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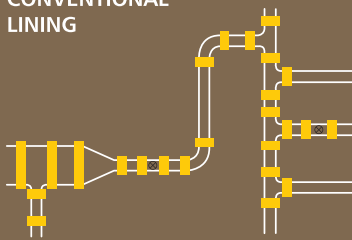
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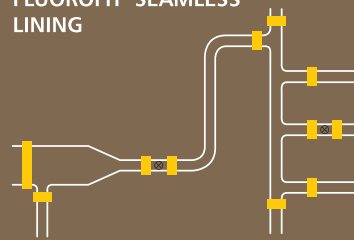
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FACTS & FIGURES - CHEMTECH WORLD EXPO 2019

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Director, Mist Resonance Engg Pvt Ltd

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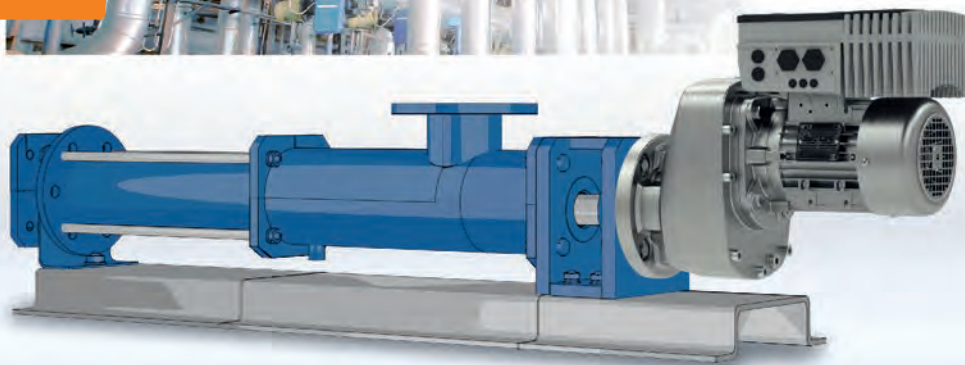
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for
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Typical case study data of a 1200 TR Chiller

Sr. No.	Parameter	Cooling Tower (Induced Draft)	LTMCS
1	Wet Bulb Temperature	29°C	29°C
2	Chilled Water Temp in °C (Assumed)	5°C	5°C
3	Supply Temp. from CT / LTMCS	33°C	30°C
4	Approach to WBT	4°C	1°C
5	ΔT for Chiller	28°C	25°C
6	Chilled Water Compressor Motor Kw for 1200 TR	720	643
7	Energy Saved in %	-	10.7%
8	Energy Saved in Kw	-	77 Kw/Hr
9	Total Running Hours per Annum	8640	8640
10	TOTAL POWER SAVED PER ANNUM	-	6,65,280 Kw



Mist Resonance Engineering Pvt. Ltd.

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Honeywell names Hitesh Mehta Country General Manager of Advanced Materials



Hitesh Mehta, Country General Manager
Honeywell Advanced Materials India

12 Bengaluru, India: Honeywell announced that it has appointed Hitesh Mehta as country general manager of Honeywell Advanced Materials India.

Honeywell Advanced Materials is a strategic business unit of Honeywell's Performance Materials and Technologies division. Globally, the business manufactures a wide variety of high-performance products, including environmentally preferable refrigerants, fine chemicals and analytical reagents designed to improve productivity, and materials used to manufacture end products such as bullet-resistant armor, computer chips, and pharmaceutical packaging.

Hitesh brings with him extensive experience in the specialty chemicals and coatings industry. Prior to Honeywell, Hitesh held leadership roles at Atotech India, Akzo Nobel, and 3M India.

He has more than 20 years' experience in leading businesses in B2B markets and setting up greenfield projects. An enterprising and customer-focused leader, Hitesh has a proven record of shaping growth across businesses based on his deep understanding of current and emerging market trends.

Aragen Announce Multi-Year Partnership With FMC Corporation



Manni Kantipudi, CEO, Aragen

Hyderabad, India: Aragen Life Sciences (formerly, GVK BIO), a leading Contract Research and Development Organization (CRDO), head quartered out of Hyderabad, India, announced a strategic partnership with FMC Corporation, a global leader in innovative agricultural science, that provides solutions towards crop protection, plant health, and professional pest and turf management. Through this collaboration, Aragen will support FMC's global discovery and development needs, including discovery chemistry, discovery biology, and chemical

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Contact: +91 22 24965031-36 | Fax: +91 22 24961073

Email: vp@horizonpolymers.com



DelVal Flow Controls is pleased to offer a variety of “workhorse” butterfly and ball valves for applications prevalent in the industry. Thousands of valves supplied over the last 15 years are alkaline, solvents, petrochemicals, corrosive chemicals all over the world. A wide variety of de

DelVal Series 50/52 Resilient Seated Butterfly Valves

provide the most economical solutions for highly corrosive and abrasive applications.

1) Disc

High strength disc with hand polished edges and smooth surface and polished to prevent accumulation of corrosive slurry and pitting corrosion. Various material options and coatings available to handle variety of applications.

2) Stem

One piece stem with close tolerance double D drive eliminates the need for disc screws or taper pins.

3) Seat

Unique heavy duty “Center- Lok®” seat design available in different elastomers, fits tightly in precision square grooves in the body.



DelVal Series 42/43 High Performance Valves

provides the most dependable applications such as acids. The lined trims in exotic materials like Hastello

1) Disc & Stem

One-piece disc + stem with minimum 3 mm thick PTFE or PFA encapsulation provides the best corrosion resistance against acids.

2) Stem Sealing

Live loaded stem sealing arrangement located on upper and lower stems provides a highly dependable and uniformly tight stem seal against all corrosive fluids.

3) Seat

Precision machined PTFE/PFA seat 3 mm thick and wide sealing face, with a resilient energizer back-up liner provides bubble tight shut-off under all operating conditions.

DelVal Series 44/45 Double Eccentric High Performance Butterfly Valves

provide the best high pressure and high temperature zero leakage, bi-directional fluid sealing solutions.

1) Disc & Stem

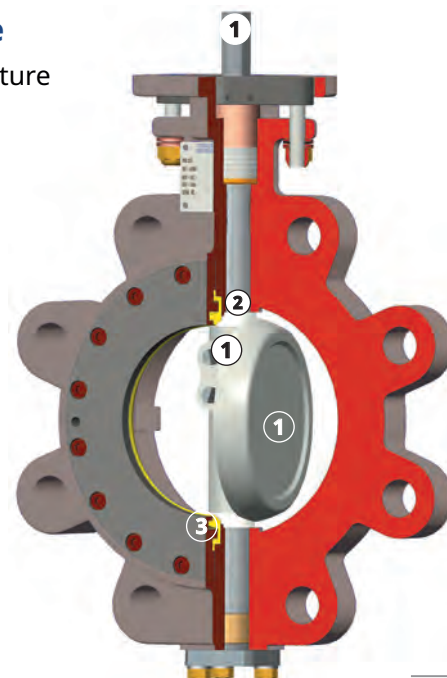
High strength stainless steel disc and stem are assembled by two uniquely designed wedge pins to provide a positive mechanical attachment. Stem seal assembly is live loaded with Belleville springs to ensure constant tight sealing of stem packing emissions.

2) Bearings

The drive and non-drive end stem “Bear-X” bearings provide excellent thermal, chemical and wear resistance .

3) Seat

The unique seat design utilizes a flexible lip seal concept. Provides a constant seating contact for high performance sealing.



