housing	✓	✓	✓	✓	✓	✓	•	✓	✓	✓	✓	✓	✓	✓
Display	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bottom Plate	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Feet	✓	✓	✓	✓	✓	✓	•	✓	✓	✓	✓	✓	✓	✓
Protective Cover	✓	✓	✓	✓	✓	✓	•	•	✓	✓	✓	✓	✓	✓

✓ Recommended by MT    • Not recommended by MT



are dishwasher-proof, and surfaces are smooth and rounded to make cleaning easy.

### Protective Cover

Another much-appreciated feature of the MS-TS, ML-T and ME-T balances is the protective cover, which comes with a new balance. Once the protective cover is worn out, it is possible to re-order one, so that you are sure your instrument's parts are protected from spills and residue. However this cover does not replace the steps necessary for cleaning the actual weighing pan.

### Pan Protection



For precision balances, a separate "pan protection" stick-on mat has been developed, that absorbs minor liquid spills and which guides the user to position the tare container centrally on the weighing pan. In this way contamination of the weighing pan can be reduced and the pan remains protected from scratches (which could also cause sample contamination). ■

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# Industrial Valves: Emission Control

**F**ugitive Emissions are the unanticipated or spurious leaks of Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) in the form of gas or vapor from process system equipment to the atmosphere.

The majority of these emissions come from industrial establishments such as factories, oil refineries, chemical plants and power plants, etc.



Creation Potential, to Ozone Depletion Potential, Global Warming Potential, Air Pollution and the Greenhouse Effect.

## Effects of Fugitive Emissions

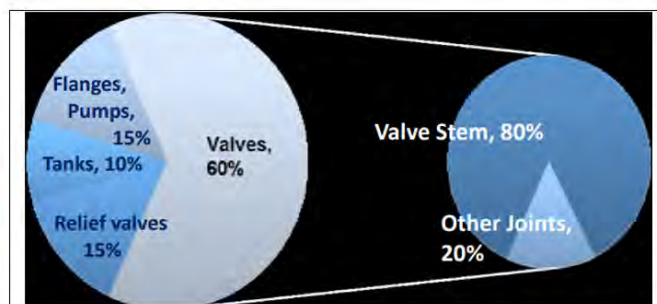


Fugitive emissions can have significant consequences like major Environmental concerns from Photochemical Ozone

Long-term health risks to workers and local communities in close civic proximity of industrial facilities because of toxicity, carcinogenicity and exposure to hazardous materials and volatile organic compounds (VOCs) such as benzene, Higher risk of fire and explosion in explosive environments where large amounts of flammable materials are contained under pressure and economic costs related to loss of commodities on account of Fugitive Emissions.

## Emission Control from Industrial Valves

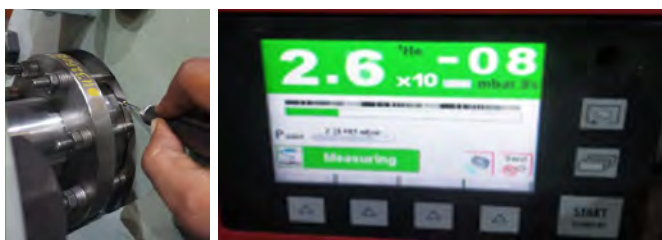
Approximately 60% of fugitive emissions come from valves. There are several failure modes for valves, including leakage from



Source: Monitoring and Containment of Fugitive Emissions from Valve Stems, University of British Columbia, Vancouver

bonnet, cover, and flange joints, and the leaks through the seat, but as much as 80% of the leakage per valve originates from its stem-seal interface. Therefore, in addition to conducting regular testing and maintenance of industrial facilities to control fugitive emission levels, it's essential that valve manufacturers and suppliers take extra measures to ensure their valves have secured stem seals to prevent them from leaking hazardous gas or vapor into the environment.

The push for "low Emissions Valves" and "low Emissions Packing" has prompted many standards organizations such as API, ANSI, ISO, MESC, ANSI and TA-Luft to establish valve and packing test standards which assess fugitive emission performance.



Fugitive Emission Testing of Triple Eccentric Butterfly Valve

## Fugitive Emission Regulations

In response to worsening industrial pollution, various international regulatory programs came into existence and other global efforts are being made to reduce industrial fugitive emission levels, this is still one of the most serious challenges that the process industry faces today.

The Environmental Protection agency (EPA) introduced the US Clean Air Act, the first federal legislation regarding air pollution control. Germany also began instituting air pollution control regulations in 1964 titled "Technical Instructions on Air Quality Control" (Technische Anleitung zur Reinhaltung der Luft) commonly referred to as the TA Luft.

During the late 1980s, EPA legislation was amended to include petroleum refineries and chemical processing plants that emit volatile organic compounds (VOC's) and hazardous air pollutants (HAPs).

In order to reduce the emission of fugitive VOCs and HAPs, the EPA instituted Leak Detection and Repair (LDAR) regulations, a system of procedures a facility utilizes to locate and repair leaking components which includes EPA Method 21, a method for determining VOC leaks from process equipment in parts per million. EPA Method 21 pertains to valves, flanges and other connections, pumps and compressors, pressure relief devices, process drains, open-ended valves, pump and compressor seal system degassing



vents, accumulator vessel vents, agitator seals, and access door seals.

By the late 1990's, the EPA determined that many facilities were under-reporting emissions, failing to implement Method 21 sufficiently to meet emission reduction targets. By the early 2000's many refineries agreed to implement official LDAR Programs to avoid litigation.

These were then extended to industry use standards first by ISO and very recently separately covered by API also.

Fugitive Emissions from Valves can be controlled through:

Tightening torques for Gland, Bonnet, Cover, Number of packing rings, Cross-sectional area, Live loading arrangement to retain the Gland load, Avoiding vents, openings in the pressure boundary, and Assembly procedure depending on the type of packing.

## Selection of Materials

Selection of FE compliant Gland Packings, Density, purity and lubrication, and Selection of Gaskets, Prototype qualification of valves, Production test of valves, Fugitive emission compliance onsite.

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## Design of Sealing Components

Design of Stuffing Box, Gland Bore and Stem, Design of Bonnet / Cover joints, Control of Geometric Dimensions & Tolerances, Control of Surface Finish,

## Conclusion

Low Emission Valves is the necessity of the time to control the emissions. Valve Manufacturers should implement the low

## Fugitive Emission Test Standards: Requirements at a Glance

Parameters	ISO 15848	API 622	API 624	API 641
Applicability	Isolation & Control Valves	Valve Packings	Rising Stem Valves	Quarter-turn Valves
Medium	Helium or Methane	Methane	Methane	Methane
Method	Vacuum or Snipping	Snipping	Sniffing	Sniffing
Units	Atm.cc/sec or Methane-ppmv	ppm	ppm	ppm
Leakage	Helium - Class A/B/C Methane - Class AM, BM, CM	<500	<100	<100
Mechanical Cycles	500 to 2500	1510	310	610
Thermal	2 to 4	5	3	3
Max.Temp.	User Defined	260	260	260
Max. SSA	1 to 3	User defined	Not permitted	Not permitted

**PRODUCT RANGE:**

Sl. N.	Product Description	Size	Pressure Rating
1	Balancing Valves	1" (25mm) up to 48" (1200mm)	Up to PN 25
2	Dual Plate Check Valves	2" (50mm) up to 80" (2000mm)	Up to ASME #2500
3	Concentric Butterfly Valves	2" (50mm) up to 48" (1200mm)	ASME #150 and up to PN25
4	Double Eccentric Butterfly Valves	2" (50mm) up to 120" (3000mm)	Up to ASME #150
5	Triple Offset Butterfly Valve	3" (90mm) up to 100" (2500mm)	Up to ASME # 1500
6	Axial Flow Check Valves	1" (25mm) up to 64" (1600mm)	Up to ASME # 1500
7	Pressure Independent Control Valves	½" (15mm) up to 6" (150mm)	Up to PN 16 / PN 20
8	Control Valves	3" (80mm) up to 36" (900mm)	Up to ASME # 600

emission technology in Valve Design, Manufacturing and Testing. End Users to insist and use Low Emission Valves qualified and tested valves.

As a responsible valve manufacturer, we at ADVANCE VALVES take pride to state that our valves are Engineered, Manufactured and Tested to low emission norms. Advance Triple Offset Butterfly Valves were the first TOVs made in India and first TOVs in India to get qualified by any international standard – starting with ISO 15848 and now API 641 also. These are widely accepted across the globe for the most stringent compliances. Our Dual Plate Check Valves are Retainerless design (does not have any threaded plugs in the pressure boundary) and thus eliminates the potential leak path to atmosphere.

Hence our Dual Plate Check valves are inherently Fugitive Emission Free, and so are our Axial Flow Check Valves. ■



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## Carrying a Legacy Forward



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**F**ounded in 1983 by Mr. Ved Kalra, Chemiplant Engineering is one of the leading manufacturers of Pharmaceutical and Chemical Process Equipment in India. What started off as a small manufacturing unit in Mumbai has grown to become a professionally-managed, customer-centric and a major supplier at a 50,000 sq. ft. manufacturing unit at Ankleshwar, Gujarat. The vision of Mr. Kalra of establishing his own manufacturing unit and making it big in the pharma machinery industry has been taken forward by Sameer V Kalra, MD, who added technology and innovation to the mix.

Chemiplant Engineering infuses technological advancement with innovative thought processes and an enviable skill set across all spectrums, and boasts of expertise in providing customized solutions that meet customer needs. The client base of Chemiplant Engineering includes organizations in the fields of Pharmaceutical, Chemical & API, Biotech, Food & Dairy and Varied Research Labs

Businesses. For many worldwide brand names, the company proves to be a flexible and customer-oriented partner. High quality, durability and maintenance friendliness, optimum designs, and above all, tailor-made equipment is its forte.