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6068 Highway 73
Geismar, Louisiana 70734 | USA
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sales@delvalflow.com

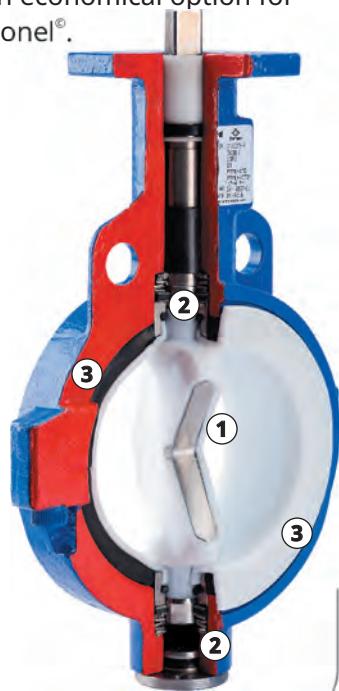
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Post-Javale, Tal. Khandala
Dist. Satara Pin-412801 | India
salesindia@delvalflow.com

for the chemical process industry. DelVal valves are designed and manufactured to handle all challenging working hard in applications like drinking water, cooling water, effluent treatment, slurry handling, acidic, designs for different body types, materials of constructions, pressure ratings, temperature ratings are available.

Performance Lined Butterfly

able and long lasting solution for trim is an economical option for y[®] or Inconel[®].



DelVal Series 4 Triple Offset Valves provide the ultimate sealing solutions for combination of high pressure and very high temperature. They are designed for bi-directional, zero leakage sealing for extended periods.

1) Disc & Stem

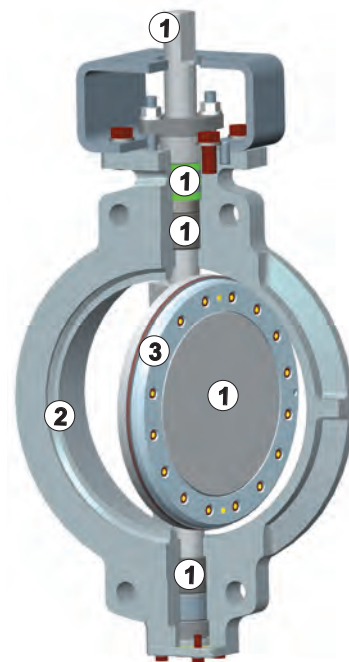
Robust disc + stem assembly designed for minimum pressure drop. Live loaded gland assembly of multiple graphite rings for seal fugitive emissions tightly.

2) Seat

Seat is integral on body and is hard faced with Stellite or suitable alloy. Seat is precision machined to ensure perfect match with the seal ring. Provides bubble tight seal in both directions.

3) Seal Ring

Conical, laminated SS + graphite seal ring is located on the disc. It is precision machined for bi-directional, bubble tight sealing at high pressures and temperatures. Seal ring is replaceable.



DelVal Series 65 - 72 Full Bore Ball Valves highly dependable zero leakage sealing and full CV flow with low operating torques. Unique features built in the products differentiate the valve from other similar products available.

1) Ball

Precision machined spherical ball with superior finish, positively engaged with heavy duty stem and located between specially designed and contoured seats provides dependable, zero leakage seal.

2) Adjustable Packing Gland for Stem sealing

Packing gland bolts are easily accessible to adjust packing with the actuator in place. Online tightening of gland assembly can be done.

3) Stem Sealing

Stem packing in graphite is live loaded with the gland assembly to ensure positive and trouble free sealing. O-ring provides sealing against fugitive emissions.

4) Body Seal

Body joint sealing is by a graphite / reinforced graphite gasket to withstand high temperatures and is contained in a precision-machined groove for extended sealing life.



All products are designed, manufactured, and tested by employing modern manufacturing practices under a robust and certified quality management system. For more details of our company and products, please visit www.delvalflow.com. Please email to salesindia@delvalflow.com and our application experts will help you find the right solution to your flow control requirement.

process development.

This partnership is focused on accelerating FMC Corporation's agro-chemical pipeline. "It has been our privilege to have been able to assist FMC, one of the global leaders in crop science, accelerate its R&D, through this long term partnership. The expansion of this collaboration through all facets of discovery and development is a testimony to the trust and confidence that FMC has in Aragen- we look forward to driving several more success stories for our partner", said Manni Kantipudi, CEO of Aragen.

Kathleen Shelton, Chief Technology Officer Research and Development at FMC Corporation, on talking about the partnership agreement said, "Aragen has been a valued collaborator of FMC for several years," said Dr. Kathleen Shelton, Vice President and Chief Technology Officer at FMC. "This partnership extends across multiple disciplines in research and development and we appreciate our strong working relationship."

Anupam Rasayan Reports Robust FY21 Results

- Revenue at ₹8,373 Mn in FY21 as compared to ₹5,398 Mn in FY20 – growth of 55% Y-o-Y.
- EBITDA (incl. other revenue) at ₹2,202 Mn in FY21 as compared to ₹1,456 Mn in FY20 – growth of 51% Y-o-Y.
- Profit After Tax at ₹703 Mn in FY21 as compared to ₹532 Mn in FY20 – growth of 32% Y-o-Y.
- Earnings Per Share (Diluted) was ₹8.56

in FY21 as compared to ₹6.97 in FY20 – growth of 23% Y-o-Y.

- Net Debt has reduced significantly from ₹7,917 Mn in FY20 to ₹912 Mn in FY21.
- Cash and Cash equivalent stood at ₹2,957 Mn in FY21.
- Company announced dividend of ₹0.50 per share i.e 5% of Face Value in FY21.
- Financial Highlights for Quarter Ended March 31st, 2021
- Revenues at ₹2,742 Mn in Q4FY21 as compared to ₹1,653 Mn in Q4FY20 – growth of 66% Y-o-Y.
- EBITDA (incl. other revenue) at ₹655 Mn in Q4FY21 as compared to ₹409 Mn in Q4FY20 – growth of 60% Y-o-Y.
- Profit After Tax at ₹222 Mn in Q4FY21 as compared to ₹104 Mn in Q4FY20 – growth of 113% Y-o-Y.

Anand Desai, Managing Director of Anupam Rasayan, commented, "We built on the momentum that we had in FY 20 across all our markets and product segments in FY 21. This fiscal was a unique one in the history of the Company as we went public with strong support from our esteemed shareholders. This apart, our focus on working with marquee clients continued with our association with Adama and we ended the year with 64 clients. The overall visibility across markets and products translated to a 55% increase in revenue while our EBITDA also increase by almost 51% to close at ₹ 2,202 Mn. The outlook for the Company looks strong and we are confident on building on this growth trajectory as we move forward."

Ball Valve Components

Ball Valve Stem Pin

Type 1Pc, 2Pc, 3Pc
Screwed End
Forged Steel,
Extended,
Flush Bottom etc.

Size 15mm to 300 mm

Material SS 304
SS 316



Ball & Metal Seat Ring

Type 2 way, L Port, T Port,
FB, RB etc.

Size 15MM To 100MM

Material SS 304
SS 316
(From Bar Stock)

Metal Seat As per requirement



Nuts M12 To Above
Material SS304
SS316

Actuator Couplers
As Per Requirement



ABB & Axpo Partner on Project Aimed at Making Green Hydrogen More Accessible and Affordable



Peter Terwiesch, President, Process Automation business, ABB

Zürich, Switzerland: ABB has joined forces with Swiss utility Axpo to develop modular green hydrogen production plants in Italy, that aim at creating an optimum operating model to produce affordable, green hydrogen.

The two companies will apply their complementary skills to achieve their joint vision of more affordable green hydrogen, with ABB harnessing its automation, electrification, and digital leadership in industrial operations and Axpo's experience as an established energy provider.