The journey that began under the dynamic leadership of Mr. Ved Kalra four decades ago has been evolving through the years, and is now scaling new heights in the industry. By adding innovative process equipment to its list, the company has gained an edge over the competition. It has also an environmentally friendly approach, in addition to being a licensed manufacturer.

"We Think, We Engineer, We Process & We Accomplish" Our business idea supports this vision by offering a wide range of well-designed, customized and accurate machines

### The Entrepreneurial Journey

An entrepreneur by choice, Mr. Sameer Kalra has dedicated his life to continue the legacy his father established. Born in a





Ved Kalra Founder

family where business is a part of dinner-time conversations, business runs

in the blood for Mr. Kalra. He credits his dad for his induction into this venture. The Founder of Chemiplant, Mr. Ved Kalra, has vast experience in the field, having worked with engineering giants. Chemiplant was a dream accomplished of having his own production unit, which he cultivated with a lot of passion and ambition. His drive to make his business successful inspired Mr. Sameer to follow his footsteps. He joined the venture twenty years ago, by which time Chemiplant had become a renowned name in the industry with a number of big and trusted clients.

"My primary objective now is to design strategies and action plans towards the goal of making Chemiplant Engineering a world-known name by 2025, and revamp systems wherever needed to outpace competition," says Sameer Kalra.

Mr Kalra leads a team of dedicated experts, and believes in the school of thought that any company is as good as its team. He has aligned the team's mission with Chemiplant's vision and motivates everyone to work with a growth mind-set.

"As a leader, I always try to lead by example and keep setting small achievable targets for my team spread over a period of time. Just setting targets is not enough, so I ensure that they get adequate training from experts in the field which keeps them focused and enjoy their work," he states.

He believes that trust is established from both sides. He trusts his team, and finds himself blessed to have trustworthy people with him. "I see a lot of energy around me which is built only because of trust. We have a mix of people who have been with us for fifteen years plus, as well as newcomers. The challenge for the newcomers is lack of experience for which I spend a lot of time with them. It is challenging to maintain synergy between the old and the new. I personally believe in new people and at the same time value the knowledge and learnings that come from the experienced team members. Once you hit this balance, your team will be unstoppable."

Chemiplant always believed in investing in training and mentoring for its team, which has brought visible changes in the working style and approach of team members. The MD believes in personally communicating with each of the team



Samer Kalra, Managing Director

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members on a regular basis so that they are in a comfortable space and find him approachable. "For me, my team is my strength and when my team stands out in the crowd, Chemiplant automatically will. One word of gratitude to my team here who stood by me during the pandemic and helped Chemiplant grow."

Mr. Kalra has always been passionate about engineering, and got a degree in it before joining the company. His career in engineering aligned with the aspirations his father held for him, and he found it quite exciting to learn the trade by his father's side. "It was fun learning the nuances of the industry and contributing to the growth of an organization my dad so fondly started," he reminisces. Under his leadership, Chemiplant has seen tremendous growth over the years,

expanding from local to global, and with an even greater vision in mind. The journey has been a roller coaster ride for Mr. Kalra, and he learnt a lot in these years. "Learnings are never ending and I yearn to learn, train and make Chemiplant reach newer heights." Mr. Sameer Kalra hopes to create a legacy and not an inheritance, for Chemiplant to always be remembered as a strong brand in the pharmaceutical machinery industry, as a lot of effort has been put into building it that should not go to waste.

The entrepreneur is an avid reader, and finds books to be the best source of knowledge and encouragement. The practice of reading has helped him know and understand beyond what he learnt in college. The two subscriptions he recommends, with respect to the industry he is in, are Chemical Today and Chemical Industry Digest. Mr. Sameer is also passionate about learning new techniques and skills, and invests his time in gaining knowledge of technology that can be implemented in his factory. Innovation, thus, is at the core of Chemiplant. He wants to play a part in taking India ahead in technology when it comes to machinery manufacturing. Gradually, the company has successfully commissioned its machines all over India. Now his vision is to go global, as there is huge potential for Indian manufacturers in the global market.

Mr. Sameer is open to inviting young dynamic people to reach out to him and

to collaborate with them, as he finds the different approach to life the new generation has inspirational.

“These Solopreneurs actually inspire me the way they look into making possibilities into opportunities. They think out of the box so someone with an entrepreneurial mind-set will always be the right collaboration for me” he says.

## What Sets It Apart



Chemiplant claims to be the expert in providing innovative solutions. The machines are tailor made to meet customer needs. That is the USP the company provides: it is flexible and has the required infrastructure to make products exactly the way the customers need. The main mission is to always develop “Fit & Forget” and the team strives to deliver the very best to their customers. The company has a state-of-the-art manufacturing facility spread over 50000 sq. feet. It maintains stringent quality control and monitors every stage of production right from the time the raw material enters the factory till the time

the final product is sent out for delivery. Making these machines need detailed planning and execution and Chemiplant is fully equipped in this area with the skill and will to deliver what the customer wants. Its team of qualified and dedicated engineers work round the clock to ensure quality and meet delivery timelines. They endeavor to make every first customer their permanent customer.

Chemiplant has developed a unique technology for its Japanese customers, who have become a regular client at this point. The customized solutions provided by the company are unique to it in the industry. The African market is also quite a favorable market for Chemiplant, and the company is looking at collaboration opportunities with developed countries to have a mix of their technology and its own. At the same time, it is looking to develop technology for underdeveloped countries so that we are able to achieve its vision. Being in the industry for so long, Chemiplant believes they have the strength to make machines that are customer-need based. They see the larger picture and strive to reach their goals, come what may.

The plant in Ankleshwar, Gujarat measures approx. 50,000 sq. feet and in the past couple of years they have almost doubled the space. Foreseeing the business potential, Chemiplant has invested into expansion every ten years. It has also invested largely in machinery





such as cutting, welding, rolling, shaping, machining, milling, etc. It has installed vertical lathe machines, which can do a 3200 mm diameter- sized job. The company has four working bays with two overhead cranes for each bay with a capacity of 10 to 25 tons. This helps to take jobs in large volumes. It has the capacity to handle a 1 lakh liter/100 kiloliter vessel with this kind of infrastructure. At present it has executed up to 50k liter vessels and expects orders for 1 lakh liter vessels soon. It can produce twenty equipment at a time within a month ranging from 1000 liters to 40000 liters i.e. 240 equipment in a year.

## Future Plans

Mr. Kalra perceives automation to be the future as it can give very fast and accurate production with very minor chances of variation. Even in India in the near future, most of the factories would be taken over by automation. Chemiplant intends to start involving automation in a few processes of production and human intervention would certainly be required. At design level, the company has invested in 3D

software, which dissolves a lot of errors in the manufacturing process. Pilferage of drawings/ designs is possible so they have screens in factories where the drawings are displayed and whoever wants to access the design can go to the screen and see it. Transact is another software which they use to monitor purchases and stock maintenance. Technological and digital development is transforming day after day and the company is open to investing in it. The team is also working on the long term concept of "Fit & Forget Products" that aims at making machines work without a problem for a minimum of twenty years.

To achieve his vision for Chemiplant Mr. Kalra believes in taking small steps, understanding where the competitors are active, investing in databases, digitalisation, focus on digital marketing, periodic training and motivation to team, having an exports manager and putting systems in place in their factory so that they are consistently able to improve on the quality of the offerings for the customers. ■

## For more information

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HUBER Envirotech Private Limited

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**F**reshwater is one of the most crucial resources for people, agriculture and industry. In India, freshwater is already scarce. This water stress is only rising as the demand for freshwater is rapidly increasing with population growth and industrialization. Factors such as over-extraction of groundwater, water pollution, and climate change further compound the water crisis. As India strives to become one of the strongest economies in the world, the development of the country will certainly require new approaches to water conservation. The “use and waste” approach for water is no more possible. Effective wastewater treatment and

reusing wastewater in place of freshwater is what the current situation demands.

## A.T.E. HUBER Envirotech Private Limited (AHET)

With a deep understanding of wastewater technology and with the core objective of providing a sustainable solution to water problems, Mumbai based A.T.E. HUBER Envirotech Private Limited (AHET) has developed advanced and cost-effective technologies for wastewater treatment, recycling, sludge management and Zero Liquid Discharge (ZLD). These robust technologies are designed to ensure that wastewater is treated to a level where it can be reused by industry or households.

A.T.E. HUBER Envirotech is a joint venture between A.T.E. and HUBER SE, Germany. Together they bring a world of experience in the field of wastewater solutions.

A.T.E. HUBER's approach is based on the understanding that each customer has different pain areas. AHET's success lies in addressing these pain areas through a unique and holistic approach, viz., IPADS - Identifying Pain Areas and Devising Solutions. Adopting this approach, AHET devises tailor-made solutions for each customer. As a result, the company has bagged many projects in India and around the world.

AHET also offers useful and specialized services to customers: 'Experts on Call' and 'EnviroCOLA®'. 'Experts on Call' offers experts' opinions to any unit for their wastewater treatment related problems. AHET has set up a panel of experts, which includes many internationally renowned subject matter specialists. It facilitates a one-to-one conversation between the customer and the experts to brainstorm about their wastewater issues. 'EnviroCOLA' is a customized cloud-based tool that handholds wastewater treatment operators for smooth plant operations and also helps in overall compliance and cost savings.

AHET also provides many value-added products like bio-boosters, enzymes, high performance cultures, etc., that help to improve plant performance or quickly restore the plant performance after an upset.

## Thriving on Innovation

Over the years, AHET has invested continuously in R&D and pilot trials, which has helped them bring many successful wastewater treatment concepts to large-scale implementation. AHET completely relies on natural processes for treatment. Using novel anaerobic processes, AHET reduces chemical consumption, sludge generation and power consumption, and simultaneously provides an alternative energy source – biogas. Wastewater plants provided by AHET hence help reduce the plant operator's overall carbon foot print.

For the municipal sector, AHET is bringing in new generation screens for municipal wastewater treatment. These screens offer a significant advantage to sewage treatment plants – as these advanced products can replace primary clarifiers and have a reduced footprint. Next in line in the innovation pathway: thermal drying of sludge, and sludge to energy projects.

## What customers say

Mafatlal Industries, who are one of the oldest and most renowned textile mills in India said: "AHET's AAA technology installed for our 4 MLD ETP has reduced our chemical consumption and chemical sludge by 60-70%!"

D'Décor, one of the world's largest home furnishing companies, says that "AHET guided us in achieving long term sustainability by bringing down our



water usage and sludge disposal cost by upgrading all our ETPs (totaling 3.2 MLD) to AAA technology, installing a reverse osmosis based recycling plant, introducing to us their anaerobic MBR based packaged STPs and providing a solar sludge dryer”

### Committed to serve

A.T.E. is a multifaceted engineering group that has served the needs of industrial customers in India for more than 80 years, and HUBER is a world leader in sustainable wastewater solutions and in business for 180 years. Adhering to their common vision, AHET believes that growth is a by-product of a strong value system practiced by the company. Anuj Bhagwati, Managing Director of the A.T.E. Group says “We nurture good people, and we believe in them. Our people deliver a good customer experience and these happy customers help us grow. We will continue to follow this philosophy.” With this mindset, and its suite of technologies and services, AHET aims to make a meaningful contribution towards creating sustainable water infrastructure. ■

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## Providing Innovation Based Solutions



**Tushar Wagh**

Director, Chemdist Process Solution Pvt Ltd

**C**HEMDIST is a renowned name in chemical process equipment & process plant manufacturing sector. With starting its journey in 2012, in a short span of time, Chemdist Process Solutions Pvt Ltd embossed its name not only in the Indian but also in Export market. With more than 500 clients, it has been an honor to say CHEMDIST is a leader in separation technology.

Chemdist is a turnkey solution provider which is specialized in Technology, Engineering, Manufacturing, Supply, Erection & Commissioning in the field of Mass Transfer, Heat Transfer, Reaction Technology, Chemical Process Technology, Environmental Technology & Membrane Technology to a wide variety of Process Industry. Chemdist has expertise in

technologies in the field of Distillation, Evaporation, Reaction, Upstream Oil & Gas, Chemical Process Industry, Biofuels, Extraction & Environmental on Turn-key basis.

Chemdist have been involved in design, engineering and manufacturing of process equipments such as Distillation Column, Condenser, Reboiler, Heat Exchanger, Reactor, Agitators, Evaporators, Static Mixer & Pressure Vessels. In house manufacturing of mass transfer internals comprising of Structured Packing, Random Packing, Trays, Liquid Distributor, Collector, Packing Support, Demister Pad, Vanepac, Vessel Internals, Separator Internals gives added advantage of providing turn-key solution under one roof. The Chemdist also has the acumen to provide its clients with premium quality



heating and heat transfer applications.

Chemdist has its own R & D Lab & Pilot plant facility to develop and provide innovative technologies & solutions. It has 70,000 sq feet production area which adds extra weightage to Chemdist's success. Chemdist also takes a special interest in customizing these products and services according to the specific needs and requirements of the customer.

And these products and services are highly demanded by customers due to their global quality and high service life.

Continuous research and innovation is a success key for Chemdist. Which implicate from its 500+ happy customer's feedback. Also Chemdist has successfully designed & executed more than 150+ projects mainly in speciality chemicals, Oil & Gas, Petrochemical, Bulk Chemical, Pharmaceuticals, distillery, Refinery, aromatic chemical etc. ■

services like Technology, Process Design, Equipment Design, Process equipment Manufacturing, System Integration, Plant Design, Plant Modifications, Automation, Project Management, Process Consultancy, and many more.

R&D is our DNA and Chemdist strongly believes in innovation based solutions. With this focus Chemdist has indigenously developed specialty hollow fiber & flat sheet membrane based separation technologies and currently holding more than 5 patents. Chemdist has "Centre of Excellence" in its own name in IIT Guwahati wherein future Biofuel and derivatives technology are under development. Pervaporation membranes have wide applications in solvent dehydration in pharma and chemical sector. Membrane Distillation is low opex alternative to conventional MEE & ZLD plants. The Heat Pumps and High Turb Turbulators are widely used in water

#### Contact Details:

##### **Chemdist Process Solution Pvt Ltd**

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## Offering World-Class Quality Systems



SR 65 PNEUMATIC



SR 44 PNEUMATIC



SR 7 PN



SR 65 AUTOMATION

**D**elVal Flow Controls Pvt Ltd commenced its operations in 2006 as a JV with DelTech Controls LLC, USA. Over the last 10 years in operations, DelVal Flow Controls has grown from revenue of 2.00 Crores in 2006 to 280.00 Crores in 2018. The company manufactures superior quality of Butterfly Valves (all designs up to 88" sizes), Ball Valves (all designs up to 24" size), Pneumatic Actuators and Valve Automation packages at the plant located near Shirwal, Satara district, India. The products have got excellent recognition for quality and performance and are exported to overseas markets which include the USA, Russia and CIS countries, Gulf Countries, Africa

and South East Asian Countries. Sales is managed through 6 sales offices and a network of channel partners. The company has 250 employees.

Our customer base includes prestigious global brands from Oil & Gas, Power Generation, Steel & Mining, Chemical, Fertilizer, Food, Dairy, Pharmaceutical and Water Processing industry segments. The indicative customer list features HPCL, Essar, BHEL, NTPC, Godrej & Boyce, Praj Industries, Thermax Limited, Alfa Laval, ABB, Bharat Forge, and RCF. Robust Quality Management Systems, certified to ISO 9001-2008, API Spec 6D (23rd Ed 2008), API Spec 609, API Spec Q1 (8th Edition-2002), ISO-EMS 14001-

2004, OHSAS 18001-2007, IBR 1980 are in place. All Product designs are certified to PED/2014/64/EU MODULE H & MODULE B1, ATEX/2014/34/EU, MD/2006/42/EC. In 2016, DelVal Flow Controls India, formed a wholly owned subsidiary in USA called DelVal Flow Controls USA and took over the business of its former JV partner, DelTech Controls LLC. This will help the company to grow extensively in the American market in the coming years.

### 100% Testing and 100% Serialization

DelVal offers 100% testing on every DelVal manufactured product, every time. Each body shell test, seat test and torque test are all recorded and easily traceable with our cutting edge 100% serialization program. We use the latest NDT techniques such as radiography, magnetic particle, ultrasonic testing, PMI testing, and dye penetrant testing to ensure defect-free castings. We perform proof of design test and accelerated life cycle tests under fully rated pressure and temperature on all of our products for continuous improvement in design and performance.

### 3-Year Standard Warranty on DelVal manufacturing products

DelVal's confidence in our extensive quality system offers the dependability you require. Our high-quality products offer a low cost of the ownership and the industry leading 3-years warranty as standard.

### Our Mission



To provide our customers with superior performance flow control products that are delivered by efficient people and processes

### Our Vision



To build flow control products that will be installed in all plants world-wide as a preferred brand. ■

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## Providing Finest Fluid Transfer Solutions



**Navdeep Goyal**  
Managing Director  
DTECH Products Private Limited  
(Formerly known as Super Industrial Lining Pvt Ltd)

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**D**TECH PRODUCTS PVT LTD is creating an edge in the manufacturing of FLUOROPOLYMER lined products with PTFE/PFA/PVDF/PP in the form Lined pipe & fittings, Expansion Joints, lined and solid Spacers, lined Valves, used as integral parts for the handling of corrosive fluids.

We work on a unique philosophy of "Concept to Commissioning" comprised of project execution that includes design, supply, installation, erection and commissioning. We are determined to provide customers with complete product packages along with technical assistance whenever required.

DTECH PRODUCTS holds a separate identity, as our experience in developing comprehensive fluid transfer solutions has been more than three decades now which is the reason why we are known "As The Most Trusted Brand in providing Fluid Transfer Solutions amongst others in the Industry."

Since its establishment the growth has been positive and progressive, successfully executing more than 1000 + projects, meeting the demands of the global industry concerning to technical, commercial and delivery terms. We also believe "Team Makes It Possible"



Our fully integrated manufacturing unit stretches over more than 20,000 Sq.mtrs. with all equipped machinery and tools, with in-house Research and Product Development Lab for all fluoropolymers linings, most advance designing modules & aided tools run by skilled professionals as well as have testing facilities to ensure quality and consistency in production by which our customers shall receive the best and high-quality products at the end.

DTECH PRODUCTS continues to strengthen its leading position in the industry by supplying certified quality and guaranteed performance products and services as assistance to the client in resolving technical problems and fast response times. In sectors like Chemicals/ Process Chemicals/Speciality Chemicals/ Acidic chemicals, Refinery, Power Plants, Oil & Gas, Steel plants, Waste water, Fertilizer, Petrochemicals, Bio diesel plants, Pharmaceutical Industries etc.

"Our Aim is to keeping your process flowing smoothly. Q2S2: Question, Quote, Source, Service" ■

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## A Legacy of Three Decades of Delivering PTFE Products



**Anand Sarvankar**

Business Head & Vice President  
DuFlon Industries Pvt. Ltd

**T**he versatile application of PTFE (Polytetrafluoroethylene) and its wide industrial adoption in electronics, consumer goods, automotive, aerospace, and chemical processing industries has driven the demand for PTFE products. The pharmaceutical sector, waging war against the pandemic has further fuelled the demand for high-quality PTFE products in that sector. Most of the products in these sectors are PTFE Lined Piping systems (LPS), Equipment Lining and Coating, PTFE Lined Pump & Valves, and PTFE products for sealing applications. However, inferior quality, non-compliant products, low performance, higher operational costs, and below-par durability have limited the acceptance of these products from some of the Indian PTFE manufacturers.