Initial work will include feasibility studies that explore ways to reduce operating costs and ensure a low carbon footprint, with the aim of identifying synergies that will support the standardization, modularization, efficient and flexible production of green hydrogen.

Cost of production currently is a major barrier to adoption of green hydrogen. Green hydrogen, which is produced solely with renewable sources, is approximately six times more expensive than grey hydrogen to produce and between two to three times more expensive than hybrid "blue" hydrogen, both of which are produced using fossil fuels as an energy source*.

Peter Terwiesch, President of ABB's Process Automation Business area said: "As technology partner we focus on the areas where we can make the greatest difference. In this project, our aim is to leverage our automation, electrical and digital technologies and domain expertise to minimize the total cost of producing green hydrogen, which includes reducing the cost of running the plant. This is essential to unlock the potential of green hydrogen and enable its widespread uptake in the future."

Axpo Italia's Head of Origination & Business Development, Simone Rodolfi, commented: "We are fully committed to exploring the potential of green hydrogen as part of our strategy to facilitate the energy transition. There has been much collaboration between Axpo and ABB in recent years and agreement reinforces that relationship, enabling both companies to become important players in this promising segment."

This project reflects a wider initiative from ABB which is joining forces with customers and partners to explore opportunities and technologies, to build a resilient hydrogen ecosystem for a low carbon future. In addition to the collaboration with Axpo, ABB is working with Lhyfe, to install control solutions

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to automate production of its first green hydrogen project in France.

In the Asia-Pacific region, ABB is supporting the Hydrogen Energy Supply Chain (HESC) project which aims to produce hydrogen safely and efficiently in Australia and then transport it to Japan, in one of the world's first efforts to commercialize hydrogen liquefaction and transportation.

The company is also working with Hydrogen Optimized to develop an integrated solution that supports the use of high current water electrolysis technology in large scale green hydrogen production systems for application across chemical, utility and transportation sectors.

ABB and Axpo have a long tradition of working together successfully and solutions from ABB are playing an important role in helping the company create and deliver energy in an efficient, safe and sustainable way. Among the latest projects is the installation of ABB Ability™ Smart Sensors and ABB Ability™ Condition Monitoring that have converted the motors at one of Axpo's hydropower plants in Switzerland into smart, wirelessly monitored devices. In addition, the ABB Ability™ Condition Monitoring solution was chosen by Axpo to support the digitalization of the company's power plants in Italy.

Galaxy Surfactants Ltd Reports 31% Profit Increase For FY 2020-21

Total volume grew by 5.3% for FY21, on YoY basis, Total Revenue (including other income) stood at Rs. 2,794.9 Cr, a YoY growth of 7.4%,

EBITDA stood at Rs. 459.7 Cr, YoY growth of 22.6% , PAT stood at Rs. 302.1 Cr, YoY growth of 31.1% , The Board of Directors has declared a final dividend of Rs. 4 per Equity share of Face Value of Rs. 10 for the financial year 2021. This is in addition to the interim dividend of Rs. 14 Per Equity share recommended in February 2021.

Total volume grew by 8.4% for Q4FY21, on YoY basis, Total Revenue (including other income) stood at Rs. 786.1 Cr, a YoY growth of 19.7% on account of better sales volumes in both Performance Surfactants and Specialty Care business and better sales mix, EBITDA stood at Rs. 120.0 Cr, YoY growth of 16.9%; driven by increasing share of specialty, better product mix due to new products and higher capacity utilization, PAT stood at Rs. 78.7 Cr, YoY growth of 25.3%.

Our Performance Surfactants have registered a healthy 8.8% volume growth and despite the disruptions in H-1, Specialty Care Products have ended the year with a 1% decline in volumes. In H-2 while the demand for Performance Surfactants remained the same in absolute terms vis-à-vis H-1; implying the structural uptick in demand, Specialty Care products registered a 15.7% volumes growth in H2 over H1 FY 2020-21, thus arresting the decline seen in H-1.

Despite the shutdown in Q-1, volumes in India have grown 11.2% vs Previous Year. AMET market which got its mojo back in Q-2 FY 20, has not only sustained it but also registered a healthy 8.2% volume growth for the year. Finally Rest of the World markets which primarily are driven by Specialty Care Products, while saw a major decline of 16%



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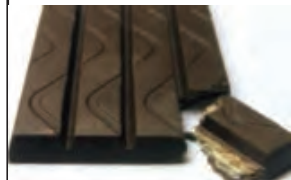


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in H-1 vs previous year have made a strong comeback in H-2 registering a growth of 4%, overall ending the year with a 6.8% decline.

To summarize, if 2020-21 were an alphabet, it would be called as the year of P - 5P's; Pandemic & Pressures countered by Persevering People and Persistent Partnerships which ensured we deliver a near Perfect Performance!"

Covestro and its Recycling Of Polycarbonate Composites

Leverkusen, Germany: The Maezio brand of continuous fiber-reinforced polycarbonate composites (CFRTPs) developed by Covestro are characterized by their extremely light weight, very high strength and exceptional flexibility of design. This means that waste generated during the production of composites also becomes a valuable raw material. However, because they consist of different materials that cannot be easily separated from one another, the recycling of composites is a challenge. Covestro is cooperating with recycling specialist carboNXT® on this. It has developed a process that allows the waste to be processed on an industrial scale.

"We are very excited about this joint solution, as we cannot process the materials ourselves for technical reasons," explains Lisa Ketelsen, Head of Thermoplastic Composites at Covestro. "By recycling according to type at our partner's plant, the raw materials can be converted back into valuable products with similarly good properties as those characteristic of virgin materials. The recycling of materials makes it possible to use them

again in other products. In this way, we save raw material resources and contribute to the focus on the circular economy."

"Our company has many years of experience in recycling carbon fiber-reinforced thermoplastics and has the necessary plant technologies to process such waste. We were therefore the partner of choice for this task," says Tim Rademacker, general manager at Mitsubishi Chemical Advanced Materials and responsible for the carbon fiber recycling business. "From the processed waste, we produce high-quality new compounds of carbon fiber-reinforced polycarbonate for Covestro at CarboNXT®."

Demand for such recycled products is high because they are valuable raw materials, but also because more and more industrial customers and consumers are looking for more sustainable products. The project will now be further developed to market maturity by Covestro, Mitsubishi Chemical Advanced Materials and possibly other partners. It is part of a global strategic program with which Covestro is focusing all its energy on the circular economy.

Galaxy Surfactants Ltd. Launches Their New Homecare Brand "Galaxy Hearth"

Mumbai, India: Galaxy Surfactants Limited (NSE GALAXYSURF), a leading manufacturer of performance surfactants and specialty care products with over 205 product grades used in Home and Personal Care industry, announced the launch of specialized homecare brand 'Galaxy Hearth' focused

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K.K. Natarajan, Executive Director & COO,
Galaxy Surfactants

particularly for the new normal world demands of consumers. Galaxy Hearth is also based on the fundamental premise of pioneering high sustainability enabling considerations of FMCG brands catering to homecare solutions popularly labelled under laundry category.

The value proposition of Galaxy Hearth encompasses critical elements of being safe, sustainable, value enhancing and flexibility to be customizable for specific requirements of homecare product brands. Thus, in effect, Galaxy Hearth provides the much-needed one-stop solution for ingredient requirements of the homecare industry. Furthermore, with hygiene and safe products attaining prime importance in end-consumer scrutiny, Galaxy Hearth™ is formulated to serve the homecare expectations of a new normal world.

Galaxy Hearth portfolio has sustainable solutions for homecare applications such as Laundry, Dish-wash, Hard Surface Care, and Institutional & Industrial Cleaning. Manufacturers of homecare products who are

interested in creating their unique, safe, and sustainable formulations can look forward to enhanced performance through the wide range of products the hearth portfolio offers.

The Hearth Range comprises surfactants, wetting agents, viscosity builders, emulsifiers, preservatives, foam enhancers, pearlisers, and many more such solutions. Combined with four decades of formulation expertise posed by Galaxy Surfactants Ltd., these ingredients are a perfect solution for all homecare manufacturing needs.

Sustainability is at the core of all innovations at Galaxy Surfactants Ltd. The raw materials used are majorly of plant origin. The ingredients are not tested on animals, are cruelty-free and are therefore, perfect for brands that claim to be vegan in nature. Galaxy Hearth™ products are biodegradable and are compatible with all innovative, new-age formats. Products such as the Galaxy Hearth, Mix Pods and Galaxy Hearth™ Mix LLDC, address this trend. The portfolio also has multiple performance-enhancing ingredients for various applications.

Lastly the brand promise offered by Galaxy Hearth is based on the 3Es framework namely ease, expertise and environment friendly thereby scoring high on latent demands of homecare manufacturers.

Commenting on the launch, Mr. K.K. Natarajan, Executive Director & COO, Galaxy Surfactants Ltd. said, "The domain of homecare ecosystem has evolved rapidly in the recent years and the new normal world has further expedited this onward momentum. In an era of well-informed and environment conscious consumer world, radical shifts in

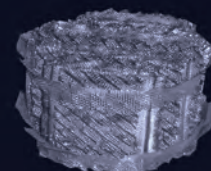
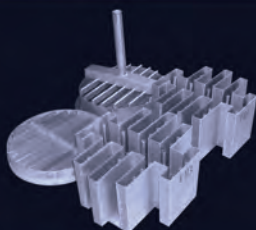
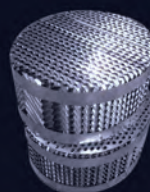
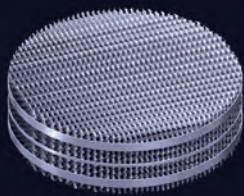
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the ingredient landscape is the need of the hour. Galaxy Hearth™ is conceptualised to set a benchmark in innovation within the homecare segment. We look forward to partner with responsible brands in the space to propagate not only high-quality driven ingredient solutions but also contribute towards larger environment cause."

LANXESS Completes Sale of its Organic Leather Chemicals Business

Cologne, Germany: Specialty chemicals company LANXESS completed the sale of its organic leather chemicals business to TFL Ledertechnik GmbH on June 1, 2021. TFL is a global supplier of leather chemicals and a portfolio company of US investment firm Black Diamond Capital Management, L.L.C. All relevant antitrust authorities have granted the necessary approvals for the transaction, which was announced in August 2020.

The purchase price comprises a fixed component of EUR 80 million. Furthermore, the agreed trade working capital mechanism will lead to a payment of around EUR 20 million, to be paid out in the third quarter. In addition, there will be a performance-related component of up to 115 million euros, to be paid out over the next three years. TFL has also assumed certain liabilities associated with the business. With the sale, all operations of the organic leather chemicals business line with around 420 employees have been transferred to TFL.

In January 2020, the specialty chemicals company had already divested its chrome

chemicals business and, at the end of 2019, signed an agreement to sell its stake in the South African chrome ore mine. LANXESS is thus exiting the leather chemicals business completely. Since the end of 2019, the company has reported the Leather business unit as a discontinued operation.

Shri Dharmendra Pradhan presides over a slew of initiatives around Compressed Bio Gas

New Delhi, India: Union Minister of Petroleum and Natural Gas & Steel Shri Dharmendra Pradhan presided over a virtual ceremony in which a number of initiatives were launched to provide major fillip to the SATAT initiative, and help India leap ahead towards a greener tomorrow.

This included signing of a Cooperation Agreement by Oil and Gas majors including IndianOil, HPCL, BPCL, GAIL and IGL, for the promotion and development of the SATAT (Sustainable Alternative Towards Affordable Transportation) scheme. The SATAT scheme aims to set up Compressed Bio-Gas production plants and make CBG available in the market for use as a green fuel. 'SATAT', launched on 1.10.2018, envisages to target production of 15 MMT of CBG from 5000 plants by 2023. Besides the potential to boost availability of more affordable transport fuels, better use of agricultural residue, cattle dung and municipal solid waste, the 5000 CBG plants will provide an investment of 1.75 lakh crore, an additional revenue source to farmers, and 75,000 direct job opportunities and lakhs

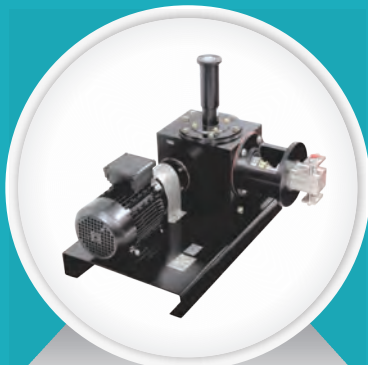
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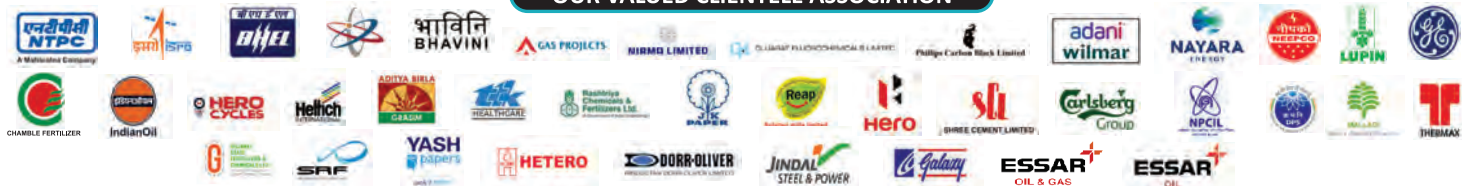


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of indirect jobs.

The Cooperation agreement provides for establishing a strong network for marketing the entire produced quantity of CBG Plants through various channels. The agreement also has provision for associate implementers to join the SATAT movement. As per the agreement, Indian Oil shall act as coordinator under the SATAT scheme and liaison with the Government and other agencies on behalf of Industry members. GAIL shall serve as the coordinator for the implementation of the CBG-CGD synchronization scheme.

During the event, the Ministry of Petroleum & Natural Gas also signed MoUs with Essar Capital Limited, XEMX Projects, Knowledge Integration Services, and Global Green Growth Institute, Seoul to set up new CBG Plants across the country.

Speaking on occasion, Union Petroleum Minister Shri Dharmendra Pradhan said that the Government of India is committed to harnessing the full potential of biofuels to realize the Hon'ble Prime Minister's vision of reducing import dependence and ensuring a sustainable energy future for the nation. He said that steps taken by India for containing the global warming as per the commitment made in COP-21 have been well appreciated. These included providing LPG connections to 8 crore people, surge in the Ethanol blending to almost 9% in the current Sugar year, progress in Bio-diesel programme, Aluminium Air battery.

Shri Pradhan said that the CBG programme under the SATAT has gained momentum,

but the growth has to be exponential, not incremental. He said that this requires Oil and Gas PSUs to play more responsible role, debottlenecking, setting up of infrastructure, handholding of small entrepreneurs, and convincing the big companies to set up mega-clusters for the CBG. The Minister said that India should play a global leadership role in energy conversion, as we convert agro-residues/municipal wastes and other green wastes into energy, and make the farmers and rag-pickers important stakeholders in the process. He said that this will help in reducing oil imports, improving environment, saving foreign exchange, enriching our poor, and also brand building. The Minister said that there is a large potential of harnessing usable Hydrogen from CBG in an economically-viable manner.