DuFlon has a legacy of more than three decades excelling in engineering designs and manufacturing high-quality PTFE products used for corrosion resistance and purity applications in various industries. DuFlon is driven by a consumer and customer-centric approach and a deep understanding of market needs. With a keen eye on the continued technological possibilities and affordable automation in the industry, DuFlon is always ahead of the curve. DuFlon with its wide range of products in Lined Piping Systems, Equipment Lining and Coating, and Pump & Valve, has enabled it to become a one-stop solution provider for the chemical process industries.

Anand Sarvankar, Vice President & Business Head of DuFlon remarks, "DuFlon is a marketing-driven organisation

using market knowledge to determine corporate strategy. DuFlon consistently offers products of the highest quality, reliability, and accuracy. DuFlon's commitment to constant improvement in technology, infrastructure, and domain knowledge has enabled us to meet stringent quality requirements. We have been spread out globally to fulfil our customers' requirements through our strategically located sales and engineering offices in India, North America, Europe, and Asia. DuFlon is India's only Teflon licensee processor (TLP) approved for Global Markets by Chemours (formerly, Dupont)."

### Key Market Differentiators

DuFlon is the only adopter and implementer of Fluoropolymer welding technology in India and has 10+ technologies under one roof. DuFlon uses Polymer & Elastomer Compounding, Isostatic & Compression Moulding, Injection & Transfer Moulding, along with machining for plastics and castings. It also uses Roto Lining, Fluoropolymer Welding, Lost Wax technology for Castings and Ram & Paste Extrusion depending on the viability of the application. DuFlon has a world-class manufacturing facility that covers more than 140,000 sq. ft. With a Fluoropolymer processing Capacity of more than 500 tons, making DuFlon, South Asia's largest processor. DuFlon has a global implementation of SAP S/4HANA and an established EOU (Export Oriented Unit). The company is the recipient of the "Niryat Shree" award for two consecutive

years for excellent performance in exports by the Federation of Indian Export Organisations (FIEO). Anand adds, "DuFlon has been growing consistently with a YOY growth of 20% in the last five years, enabled by a global customer base."

### Wide Range of Offerings

DuFlon product range can be broadly divided into three categories: Nozzles for SF<sub>6</sub> Circuit Breakers for the Switchgear Industry; Pump & Valve Components; and Corrosion & Purity Solution Products. DuFlon manufactures Butterfly, Ball, Plug, Check, Globe, and Diaphragm valve components along with Pump Housings, Casings, Diaphragms, and Impellers. Corrosion and Purity solution products include, Lined piping systems, Lined Flowmeter bodies, Equipment lining & Coating for Vessels, Columns, Filters, Manholes, Shafts, etc.

Our vision is to become a one-stop supplier to the Global Pump and Valve Industry and a Solution Provider for Corrosion and Purity Applications

"Teflon™ is a trademark of The Chemours Company FC, LLC used under license by DuFlon Industries Pvt. Ltd." ■

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## "Smart Solutions in Full System Design"



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**F**enix Process Technologies is a heat and mass transfer (Distillation, Absorption, Extraction, Mixing, Solid-Liquid Separation, LLE, Edible Oil Refining and Biodiesel Production) equipment manufacturing company with an integrated engineering solution. Our team possesses the skillset to provide solutions and support from conception, design, fabrication, delivery right up to installation. These capabilities are rapidly transforming us, from what started as a product-based company, into a complete EPC solutions provider having commissioned a total of over 15 full-scale as well as pilot-scale plants both domestically and internationally. This number is only going to go up.

The range of our products includes Structured & Random Packings, all types of Column Internals, Valve, Sieve & Bubble Cap Trays, processing equipment for Oil & Gas etc. We manufacture & supply Static Mixers, Pusher Centrifuges, Heat Exchangers, Evaporators and Dryers.

We possess licensing technologies for the commercial production of Sodium Methoxide (Solution/Powder), Potassium Methoxide (Solution/Powder), Sodium Ethoxide (Solution/Powder) and Sodium Isopropoxide (Solution/Powder). We have also made strategic partnerships, globally, with companies to develop and provide solutions for Used Oil Re-refining, Bio-diesel production, Cellulosic Ethanol production and Lithium Ion



Battery Recycling. We have catered our products and services to customers from the Chemical Industry, Food Technology, Pharmaceutical Industry, Alcohol Technology, Ethanol Derivatives Industry, Aromatics Industry, Bio-diesel Industry, Dyes & Intermediates Industry and Oil & Gas Industry within India as well as the rest of the world.

Our vertical centric solution approach makes us a trusted partner for all our client needs. Headquartered in Pune and headed by an efficient team, with a cumulative experience of over three decades in the process design and manufacturing industry, Fenix is poised to lead its industry segment.

Our state-of-the-art manufacturing unit spread across 3 acres, located at Jejuri, India, is a highly equipped, advanced and completely self-sufficient unit which allows us to be independent and execute our jobs on time without any compromise on the quality standards that we swear by.

Technology, environment, and customised solutions define the world we live in. Fenix represents a bold vision in meeting today's customer requirements - one that provides a

solution for addressing and meeting today's demands with niche efforts through R&D and our technology partners.

The success behind Fenix lies in the transparent and truthful way we conduct business. We believe that our key to success is "Smart Solutions in full System Design."

Fenix has become everything it was meant to be and much more! ■

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## Prevalent Global Leader in Corrosion-Resistant Technologies

**GMM Pfaudler**



**Aseem Joshi**  
CEO, GMM Pfaudler Ltd



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**G**MM Pfaudler Ltd (GMMP) is a leading supplier of engineered equipment and systems for critical applications in the chemical, pharmaceutical, food, and energy sectors to organizations around the globe. Our unique expertise, manufacturing capabilities, innovation, strategic market, and business operations help us successfully deliver technologies, systems and services. This includes glass-lined technology, filtration and drying, engineered systems, lab and process glass, sealing technology, fluoropolymers, mixing technology and alloy process equipment. Our capabilities and service offerings assist our clients in optimizing and improving processes at their

organizations. Adding to our global growth ambitions, we continue to move forward by taking big steps that favorably impact partner and people growth.

GMMP has been making big moves in the last couple of years. A market leader in manufacturing glass-lined equipment (GLE) and systems for critical applications in the pharmaceutical and chemical industries, GMMP has carried out three strategic acquisitions including a significant deal with its parent Pfaudler's international business. In fact, this deal along with two others, has completely transformed the company from primarily being a domestic player, into a global leader in corrosion-resistant technologies,





systems and services space.

With these acquisitions, the company has significantly scaled up its business. It now commands over 40 per cent share in the overseas market even as it holds pole position

in the domestic GLE market, with over 55 per cent. From being a predominantly Indian player catering to the domestic market with just one manufacturing facility in Karamsad, Gujarat, the company now has a global footprint with 14 manufacturing facilities (three in India, one in China, three in America and seven in Europe) across eight countries and four continents, employing around 1,800 people.

The company has also diversified its product portfolio over the years, to mixing systems, filtration & drying equipment, engineered systems and heavy engineering equipment from only GLE manufacturing, and these recent transactions have considerably helped it in further expanding its non-GLE business.

Currently, the GLE business contributes over 60 per cent of its total revenue.

These deals along with its recent diversification efforts will help the company achieve its goal of positioning itself as a fully integrated solution provider (from being just a product supplier) with a one-stop shop concept. GMMP and Pfaudler are a strong fit in terms of products, customers and markets, the cross pollination of which would result in significant gains for the entire group.

Overall, GMMP is witnessing strong business momentum both in India and internationally, with healthy demand trends accruing out of the China+1 strategy. The company is witnessing healthy investments in pharmaceuticals and chemicals which are resulting in strong order intake in India across all verticals of GLE, proprietary products, and the heavy engineering business. Its global business is also witnessing a healthy traction with investments across developed markets of Europe and US. GMMP is also seeing opportunities on the cross-selling front. ■

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## Corrosive Processes Managed With Peace in Mind



**Krunal Kirdavkar**  
Managing Director, Graphite Technology

**I**n 2019, Chemtech dropped the curtain on Feb at Bombay exhibition centre in Mumbai, India. It attracted nearly 70,000 visitors from 119 countries and regions. As one of the largest and most diversified pharmaceutical market worldwide, India, will be a strong drive to achieve business growth in coming years.

Thanks to visitors and organizers for the warm gesture on GT's debut in 29th edition of Chemtech exhibition in India. We had a great time during these four days. Each day brought us closer to our customers. .

We had plenty of interactive sessions with customers, shared case studies of some critical applications like fluorine, chlorine

etc. We tried to understand their problems and provided remarkable solutions as well.

By the end of the exhibition, our visitors were assured that to give a cooler attitude to operate their process, they can trust GT because it is an exceptional company, with improved technologies and more importantly user-friendly.

A well know chemical manufacturing company of India involved in fluorine and chlorine chemistry approached GT with frequent equipment failure issue. We are proud to say that the customer left our stall with complete satisfaction. GT—the graphite experts company, is engaged in offering special customized equipment through continuous innovation in the field of Chemicals & Processing,



Disc type graphite Heat Exchanger

pharmaceutical and metallurgy, Oil & Gas, Refining & Petrochemicals, Engineering Procurement etc.

So in the upcoming 30th edition of Chemtech, in June 2022, visitors will get to witness new patented technologies, innovative and economical synthesis units and warm appreciation from GT.

This year you will witness and improved and dynamic infrastructure, New patented designs for the pharmaceutical industry, Working models and systems and a souvenir for visiting the stall. ■

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# A One-Stop-Shop for Heat Exchange Equipment



HRS range of critical process equipment's for Pharma, Chemical and Healthcare industry



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RS Process Systems Ltd, is part of the UK based HRS group, an established name in the field of innovative heat transfer solution. HRS Group

is globally known for providing energy efficient range of heat exchangers and heat exchanger based systems. We are equipped with a strong network all across domestic and international market like UK,

Spain, USA, India, Australia, New Zealand and Malaysia to fulfil technology needs of process industries.

HRS PSL is ISO 9001:2015 certified company and accredited ASME 'U' stamp in heat exchanger design and manufacturing, with a state-of-the-art facility near Pune, India. HRS PSL offers customized heat transfer solutions

all across industries like chemical, petrochemical, food & beverage, paper & pulp, pharmaceutical, fertilizer, edible oil & fats, bio diesel, oil & gas, steel, power, effluent treatment, automotive and various other process Industries.

Our product range includes ECOFLUX\* corrugated tube heat exchangers, Shell & Tube heat exchangers, HRS FUNKE Plate heat exchangers, Hot water system, UNICUS scraped surface heat exchangers, systems for food processing and evaporation application.

HRS, truly a one-stop-shop for your entire heat exchange requirement ■

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### Contact Details:

**HRS Process Systems Ltd**

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# 360° Total Water & Environment Management Solutions



ISO 9001, 14001 & 45001 certified R&D centre in Patancheru, Telangana

**I**on Exchange (India) Ltd. (IEI) is a pioneer in water treatment with a legacy spanning over five decades. We offer water treatment solutions across the entire water cycle - that is from water treatment and conservation, seawater desalination through production and processes to effluent treatment, recycle/zero discharge and drinking water.

Our first R&D centre was established in 1965, (the oldest in the water segment in India) and has developed a host of products & technologies that have enabled us to retain our leadership in innovation & quality. We have over 100 new products

developed/launched and over 10 patents in the water treatment domain. We also have a rich history and continue to form technical partnerships with the world's leading technology companies. Our R&D and Technology Centres in Patancheru, Telangana and Vashi, Maharashtra provide improvements in current technologies, adapts processes and systems to suit special needs and undertake developmental work with regards to introduction of new resins, membranes, specialty chemicals for process and utility applications, home water solutions as well as equipment.





ISO 9001 & 14001 certified ion exchange resins manufacturing facility in Ankleshwar, Gujarat

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Formed in 1964, IEI, renowned for its world-class Ion Exchange Resins for applications in industries such as pharmaceutical, food & beverage, nuclear, chemical, sugar and many more, pioneered the production of resins in India with the country's first resin manufacturing unit at Ankleshwar, Gujarat which was ISO 9001 certified and was also the first in India with an FDA (India) approval for manufacturing pharmaceutical grade speciality resins. Our industrial chemical plant at Patancheru was also the first facility in the water treatment chemical sector to obtain an ISO 9001 certification. We introduced the Reverse Osmosis (RO) concept into the country and were the first in India to manufacture RO membrane element at Halol Kalol in Gujarat. We also manufacture High-Performance Membranes (HYDRAMEM) which belongs to the latest generation of membrane

technology for industrial, institutional and domestic applications. Our state-of-the-art integrated Reverse Osmosis membrane manufacturing facility was inaugurated at Verna, Goa in 2017.

IEI also designs, engineers and supplies standard and customized water, wastewater treatment, Zero Liquid Discharge and waste to energy systems for industries, municipalities and communities. We have over 1,00,000 installations worldwide including over 1000 in large industries & communities. We undertake developmental projects for drinking water supply schemes and distribution systems, sewage treatment & disposal, seawater intake and desalination and solid waste management including waste to energy projects for the much-needed integration between energy and the environment.

The Zero B tap attachment marked IEI's foray into the home water purification space. From this small unit, the Zero B brand has now evolved into a total home water solutions provider, delivering products at every price point and category: household, urban and rural as well as institutional segments.

Our state-of-the-art manufacturing and assembly facilities are spread across five states in India (Patancheru in Telangana, Verna in Goa, Hosur in Tamil Nadu, Ankleshwar in Gujarat and Rabale & Wada in Maharashtra) and internationally in UAE, Indonesia, Bangladesh and Saudi Arabia. Our facilities are committed to built-in quality achieved by quality assurance systems, advanced manufacturing processes and continuous training in manufacturing practices, safety and quality. Our manufacturing facilities are ISO 9001, 14001 and 45001 certified. ■

#### Contact Details:

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## IPCO - A World-Class Engineering Group



**I**PCO is a high technology engineering group providing customized process equipment solutions to customers across a number of industrial sectors including oil/gas, chemicals, pharmaceuticals, automotive, aerospace, construction and food.

As an independent company owned by FAM AB, part of the Wallenberg Group, IPCO has 600 employees, more than 30 sales and service offices and annual sales in excess of €200 million. The company's network of regional offices enables it to provide local, on-the-ground expertise backed up by a global service organisation with the ability to support customers in any location around the world.

The Indian team – based in Pune, in the western state of Maharashtra – provides local, on-the-ground expertise throughout India and beyond, carrying out installations, preventative maintenance and repair work.

### Rotoform – Market-Leading Pastillation Technology

Rotoform is IPCO's flagship solidification system and more than 2 000 lines have



IPCO Rotoform system

been installed since it was first introduced in the early 1980s.

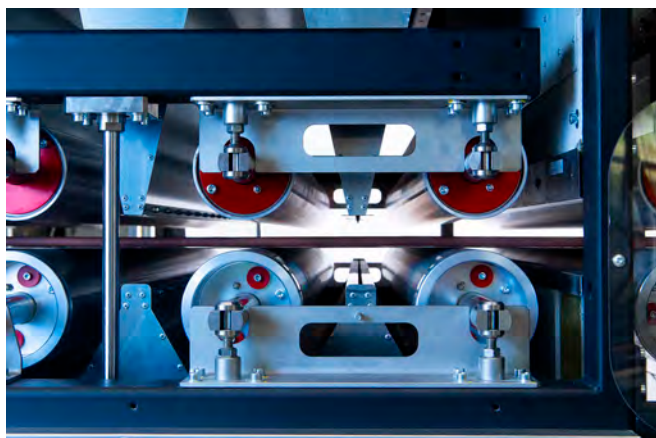
The system combines a Rotoform depositor with a continuously running stainless steel cooling belt to enable the pastillation of chemicals directly from the melt. Solutions are available for products including sulphur, hot melts, resins, waxes, fat chemicals, bitumen, tar pitch and many more.

An entire family of Rotoform systems is available, including process solutions for applications such as abrasive and sedimenting materials (e.g. catalysts and suspensions); melts requiring a high feed temperature (e.g. bitumen, resins); subcooling melts (e.g. antioxidants for the tyre industry); and pharmaceuticals requiring GMP compliance.



The largest market for Rotoform is sulphur processing, and the recent development of the Rotoform HS, a high speed model with a capacity of up to 350 t/d, takes system performance to new levels. For operations with even greater needs, IPCO's SG rotating drum technology can process up to 2000 tonnes a day, the highest capacity solution on the market. IPCO can supply complete end-to-end systems covering everything from receipt of molten sulphur to storage and loading of solid material.

### **Thermopress and Scatterpro for Advanced Composites**



IPCO ThermoPress double belt press system

IPCO is the world's leading manufacturer of double belt presses and scattering systems for the production of advanced composites. Applications exist across industrial sectors such as building and interior design (e.g. roofing, flooring, insulation and technical textiles); transportation and automotive (e.g. pre-pregs, non-wovens and lightweight, high strength components); and recycling.

ThermoPress double belt presses are modular in design, enabling controlled heating, reaction, consolidation & calibration, cooling, and tempering processes to be incorporated into a single production system. The ScatterPro range of scattering systems is the most extensive on the market, with systems for handling powder, granules, fibres, chips, flakes and other flowable bulk materials.

### **Extrusion and Cooling Systems for Powder Coating**

Another area of expertise is the manufacture of integrated powder paint production lines. IPCO's ranges cover everything from feeding and extrusion equipment to cooling, flaking and downstream handling. This includes twin screw extruders from 1 to 2500kg/h capacity and a range of steel belt cooling systems and compact drum coolers.

The company also offers spare parts, maintenance, refurbishment and servicing for all leading brands. ■

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Phone: +91 20 67 68 29 00

## We are Local Worldwide



INDIA



Leister Technologies India Pvt Ltd is a 100% subsidiary of Leister Technologies AG Switzerland, the Global

Leader in Plastic Welding

Machines. All Leister products are made in Switzerland. Our Core Values revolve around, offering World-Class Products, Application Engineering Support, and Prompt After Sales Service. Leister India has its headquarters in Chennai and has branch offices in Ahmedabad, Bangalore, Chennai, Delhi, Mumbai, Kolkata, and Mumbai.

Leister is known for our quality, innovation, technology, service, and reliability in the field of Plastic Welding, Process Heat, and Laser Plastic Welding. Leister ensures quality products and services through self-testing, process monitoring and control with innovative test equipment, as well as with various quality elements in the product design. Every product is tested before delivery. Leister's strong forte includes hot air hand tools, extrusion welders, automatic plastic welders, technical textile welders, heat sources, and blowers.

All over the world, blowers, hot air blowers, ignition blowers and air heaters from Leister are used in countless industrial



production processes. For the last SIX decades, Leister has been the technology and innovative leader in the field of

### Plastic Welding

The Leister brand stands for more than 70 years of worldwide market and Leister quality stands for performance in premium products – around the clock and the globe. Our products are used in roofing, billboards, tarpaulins, civil engineering, tunnelling, landfills, plastic fabrication, flooring, and shrinking to name a few.