UPL Ltd appoints Ashish Dobhal as Regional Director for India

Mumbai, India: UPL Ltd, a leader in global food systems and sustainable agriculture solutions, announced the appointment of Mr. Ashish Dobhal as the Regional Director for India region. Ashish was previously the Head of UPL's Agri Formulation business.

Ashish takes over from Sameer Tandon, who previously held the position of Regional Director of

UPL – India Region and has now been appointed as the Regional Director for ASEANZ (Australia, Southeast Asia and New Zealand).

Sharing his thoughts, Mr. Jaidev Shroff, CEO of UPL Ltd., said, "A result-oriented leader and motivator, Ashish has taken several challenges upfront and has delivered strong performances. He has played a pivotal role at UPL and has successfully implemented various important projects. India is an important market for us and is poised for an exponential growth. I'm confident that with his experience and enthusiasm, we will continue to grow better and faster in the region."

He also said "I would like to congratulate and thank Sameer for his contribution to the India region wherein he demonstrated a positive shift in the operating model of the business from being product driven to a solutions model"

Mr. Ashish Dobhal, while sharing his views, said, "The potential for our India business to grow is immense. We have already established a strong base in the market and are uniquely positioned to deliver superior performance in the upcoming period. We are committed to grow in alignment with our purpose of OpenAg-Reimagining sustainability with an open network to create sustainable growth for all. I'm sure that with the highly talented team here, we will scale newer heights."

Ashish has a rich experience of over 20 years in the field of Agri business. In his journey of 17+ years with UPL, he has served at various leadership positions across China, Taiwan, Middle East, Sri Lanka, Bangladesh, Turkey and European countries. He has played an instrumental role in the success and growth of UPL in these regions.

Record Year of Performance, All Set To Ride High Growth Trajectory Net Profit Bolstered > 4.6 Times



Sailesh C. Mehta, Chairman & Managing Director
Deepak Fertilisers And Petrochemicals Corporation Ltd

Pune, India: Deepak Fertilisers And Petrochemicals Corporation Limited, one of India's leading producers of industrial chemicals and fertilisers, announces its results for quarter and year ending March 31, 2021.

Consolidated FY21 Financial Highlights

Topline grew by +24.0% and crossed Rs. 5,800 crores, Net Profit jumped by 357% and crossed Rs. 400 crores (FY20: 89 crores), Chemical business contribution approx. 81% of segment profit, Cash Flows from Operations of Rs. 1,248 crores more than doubled (FY20: Rs. 578 crores), The Board has recommended the highest ever dividend rate of 75% (FY20: 30%)

Consolidated Q4 FY21 Financial Highlights

Topline grew by +21.8% to Rs. 1,575 crores, Net Profit jumped by 415% to Rs. 116 crores (Q4FY20: 23 crores)

Commenting on the performance, Mr. Sailesh C. Mehta, Chairman & Managing Director said, "As evident, this has been a truly historic year for us in all aspects of our performance parameters. The Strategic Initiatives to transform our sectors from a Commodity to Speciality position, holds tremendous promise for the future, as we build further on the success of our transformational Business Models.. The balance Capex plans, once implemented will hugely solidify the strong foundations of the Company and help sustain and enhance our sectoral leadership built over the past 40 years."

Global Specialty chemical intermediates value chains shifting from China to India boosting Nitric Acid demand and prices in India, Limestone Mining is likely to increase driven by the thrust on the Infrastructure segment announced in India's Union Budget for FY22, Cement plants are likely to improve their capacity utilizations; large Cement producers have already announced expansion plans (both greenfield & brownfield), Sky Met and IMD have both projected a normal monsoon in the coming season. With current reservoir levels, Kharif season is expected to be good.

Yokogawa Bio Frontier Commences Sales of S-CNF, a High-Performance Nanocellulose Material

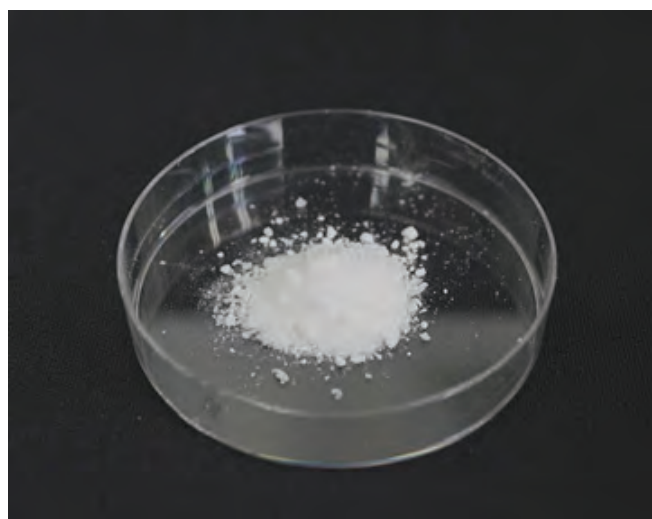


Tokyo, Japan: Yokogawa Bio Frontier Inc., a subsidiary of Yokogawa Electric Corporation, announces that it has commenced sales

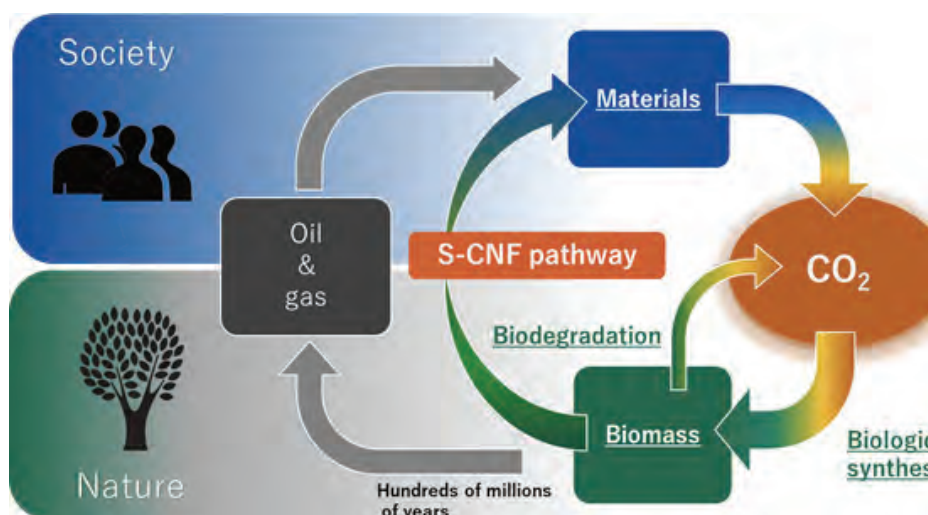
of 100% plant-derived sulfated cellulose nanofiber (S-CNFTM). The company is initially providing samples to prospective customers, and will subsequently scale up production in preparation for the commercial sale of this highly versatile plant-derived S-CNF material to customers mainly in the chemical and materials industries.

Cellulose nanofiber is a fibrous biomass material that is derived from cellulose, an important structural component of plants. It is produced by extracting the cellulose from materials such as wood pulp and defibrating it to form very fine nanosized fibers. Companies in the materials industry have shown a great interest in cellulose nanofiber as it is a strong and lightweight material that is resistant to deformation when exposed to heat and provides a highly effective barrier against oxygen and other gases, and its production and disposal have a low environmental impact.

In addition to having the same characteristics as standard cellulose nanofiber, S-CNF in a gel form can be dried to produce a powdered substance that has approximately 1/100th the



S-CNF in powder form



Caption: Carbon-recycling through S-CNF

volume and weight of the gel. This powder costs significantly less to transport and store, and its physical properties can be restored by blending it with water. By adjusting the blending ratio, the physical properties of the cellulose nanofiber can be altered to suit specific applications. Furthermore, the process employed by Yokogawa Bio Frontier to break down fibers and produce S-CNF consumes less energy than other cellulose nanofiber production processes, and this is expected to make a significant contribution in reducing production costs.

Moving forward, Yokogawa Bio Frontier will work toward the commercial production of S-CNF and develop this business through the sale of this product and the licensing of its commercial production process principally to companies in the chemical and materials industries. The company will also look into joint research and development activities with customers using S-CNF. Yokogawa Bio Frontier will strive to promote the widespread use of plant-derived materials that will lessen our dependence on fossil resources and contribute to the realization of a carbon-neutral society.

S-CNF will be exhibited at the Kansai Sustainable Material Expo, which is to be held June 23-25 at the Intex Osaka exhibition center.

Some major target markets for S-CNF are chemicals, petrochemicals, automobiles, construction materials, ceramics, textiles, and other material industries, Food products, pharmaceuticals, and paper processing

Some major target markets for S-CNF Applications are Filler for plastic/rubber materials, etc, Film and bottle packaging, Functional additives for cosmetic products and paints and Thickeners, emulsifiers.

ABB Completes Melt Shop Digitalization Project With India's Leading Steel Company

Zürich, Switzerland: Digital solution connects steel melt shop operations with ladle and crane tracking and thermal loss prediction for higher casting speeds and additional output of 24,000 tonnes per annum. ABB has built on a long-term relationship with JSW Steel Ltd, India's leading steel company, by integrating its digital solution ABB Ability™ Smart Melt Shop into a wider expansion at Dolvi Works plant in Maharashtra state.

With the project, completed on schedule in March 2021, ABB has improved productivity and energy efficiency for the steel melt shop by developing an operations optimization solution, including ladle and crane tracking

system, crane scheduling system and thermal loss models, to predict target temperature for ladle furnaces and ensure the correct superheat at the caster. This is expected to increase the company's EBITDA profit by around USD two million per annum through four percent higher casting speeds, time savings of one working day per month and additional output equating to 24,000 tonnes a year.

The plant now has real time tracking of steel ladles for process synchronization and better maintenance planning. In wider benefits, the lower energy consumption means fewer consumables used per batch and therefore a lower carbon footprint with less CO₂ per tonne of steel produced. Automatic tracking and scheduling increases personnel safety as they are removed from the production area during crane and ladle movements. The scheduling solution also results in reducing tapping delays by ensuring these movements are synchronized with process requirements.

It is an example of overcoming one of the major challenges facing steelmakers, which is to maintain the optimal temperatures required to make molten steel while balancing high electrical energy costs. Ensuring the right temperature at the right time, together with other parameters in the molten steel, directly determines steel quality and productivity. ABB's Industry 4.0 led solution minimizes temperature superheat deviation and thermal losses resulting in higher caster speeds by around four percent, improved productivity, energy efficiency and steel quality.

"We relied on the metallurgical expertise of ABB's Metals team as they proved to us

that this digital solution could be integrated into our complex plant with its diversified operational procedures," said Gajraj Singh Rathore, President, JSW Steel Ltd. "The figures and the results from testing stacked up and we could see the capacity to enhance productivity, improve energy efficiency and generate a relatively quick return on investment too."

"Based on advanced digital algorithms and mathematical modeling, ABB Ability™ Smart Melt Shop is a true example of technology convergence as it utilizes cameras and image-processing, weighing systems, radar, laser and wireless-based technologies to ensure steel melt shops operate at optimum levels where crane and ladle tracking and their availability are critical to the entire steelmaking process," said Tarun Mathur, Global Product Manager and Digital Lead for Metals, ABB.

"Our data from performance testing has shown significant increase in superheat compliance, returning time savings equating to more than nine hours per month and nearly 2,000 additional tonnes produced per month," said Amit Kumar Chakraborty, Project Manager for Metals, ABB.

Additional benefits of the ladle tracking system include reduction in tapping delays in the electric arc furnace, reduction of electrode and power consumption at the ladle furnace and reduction in silicon deviation in hot rolled coils produced from slabs from the continuous caster.

A complete range of products, services and end-to-end solutions that improve productivity, quality, safety and cost-efficiency in iron, steel, aluminium and other metals

production processes are available through ABB. Across the whole metals value chain, ABB demonstrates a commitment to optimize operations with high performance products and digital solutions.

Rajesh Kamath To Head Thyssenkrupp Industrial Solutions' Operations in India



PD Samudra will superannuate at the end of June 2021.

Mumbai, India: Rajesh Kamath will head thyssenkrupp Industrial Solutions India, the plant engineering group company of thyssenkrupp Industrial

Solution sAG (BUUhde) in India. Kamath will take over the end of June 2021, after heading the company from 2014 as the first Indian, since its incorporation as an Indian company in 1977.

The official handover was formalised in an online meeting of the company's key account Customers, Business Associates and Press on June 23 2021 in the presence of Dr Sami Pelkonen, CEO, Business Unit Uhde to which the Indian company belongs.

Speaking at the event, Dr Pelkonen thanked Samudra for his outstanding contributions to the group, and the Indian office in particular,



Rajesh Kamath will head the company from July 1, 2021.

in a long and illustrious career spanning 4 decades. 'Your vision, incisiveness, excellent relations fostered with Customers, and untiring

zeal in advancing thyssenkrupp Industrial Solutions has been exemplary, and along with the Indian teams of past and present times, have helped bring our India operations to reach a position among top ranking engineering firmaments in India. We wish you the best going forward. We have a worthy successor in Mr. Kamath, whose considerable experience in the EPC business, will surely help to take the success story of India forward.'

Thanking Dr Pelkonen, Kamath expressed how honoured he was to be heading thyssenkrupp Industrial Solutions India. 'The legacy is enormous,' he said. 'thyssenkrupp Industrial Solutions India is a front-runner in the EPC business of chemical plants and with our vast experience, dedicated strong team, continued support from our customers and our parent company, I am sure that we will succeed in the years to come as well. I am looking forward to the new role.'

A graduate engineer from Bangalore University, Kamath led Air Liquide Engineering and Construction (E&C)

McDermott Wins Two EPCC Refinery Contracts From Indian Oil



Samik Mukherjee
Executive Vice President & Chief Operating
Officer, McDermott International Ltd

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McDermott International, Ltd announced it has received two separate engineering, procurement, construction and commissioning (EPCC) contract awards from Indian Oil Corporation Limited (IOCL) for the Haldia Refinery and the Barauni Refinery.

The first award is an EPCC contract for a new diesel hydrotreating unit and associated facilities for the Barauni Refinery Expansion Project in Bihar, India.

The second award is an EPCC contract for the catalytic dewaxing unit and associated facilities at the Haldia Refinery in West Bengal, India. The catalytic dewaxing unit will help produce base oil which can be utilized in finished lubricants. India is

the world's third-largest user of finished lubricants but is also, with a deficit of base oil, one of the world's largest importers of base oil. Both projects contribute to greater independence for India's domestic energy needs.

"These awards demonstrate our commitment to advancing India's long-term energy market," said Samik Mukherjee, Executive Vice President and Chief Operating Officer. "We look forward to working with Indian Oil Corporation Limited on these prestigious downstream projects, showcasing our dedication to world-class project execution and sharing our leading health and safety protocols."