## Process Heat

All over the world, blowers, hot air blowers, ignition blowers and air heaters from Leister are used in countless industrial production processes. Typical applications include activating, heating, curing, melting, shrinking, welding, sterilizing, drying and warming to name a few.

## Laser Plastic Welding

Innovative Leister laser plastic welding systems enable new manufacturing methods in automotive engineering, medical technology, sensor technology, electronics and microsystems technology. Each of our developments are considered state of the art. A worldwide exclusive Leister speciality is the patented and award-winning "GLOBO-Welding", in which three-dimensional plastic parts are welded in a single operation. We find tailor-made, economical solutions for all

### Contact Details:

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# Providing Highest Quality Customer Solutions Material



**M**OJJ, a name synonymous with excellence and professionalism for 37 years has over 1000 installations worldwide - from concept to commissioning, from raw material handling to waste treatment, from single-process units to complete integrated turnkey plants. We have comprehensive know-how and in-house infrastructure to custom design plants and equipment to suit specific needs. At our state-of-the-art plants we manufacture and fabricate world-class equipment while ensuring timely delivery.

Today with the team of more than 200 dedicated technical personnel, the group offers wide range of turnkey process plants, systems and equipment in the fields of Biotechnology, Drying, Evaporation, Mixing and Pollution Control.

We believe and recognize the basic fact that each customer has his own specific needs to be catered to, requirements to be met and problems to be solved. We therefore strive in giving our services suited to these specific and peculiar needs of our customer. This calls for understanding these needs and transferring them into an engineering

solution. No aspect of a plant is too minor to be ignored and no process requirement too complex to be met.

Over 1000 customized installations world-wide. Experience on widest range of product applications. Complete range of custom built Spray Drying Plants & other Dryers. Complete range of custom built Bio Ethanol Plants and Zero Discharge Plants. Complete range of custom built Evaporation Systems. Complete range of custom built Incinerator Systems. Complete range of custom built Granulator Systems. Customer base from small manufacturing units to global scale corporations. Long list of satisfied repeat customers. Recognition from Chamber of Commerce for successful commercialization of innovative designs. Dedicated Research & Development facility. ■

## Contact Details:

### **MÖJJ ENGINEERING SYSTEMS LIMITED.**

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# Pioneering an Ideal Hub for Industrial Developments



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**P**IP (Payal Industrial Park) - built, developed and promoted by Arete Group - is one of the India's largest privately integrated industrial park with world-class infrastructure and superlative facilities conducive for setting up manufacturing plants and large-scale industries. The Park, located in Dahej, Gujarat, and approved by the Government of Gujarat, has been developed within the Gujarat

PCPIR (Petroleum, Chemicals and Petrochemicals Investment Region) - as declared by Ministry of Chemicals and Fertilizers, Government of India under PCPIR Policy 2007. Therefore, it is surrounded by fast-growing industrial projects within PCPIR - a pioneering breeding place for myriad industrial developments.

PIP is spread over a vast 3,500 acres of area earmarked for large-scale industrial development, logistics parks



which are situated at the farthest end (Kutchh) of Gujarat are also important for the Park in terms of boosting exim trade and establishing connectivity to Middle-East, Central Asia and Europe. Further, the Park is situated close to the Western Railway Network, and is also at

close vicinity to 3 international airports viz. Surat International Airport, Vadodara Airport and Ahmedabad Airport.

PIP truly stands out amongst other private industrial parks in the country today by focusing on the following aspects:

- Evaluating cost-effective ways of effluent discharge, handling of pollution related queries and assured treatment of effluent with the help of common effluent treatment plant, combined ETP and solid waste management.
- Assuring quality power at a consistent rates vis-à-vis increasing electricity rates through co-generation plant, solar plant and group captive plant.

and utilities. Its master planning is done by engineering & construction giant CH2M Hill, and the Park's facilities are customized to specific water-intensive and polluting industries' requirements, hence making it easy and seamless to kick-start their operations. It is designed as an ideal hub for chemical, agro-chemical, fertilizer, dyes intermediates, pigments, chlor-alkali, inorganic and organic chemical, petrochemicals, specialty chemical, polymer, rubber, metals and metallurgical, and textile industries, among others.

In terms of **connectivity**, PIP has excellent **multimodal connectivity** via ports, air, railway and road. It is accessible via the National Highway-48 along the Delhi-Mumbai Industrial Corridor (DMIC). PIP also has easy access to the nearby Dahej Port, whereas Kandla and Mundra ports



- Building innovative water-based utilities which can reduce the water consumption costs by leveraging rainwater harvesting, central ponds and reservoirs, and treated water for industrial use.
- Providing social Infrastructure suited to client requirements -- affordable housing, visitors' accommodation, community centre, etc.
- Ideal Location: The Park is located in a region that already has an industrial ecosystem in place with numerous industries functional in this area.

Besides offering a plethora of geographical, demographical and infrastructural advantages – particularly due to being situated within the highly-industrialized belt of Gujarat -- PIP also boasts of providing its clients/ partner companies with Single Window Clearance and Environmental Clearance (given by Ministry of Environment, Forest and Climate Change, Government of India), as well as having under its aegis a team of experts from across diverse industries who understand critical infrastructural requirements for success. Notably, the Park is promoted by the Arete Group -- which has over 3 decades of experience in this field has

9 industrial park in Dahej-Vadodara region build and operate privately-owned industrial parks in Gujarat.

With word-class infrastructural facilities such as consistent and quality availability of power treated water, CETP (common effluent treatment plant), sea discharge facility and shovel-ready land (plots) for construction, PIP envisions to be "Asia's ultimate destination to set up industry", while also fulfilling the vision of Gujarat's ongoing 'mega industrial revolution' and bolstering and contributing towards the 'Make in India' initiative. And to that end, it customizes the facilities to suit requirements of clients from different industrial backgrounds, helps them with regulatory approvals, and even provides them end-to-end assistance to set up and grow within the industrial ecosystem. ■

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Website: areteservices.in

## "Global Solutions - Local Presence"



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Phoenix Contact (India) Pvt. Ltd., founded in 1992 as a joint venture, is one of the sales subsidiaries and production locations in the Phoenix

Contact Group. Customer proximity and satisfaction is the most important principle for 500+ employees working all over the country. The company is constantly introducing innovative products into the market, setting trends in Industrial Automation, Machine Building, Energy, Railways, Building Automation, Telecom and Process industries with our 100000 + articles.

From the beginning it was our endeavor to produce locally, thus during past

30 years we have created state of art manufacturing base, strongly supporting Made in India philosophy. We have this production facility at Prithla near Delhi. Our production unit spread is in 12000 sq. mtr. approx. It is a hub for production and logistics which coupled with Special Purpose Machines, bring new innovations in the market with enhanced efficiency.

From this production location we are manufacturing terminal block, Surge protection devices, cabling solution & connectors & a big part of this manufacturing we are exporting to Germany

“Technology Center” a state of art development facility right in New Delhi has been set up, with an aim to support the innovation and development at Phoenix Contact Group. The center is providing the technical services to development process worldwide within the Phoenix Contact Group.

Our expertise includes Product Development, Product Testing and Product Certification. A formal recognition of competence of our laboratory by National Accreditation Board for Testing and Calibration Laboratories (NABL) according to ISO/IEC 17025:2005.

Phoenix Contact India has been fulfilling its commitment of “Global Solutions – Local Presence” for the customers with its increasing number of regional offices in important cities including Mumbai, Pune, Bengaluru, Ahmedabad, Kolkata and Chennai. An experienced team of product specialist and regional engineers are working closely together to offer timely support to our customers in major cities of the country along with a dedicated network of more than 250 channel partners approx.

As part of the global Phoenix Contact production network, Phoenix Contact India is committed to provide the Phoenix Contact quality standard for all products made in India. With advanced equipment, sophisticated workmanship, comprehensive testing method and strict

quality control in all processes, we provide our customers with most reliable products. As part of our corporate philosophy and culture a constant process of staff qualification, education and training ensures that all production units are well trained and motivated which perfectly supports the growth strategy of Phoenix Contact for the Indian market.

Phoenix Contact is the specialist from electrical connection systems to electronic automation technology. At Phoenix Contact, you get first class components and service from a single source for everything to do with your application.

Tailored to different markets and their needs, at the heart of the company lies an extensive product portfolio: Device and PCB connection technology, Enclosures, Industrial components for electrical engineering and electronics, as well as industry-specific automation solutions for various industry like Water, Wastewater, Energy Generation, Transmission & distribution, Machine Building, Telecom, Process & many others. ■

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## Delivering Exceptional Manufacturing Solutions

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Power Handling and Filling System



Bag Filling Station Big

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**P**

rochem is a fast-emerging business offering Powder Handling solutions for various industries vertical around the globe. ProChem has been

one-point solution for powder handling by supplying unloading, conveying, mixing and packaging projects / products for the processing of bulk materials. The optimal combination of innovation, operational safety and service means additional value and success for our customers!

We work on understanding your challenge first and then offer the most optimal solution for it with our machines/applications. At Prochem, we

are absolutely committed to delivering Exceptional Manufacturing Solutions and hence have witnessed consistent growth & achieved a long-term success with our customers across the globe.

We offer to customize powder handling solutions by supplying unloading, conveying, mixing, milling, and packing the powder product. Referring to Chemical and Pharma Industry processes like Reactor Charging under an inert atmosphere, Wet cake handling, Post drying process, and Packaging in closed-loop solutions are a few of the applications that we have implemented successfully.

Our product range includes - Bag dumping station, Big Bag Unloading Station, Powder Transfer System, (PTS), Screw conveyor, Drag tube conveyor, Lean Phase Conveying, Dense Phase Conveying, Conical blender, Pneumatic blender, Ribbon blender, Cone mill, Delumper, Small Bag filling machine, Big Bag Filling Machine, Silo, Bins and other Accessories such as a Dust collector, Rotary airlock valve, Vibro-Sifter, Bin activators, Pneumatic Fluidizer.