In line with India's Make in India initiative, McDermott's Senior Vice President, Asia Pacific, Mahesh Swaminathan, emphasized the strength of the local team. "Our 2,000 personnel in India bring global experience with high levels of technical and project management expertise," said Swaminathan. "These individuals continue to demonstrate the strength of McDermott's vertically-integrated solutions and the positive impact these bring to the Indian downstream market."

The scope of work across the projects includes project management, residual process design, detailed engineering, fabrication, procurement, construction,

transportation, mechanical completion and commissioning. Work will commence in quarter two 2021. Both projects will largely be executed by the McDermott team in Gurgaon, India, with some support from Perth, Australia and Brno, Czech Republic.

Oil India awarded a contract for 30 MW Power Plant to Wärtsilä



Henri van Boxtel, Energy Business Director, South Asia, Wärtsilä

The technology group Wärtsilä will supply OIL INDIA LIMITED (OIL), a premier Indian National Oil Company, with a 30 MW power plant to be delivered under a full engineering, procurement, and construction (EPC) contract. Wärtsilä won this project through International Competitive Bidding Process (ICB). Significantly greater open cycle efficiency and reduced emission lev-

els of the IC Engine solution was a factor in the final decision. After following the entire ICB process, OIL issued LoA on 11th January, 2021 to Wärtsilä.

The groundbreaking ceremony of the new Wärtsilä engine power plant at Duliajan, Assam, in northeast India took place on 21st April, 2021. Once operational, the plant will be one of the main source of power for OIL's facility at Duliajan, which does not have connection to the grid. It caters power to LPG bottling cum extraction facility, gas gathering station, the entire OIL township and other critical loads. The plant will operate with three Wärtsilä W20V34SG gas engines running on natural gas fuel from OIL's captive gas fields. Since there can be variations in the quality of the gas supply from these fields, Wärtsilä will provide a continuous gas analyser system which will automatically tune the engines as per fuel quality. Operational reliability and plant availability will be supported by a multi-year Wärtsilä maintenance agreement.

"This plant will form the backbone of Oil India's power supply to the surrounding area/facilities and Township. The Wärtsilä solution, backed with our long-term maintenance agreement, will enable extremely high plant availability to deliver a thoroughly reliable electricity supply," said Henri van Boxtel, Energy Business Director, South Asia, Wärtsilä.

H-Energy inks LNG deal with Petrobangla

India's H-Energy, a natural gas company, has signed a memorandum of understanding (MoU) with Bangladesh's state-run Petrobangla for supply of re-gasified liquefied natural gas (LNG).

Both firms will finalise a long-term supply agreement to start the supply of LNG to Bangladesh through a cross-border natural gas pipeline. H-Energy has been authorised by the Petroleum and Natural Gas Regulatory Board (PNGRB), a regulatory body in India, to build, own and operate the pipeline.

The Kanai Chhata-Shrirampur natural gas pipeline will connect H-Energy's LNG terminal in West Bengal, passing through various regions of the state and connecting to the Bangladesh border. H-Energy's wholly-owned subsidiary HE Marketing will be responsible for sourcing LNG and supplying R-LNG to Petrobangla.

The company will commission its floating storage and regasification unit (FSRU) at the Jaigarh port in Maharashtra in July 2021. The terminal, which has been delayed on several occasions, is planned to be capable of handling four million tpa.

H-Energy is also constructing LNG re-gasification terminals on the east coast of

India at Kakinada, Andhra Pradesh and Kukrahati, West Bengal.

CG Power And Industrial Solutions Chalks Out Rs 135 Cr Capex For FY22

CG Power and Industrial Solutions, gained by the Tube Investments of India Group Company of Murugappa Group, has chalked out capital consumption plans of Rs 135 crore for FY22.

The capex plan will be used to improve creation at its assembling offices. The Board of Directors of the organization has endorsed a capex program of Rs 135 crore to be executed in FY22.

The capex will be spent in adjusting, debottlenecking and modernizing offices at the plants to improve creation and usefulness.

Cylinder Investments of India obtained CG Power and Industrial Solutions on 26 November 2020 and the leading group of reconstituted CG Power with Vellayan Subbiah turning into the new Chairman and Natarajan Srinivasan was delegated as Managing Director.

On the monetary execution, the organization announced Rs 673.77 crore for Q4/FY21 as against a total deficit at Rs 184.36 crore during Q4/FY20. For FY21 independent total deficit was at Rs 208.93

crore when contrasted with an overall deficit at Rs 1,799.20 crore recorded in FY20.

The independent absolute pay for Q4/FY21 went upto Rs 1,036.06 crore from Rs 472.20 crore enrolled in Q4/FY20. For FY21, independent all out pay remained at Rs 2,568.06 crore as against Rs 3,226.36 crore enrolled in FY20.

Edges were affected because of steep expansion in materials costs (sway at five percent deals) as the organization couldn't acquire or cover these things prior because of monetary troubles.

The modern frameworks division revealed a 47 percent development on deals for Q4/FY21 at Rs 740 crore while the request admission was higher at Rs 814 crore.

The Power Systems division enlisted 40% Q-o-Q development at Rs 282 crore and the request consumption during Q4/FY21 was higher on Y-o-Y premise at Rs 814 crore. The request book in the force frameworks division was at Rs 1,057 crore.

Centre Allocates Rs 7,064 Cr Grant to Maharashtra for FY22 Under Jal Jeevan Mission

The Central government has increased the grant-in-aid to Maharashtra under

Jal Jeevan Mission to Rs 7,064.41 crore in FY22, which was Rs 1,828.92 crore in FY21.

Union Minister, Jal Shakti, Gajendra Singh Shekhawat, while approving this four-fold increase in allocation, assured full assistance to the state for making provision of tap water supply in every rural home by 2024.

At the beginning of the Mission in 2019, out of a total of 19.20 crore rural households in the country, only 3.23 crore (17 percent) had tap water supply. During the last 21 months, despite COVID-19 pandemic and lockdowns disruptions, Jal Jeevan Mission, has been implemented with speed and 4.27 crore households have been provided with piped water connections.

With this increase in coverage by 22 percent, presently 7.51 crore (39.12 percent) rural households across the country have tap water supply. Goa, Telangana, Andaman and Nicobar Islands and Puducherry have achieved 100 percent household tap connection in rural areas and has become 'Har Ghar Jal'. At present, in 62 districts and more than 92,000 villages, every household has tap water supply.

In Maharashtra, out of a total of 142 lakh rural households, 91.30 lakh households (64.14 percent) have been provided with

tap water connections. In FY22, the state has planned to provide tap water connections to 27.45 lakh households, 18.72 lakh tap water connections in FY23 and 5.14 lakh tap connections in FY24 to achieve tap water supply for every rural household.

In FY22 with four-fold increase in Central allocation (Rs 7,064.41 crore), unspent balance of Rs 268.99 crore and shortfall in state matching share of Rs 149.43 crore in FY21, and matching state share in FY22, the state has an assured availability of Rs 14,547.24 crore under Jal Jeevan Mission for water supply work in FY22. Thus, there is no shortage of fund for water supply.

In 2021-22, Rs 2,584 crore have been allocated to Maharashtra as 15th FC tied grant for water & sanitation to rural local bodies/PRIIs. There is an assured funding of Rs 13,628 crore for the next five years i.e. up to 2025-26.

In Maharashtra 65,301 schools (76 percent) and 60,082 anganwadi centres (66 percent) are provided with tap water connections. The Central government has asked the state to ensure that in the next few months, provision of safe tap water is made in all remaining schools, ashramshalas and anganwadi centres for better health, improved sanitation and hygiene of children.