The growing concerns about the safety in the industry midst of today's crisis are bound to push for better Powder handling & Packaging solutions in the chemical processing industry. We, at Prochem takes immense pleasure to invite you to visit our stall Hall 1, A-8 at ChemTECH World Expo 2022, Mumbai where we will showcase our best innovative technology & machinery. ■

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# Large Diameter Seamless PTFE Lined Pipes & Columns up To 1250 NB with Reliable Performance. Biggest in Asia



**Prashant Patil**  
Director, Resistotech Industries Pvt. Ltd.

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**R**esistotech Industries private limited has gained high popularity and support from many Indian specialty Chemicals, Agrochemicals & Pharma API manufacturers due to differentiated product range & value-added technical solutions to critical problems in Corrosive & Acidic chemical handling under full and Partial Vacuum applications in compliance to international quality standards ASTM F 1545-15.

Our key product range include:

- **PTFE / PP/ HDPE / PVDF Lined piping systems – 25 NB to 900 NB**
- **Anti-static PTFE Lined Pipes & fittings – 25 NB to 400 NB**
- **Seamless PTFE lined columns, vessels – up to 1250 NB**

- **Basket filters, strainers, sight glass etc.- up to 900 NB**
- **Different types of PFA lined Valves etc. – 20 NB to 600 NB.**
- **Molded PTFE Bellows/ Expansion joints up to 1250 NB size.**

We have state-of-the-art manufacturing facility (1,50,000 Sq. Ft) in Nashik, India with high reliability for Indian as well as international market through many reputed EPC contractors and engineering consultants.

Currently we are preferred choice & supplying to many Indian Chemical, specialty chemical, Fluorochemicals, Pharma, Petrochemical & Agrochemical companies as well as export to more than 25 countries from India.





Large diameter Seamless PTFE Lining (without any sheet weld joints) in Column/ Pipes/Tanks. Diameter - 900NB x 11-meter length.

We developed many success stories with specialized product offerings which many other suppliers from India finding challenging and not able to offer. Our specialized product offerings have made us one of the fastest growing companies in our peer group with CAGR of > 40 %.

Lining Materials: - PTFE / PFA / PVDF / PP / HDPE/ ETFE.

Sizes available: - 25 NB to 1250 NB, PTFE seamless lining without any weld joint. (1500 NB size under development)

The top management of ResistoTech is having > 21 years of experience in fluoropolymers (PTFE/ PFA/ PVDF/ ETFE/ ECTFE etc.) lining industry. Our close interactions with end customers & engineering consultants have helped us to discover challenges associated with PTFE Lined Pipelines & equipment's and developed new products to reduce initial capital investment & long-term maintenance cost. Our products are installed and working absolutely satisfactory at many leading specialty chemical & Pharma API manufacturers in India and abroad.

Resistotech accepted toughest challenge in Chemical processing industry and after 18 months of continuous trials and development efforts successfully developed India's largest diameter seamless extruded PTFE liner 900 mm size followed by 1250 mm Diameter.

Especially for Chemical industry Resistotech developed 6-meter-long PTFE Lined pipe up to 24-inch Diameter which is 1st time ever developed in ASIA. Earlier days maximum length was 3 meters only which leads to more joints and higher cost of additional flanges. With new development, flange joints came down by 33-50 % and Cost of piping goes down 10-15 % depending upon size which offered direct saving to chemical industry end users. We do manufacture seamless PTFE lined columns, tanks and vessels as complete package in seamless PTFE paste extruded lining as per ASTM D 4895 which performs longer life than many joints welded sheet lining technology.

Developing larger sized seamless PTFE liner manufacturing for > 400 NB to 1250 NB (16 inch to 50 inch) for heavy process equipment's like columns, Vessels, scrubbers etc. is proud moment for India to become import independent & develop substitutes with Fluoropolymers lined equipment's at reasonable cost and performance. ■

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**“Our cutting-edge expertise is based on an integrated production platform, industry leading metallurgy and R&D.”**



**Vikram Pandit**

Technical Marketing Manager,  
Sandvik Materials Technology

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**S**andvik Materials Technology is a business area within the Sandvik Group and a world-leading manufacturer of high value-added products in advanced stainless steels and special alloys as well as products for industrial heating.

Our cutting-edge expertise is based on an integrated production platform, industry-leading metallurgy and R&D. With a long tradition in innovation backed by significant R&D investments, its R&D centers have market-leading track records

in the successful commercialization of new products and materials.

Sustainability is ingrained in many of our offerings and operations, contributing to reducing environmental impact and creating a solid base for conducting profitable and responsible business. From zero-emission hydrogen-powered cars on the road to more energy efficient umbilical tubing at the bottom of the ocean, the high-performance materials used by Sandvik Materials Technology enable energy efficiency around the world.



Sanicro® 35 (Alloy 35Mo)

Through a combination of world-leading research in metallurgy and extensive application knowledge, Sandvik Materials Technology continues to push the boundaries of what's possible for productivity, energy efficiency, and safe operation.

As part of its commitment to addressing customer needs, we systematically collect data about new and growing challenges facing them and share its materials expertise through its technical center. The center provides free access to material datasheets, corrosion tables, webinars, tools and calculators, podcasts, and more.

Since Sandvik was established more than 160 years ago, its global operations have

leveraged product innovation, technology leadership, and sustainable operations to set the industry standard in the 160 countries in which the group operates. In 2021, our sales were approximately 13.4 billion SEK with about 5,500 employees. ■

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## India's premium manufacturer offering a broad variety of Thermoplastic Piping, Sheet & Roto Molded Solutions



**S**angir is India's premium manufacturer offering a broad variety of Thermoplastic Piping, Sheet & Roto Molded Solutions in HDPE, PP/PPH, Corzan CPVC, Kynar PVDF and PVC for applications across all industries for nuclear, thermal, process, chemicals and fertilizers, water, gas, fuel, slurry and air, transfer, storage and containment.

In existence since 1982, Sangir, an ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 certified company, now exports products to over 35 countries worldwide and enjoys loyalty of over 1500 customers.

Chemicals Industries Served are Agrochemicals, Pesticides & Insecticides Industries, Bromine, solvents and Catalysts manufacturing Industries, Acid Manufacturing Industries (Sulfuric, HCL, Nitric, Phosphoric and etc.), Chlor-alkali, Caustic, Chlorine and Hypochlorite Industries, Fine-chemicals, Specialty chemicals Industries, Bulk Drug, API and Pharmaceuticals Industries, Fertilizers and phosphoric Acid Plants, Petrochemicals & Polymers Industries, Dyes, intermediates

and color industries, Surfactant Industries, Desalination, Brine and VCM Plants, Minerals & Metals Processing Industries, Semi-Conductors and Solar PV Silicon Wafers Processing Industries, Battery Industries.

### Applications Served in Chemicals & Process Industries:

**Sangir PPH Piping systems**, which are extensively used for sulphuric acid, phosphoric acid, hydrochloric acids service, covering a broad range of application areas for diverse acids, alkali and other corrosive chemicals

**Sangir KYNAR PVDF Piping systems** – Which are extensively used for Bromine, Solvents, agrochemicals, pesticides and insecticides process applications. High-purity applications such as in Pharma, Drug and food-stuff industries. Suitable for containment and transfer of formic acid, chromic acid and concentrated sulphuric acid.

**HDPE Pipes & fittings** – for all sizes up to 1200mm in diameter for water, effluents, fire-water mains, cooling water pipelines,



cooling tower pipelines, wet-utilities, desalination, sea-water intake & outfall and raw water pipelines.

### **Corzan CPVC Pipes & Fittings –**

Superior grade industrial CPVC Piping Systems, conforming to global standards, extensively used for DM Water Plants, Concentrated Acids, Chlor-alkali, and other applications.

### **Major Piping Products Manufactured:**

- HDPE Piping systems (up to 1200mm Diameter)
- CORZAN HP Piping Systems – Produced under manufacturing license from Lubrizol USA
- KYNAR PVDF Piping Systems – Manufactured under authorization from KYNAR – ARKEMA Inc
- PPH Piping Systems – Superior Grade polypropylene, having higher mechanical strength and better chemical properties (Pipes, Fittings,

Valves and other piping material are readily available for each of the above mentioned MOCs)

Product Characteristics for Industrial Piping Products are UV Stabilized, Thermally Stabilized (No Change in properties within working temperature range), Fire-Retardant (Does not propagate fire), Harder inner surface

with permanent higher smoothness (smoothness does not change throughout operational life of plant) and Made from Pre-compounded raw material supplied by licensor / International Raw Material Supplier.

Sangir also provides various customized Fittings, Manifolds, Mixing-Tees, Spool-Pipes, Liner Pipes and Valves are also in our range of manufacturing and supply. Products are widely used in diverse applications handling a range of fluids & gases at temperatures between  $-40^{\circ}\text{C}$  to  $140^{\circ}\text{C}$ . ■

### **Contact Details:**

**Himanshu Mistry,**

Head – BD and Mktg.

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## SRICO: Product, Application and Reliable Sales & Service Partner



**S** RICO is a professionally managed Laboratory Equipment Company established to deliver the best solutions available from internationally reputed manufacturers in the field of Research and Development and Quality Control for industries and educational institutions.

SRICO is committed to provide the best customer support across India in the areas of Product & Application, Consultation, System Integration, Installation, Maintenance, Technical Services, IQ/OQ Documentation.

SRICO's primary focus is to address the Laboratory Equipment-related needs of Companies, Institutions and Universities (from both Government and Private Sectors) which are active in the fields of Pharmaceuticals, Chemical, Petrochemical, Biotechnology & Life Sciences, Agricultural & Veterinary Sciences & Food and Environmental Sciences.

SRICO's product range includes Analytical Instruments, General Laboratory equipment and consumables. The

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products represented by us are supplied/ supported across India through our own branch offices and residential representatives spread across India.

SRICO's team of Product & Application specialists and Technical Support Engineers will co-ordinate through our



colleagues across India to provide you the best technical support.

SRICO's team along with its partners and Principal Companies will work as ONE TEAM to provide the most effective and efficient support to end-users and offer the best timely solutions in Product, Application, and Technical Service support at an optimal price intended to benefit our customers.

Our mission is to deliver total customer satisfaction. In order to achieve this objective, we are always at your disposal and ready to serve you whenever you need us.

### **Service & Support**

**SRICO is committed to deliver the best Customer support across India through SRICO Service Centre:**

Product Selection, Application support, Consultancy & Technical Support:

With our experienced technical experts, we support our customers in choosing the right product & accessories, solutions based on application. Our team provides Technical Consultancy and support to Customer for an optimized solution.

### **After Sales Service and Technical Support**

Consignment verification, Installation/ Commissioning, Product Demonstration, Training, General maintenance, and safety

precautions are explained, documented, and given to customer during the implementation of the project.

### **Preventive Maintenance, AMC, & IQ/OQ Documentation and Implementation:**

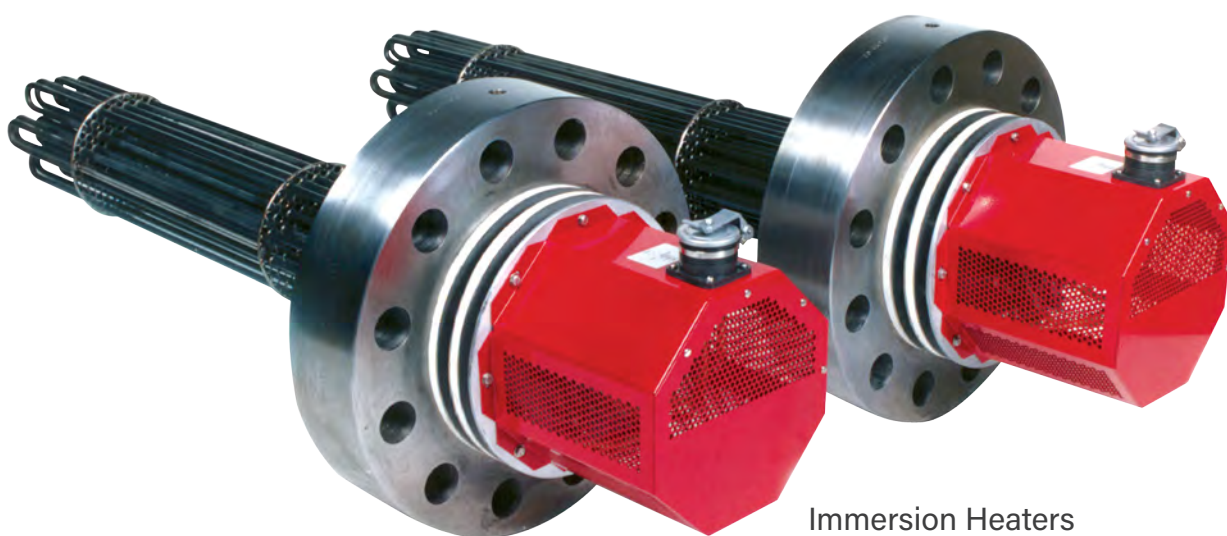
The product represented by SRICO is of high quality and reliability. We understand that our customers especially from production processes rely on us to provide durable product performance 24x7. SRICO offers fully customisable and standard Preventive Maintenance packages that helps to ensure your instruments are looked after maintained so that they will live up to your expectations.

We provide IQ/OQ documentation and implementation services to our Pharma Industries. We have complete infrastructure and necessary tools and equipment which are calibrated by Accredited laboratory to implement 100% to fulfill any international standards. ■

### **Contact Details:**

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info@srico-labworld.com  
www.srico-labworld.com

## Advanced Solutions for Industrial Heating Applications



Immersion Heaters

98

**T**hermon serves the global Energy, Power Generation and Chemical markets to provide innovative solutions for industrial heating applications by deeply understanding our customers' needs. We specialize in providing complete flow assurance, process heating, temperature maintenance, freeze protection and environmental monitoring solutions.

We are committed to doing business responsibly. Engaging our stakeholders and communities is critical to the sustainability of our business, our people and our communities. Corporate responsibility engages our people, helps

create efficiencies in our processes and serves as a catalyst for growth.

We strive to operate safely, protect our workers and deal ethically with our stockholders, partners and the public. As a manufacturer, we strive to operate our business as efficiently as possible and minimize waste. Our goal is to reduce the environmental impact of our operations and help our customers and suppliers to do the same.

### Immersion Heaters

We, Thermon, are well known for Heat Tracing System. In 2017 Thermon completed strategic acquisition of M/s. CCI Thermal Technologies INC, Canada.

## Brand Offering



**Caloritech™**  
Engineered Electric Heat



**3L Filters™**  
Engineered Filtration Systems



**Cata-Dyne™**  
Explosion-Proof Gas Catalytic Heaters



**Ruffneck™**  
Heaters for the Harshesht Environments



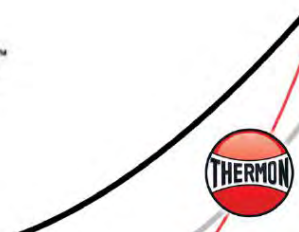
**DriQuik™**  
Infrared Oven Components



**Norseman™**  
Electric Explosion-Proof Heaters



**Fastrax™**  
Track and Switch Heaters



CCI Thermal Technologies Inc. now known as TCI (Thermon Canada Inc.) is a world leader in the development and production of advanced heating and filtration solutions for industrial and hazardous area applications. The diversity of our seven brands - Cata-Dyne, Ruffneck, Caloritech, Fastrax, 3L Filters, Norseman and DriQuik - represents the broadest based industry expertise, and the range of technologies enables their application in virtually any environment.

We are Honeywell UOP approved sub-vendor of Electrical Heaters for industrial

& hazardous area application. We have supplied our electrical heaters globally across all segments i.e. Refinery, Oil & Gas, Petrochemical, Chemical etc. These electric heaters are used in various units like CCR platforming, Isomerization, polypropylene, Ethylene Cracker, Para Xylene - PTA etc. named as few. ■

### Contact Details:

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<https://www.thermon.com>, [india.queries@thermon.com](mailto:india.queries@thermon.com)  
Contact: Mr. Prashant Badgujar / Mr. Yogesh Deshpande  
+91 99006 74407, +91 99000 64115



# Delivering Unmatched Design & Fabrication Capabilities



**I**sgec TITAN Metal Fabricators Pvt. Ltd. is a joint venture between Isgec Heavy Engineering Ltd., India & TITAN Metal Fabricators,

USA. It caters to the global demands of the largest chemical, petrochemical and pharmaceutical companies with top-tier; custom fabricated corrosion-resistant process equipment.

Isgec Heavy Engineering Ltd. is a diversified heavy engineering company engaged in manufacturing and project businesses with an extensive global presence. In operation for the past 89 years, Isgec provides state-of-the-art, sustainable engineering solutions to customers around the world. Isgec manufactures Process Equipment, Presses, Iron & Steel Castings, and Boiler Pressure Parts. The company also undertakes turnkey projects for setting up Sugar Plants, Boilers, Power Plants, Distilleries, Factories, Industrial Water Treatment Facilities, and Bulk Material Handling Facilities. It has also developed strengths in Construction.

TITAN Metal Fabricators Inc., brings a legacy of leadership in the fabrication and design of corrosion-resistant process

equipment using reactive metals and high nickel alloys. TITAN focuses specifically on the complex needs of the chemical, petrochemical, pharmaceutical, mining and steel industries.

Combining the strengths and resources of Isgec Heavy Engineering Ltd., and TITAN Metal Fabricators, Inc., the JV delivers unmatched design and fabrication capabilities.

The company's fabrication facility is located in Yamunanagar, Haryana, India. Staffing and support are provided by experienced personnel from both India and the USA in all departments, including project management, engineering, manufacturing and quality assurance. The expertise along with its knowledge of the global metals market allows Isgec TITAN to offer cost-competitive products anywhere in the world.

## PRODUCTS

- Shell & Tube Heat Exchangers
- Pressure Vessels
- Reactors
- Columns /towers
- Condensers
- Falling Film Evaporators

- Pipe Spools & Piping System
- Storage Tanks
- Spargers, Dip Pipes & Vessel Internals
- Immersion Coils

## METALLURGY

- Titanium
- Tantalum
- Zirconium
- Niobium
- Hastelloy
- Inconel
- Monel
- High Nickel Alloys
- Duplex Stainless Steel
- Lean Duplex Stainless Steel

## INDUSTRIES SERVED

- Chemicals:
  - o Fluro-chemical / Agro-chemicals / Fine-Chemicals
  - o Nitric Acid / Sulphuric acid / Hydrochloric acid
- Petrochemicals
- Fertilizers
- Refineries
- Acid Concentration / Spent Acid
- Plants
- Bromine Plants
- Steel Plants
- Pharmaceuticals
- Power ■

## ACCREDITATIONS

- ASME U-Stamp & R-Stamp Certification
- ISO 9001:2015



Zirconium



High Nickel Alloys



Titanium



Hastelloy



Niobium



Tantalum

## Contact Details:

Radaur Road, Yamunanagar- 135001 (Haryana) India  
Tel: +919871300875, [www.isgectitan.com](http://www.isgectitan.com)

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to  
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