Out of 177 district and sub-divisional laboratories, only 10 are NABL accredited. So far Maharashtra has 25,926 Village Water & Sanitation Committee (VWSCs) or Pani Samitis in 40,596 villages. The total budget for Jal Jeevan Mission in 2021-22 is Rs 50,011 crore.

Indian Oil and Gujarat Government sign MOU for “Investment Promotion”

The Chief Minister of Gujarat, Shri Vijaybhai Rupani and Union Minister of Petroleum and Natural Gas & Steel, Shri Dharmendra Pradhan, presided over an MOU signing ceremony for “Investment Promotion” between the Government of Gujarat and IndianOil for setting up a Petrochemical and Lube Integration (LuPech) Project and Acrylics / Oxo Alcohol Project along with other infrastructure projects at its Gujarat Refinery at Vadodara.

The LuPech project will produce import substitutes like Lube Oil Base Stock (LOBS) and Polypropylene. The Acrylics/ Oxo Alcohol Project at Dumad and Gujarat Refinery will manufacture value-added Butyl Acrylate, a key ingredient for paints, coatings, adhesives, textile chemicals, plasticizer industry, and other similar products.



These projects will strengthen the Corporation's readiness for venturing into petrochemical projects like PVC, Styrene, Acrylonitrile, Poly-Methyl Methacrylate and Ethylene Oxide in future. The Petrochemicals & Specialty products (Gr-II/III LOBS) integration index based on additional crude oil added under this project is estimated to be 20.7%.

MoU was also signed for Infrastructure facilities at Dumad for Koyali-Ahmednagar-Solapur Pipeline (KAhSPL) and Tank Truck Loading facility for Linear Alkyl Benzene (LAB) - a feed-stock for detergent industries. The other infrastructure projects envisaged are New Flare System at Gujarat Refinery and a Hydrogen dispensing facility for Fuel Cell Electric Vehicles (FCEV). IndianOil's Gujarat Refinery will be implementing India's first Hydrogen Dispensing Facility as a clean fuel initiative. This facility aims

to fuel Hydrogen buses plying between Vadodara and Kevadia / Sabarmati Ashram.

During his address, Chief Minister Shri Vijaybhai Rupani mentioned that Gujarat is a leading State in the field of

Oil and Petrochemicals. The Chief Minister said that "As a result of the transparent policies, acceleration of 'Ease of Doing Business' and favourable environment for industries, Gujarat, in spite of the covid pandemic has for the fourth year in a row, maintained its number one position as the highest recipient of FDI in the country".

Union Petroleum Minister Shri Dharmendra Pradhan said, "Gujarat has become the first choice of investors as in its roots is Prime Minister Shri Narendra Modi's vision that implements new plans for the holistic development of the State". The Minister also committed that these projects would be completed on schedule and inaugurated at the hands of Hon'ble Prime Minister Shri Narendrabhai Modi.

Giving further details during the MOU function, Chairman Indian Oil Shri SM Vaidya said, "Gujarat is charting a new

path of prosperity. To power that journey, Indian Oil's Gujarat Refinery is now poised to grow to 18 MMTPA capacity. New units for the production of Polypropylene, Butyl Acrylate and Lube Oil Base stocks will also be added to the Refinery's portfolio".

These projects will enable large-scale direct and indirect employment opportunity during the peak construction period and later for the operation of these facilities. During the construction stage, around 125 million person-hours of employment will be generated. The total investment outlook for these projects in different execution stages is approximately ₹ 24,000 crore.

Tata Power Solar Receives EPC Orders For INR 686 Crores to Set Up Solar PV Projects

Tata Power Solar, India's largest integrated solar company and a wholly-owned subsidiary of Tata Power, has received "Letter of Award" (LoA) to build 210MWp of Solar PV projects for NTPC. The total order value of the projects is approximately INR 686 crores. The commissioning date for NTPC is set for November, 2022.

With this addition, the order pipeline of Tata Power Solar stands at approximately 2.8GW with an approximate value of INR 13,000 Crores., thereby cementing



Dr. Praveer Sinha, CEO & MD, Tata Power

its position as India's leading Solar EPC player.

The scope of work includes land, transmission, engineering, procurement, installation and commissioning of the solar projects. The NTPC project site is located in Gujarat.

Speaking on the achievement, Dr. Praveer Sinha, CEO & MD, Tata Power said, "We are pleased to announce the new win of this large solar EPC contract from NTPC. Tata Power Solar is the leader in producing solar energy across the country and this further validates Tata Power Solar's excellent execution skills in solar projects."

Over the years, Tata Power Solar has been India's leading solar rooftop EPC player with compelling economics, especially for

the commercial and industrial segment. Favourable government policies, and increased environmental awareness have been the key growth drivers. Tata Power Solar comes with a successful background of executing large projects such as the 250 MW Ayana at Ananthapur, 50 MW Kasargod at Kerala, 56 MW Greenko, 30 MWp Solar Power Plant in Lapanga, Odisha and 105 MWp of Floating solar at Kayamkulam.

Saint-Gobain Expects To Implant Rs 1,100 Cr In Rajasthan

Saint-Gobain has proposed to put Rs 1,100 crore in Rajasthan which can give more than 300 direct open positions in the state. Since 2010, the organization has effectively contributed over Rs 1,200 crore and employed 1,100.

The company is aiming another Rs 1,100 crore investments with its latest phased expansion. With this extension, Rajasthan will have Asia's biggest buoy glass line.

In accordance with its system to speed up development in India, the organization will put resources into another new float glass plan in the World Glass Complex, Bhiwadi. ■

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"I very much enjoyed reading the digital issue of the March edition of Chemical Engineering World. Both content and quality of the digital publication of CEW were excellent. The printed and digital versions offer specific advantages and I wish that both will be continued. In the current pandemic the digital publication is of great value since it facilitates uninterrupted access to the magazine. Privately I benefit as well from timely and profound information by having subscribed to printed and electronic media."

Dr Dietmar Hueglin

Director, BASF Innovation Campus Mumbai



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"Today on world Environment day (5th June) while I am sharing my feedback with Jasubhai Media team, I applaud this initiative of you going paperless for your magazine Chemical Engineering World. We have come a long way in terms of our technological development and its high time we started leveraging it to minimize the harsh impact that has been caused on our environment. Congratulation for your current shift from publishing print editions to digital magazines and setting a great example for rest to follow."

Suresh Kalra

VP & Managing Director, SI Group-India Pvt. Ltd.



"The CEW has always been a very rich and fresh source of Information for me for quite a few years now. Though a hard copy has its own aura to it, I am confident that as we make this habit shift arising out of the current pandemic scenario you will achieve the same exquisite result in this digital version. "

Dr. Valmik Dhakane

General Manager, R&D Astec Life Sciences Ltd.



"I have gone through the Chemical Engineering World (CEW) March edition. My compliments on transforming and keeping the publication going in such challenging times. Digital transformation and its relevance in all facets of chemicals manufacturing, safety, data management, IOT, marketing and its channels of distribution cannot be overemphasised. Good to it was the focus of your edition."

Jatin Aggarwal

Director, Bansal Trading Company



"In my view given the circumstances and need to limit contact with anything not very essential it is an excellent idea to switch to Digital magazine. It will help the reader to remain safe and go through the magazine at his own leisure."

Ashwani Mehra

Director – Sunlac Paints Ltd



"We applaud Jasubhai Media for taking this initiative to create a digital edition of Chemical Engineering World ! Over the years CEW has become a synonym for process industry information, trends and prospects. CEW has been a platform for all type of business association. The digital version matches the high standard set by the print version and would go a long way in enabling the industry at such critical times. We are proud of our association and look forward to contributing in next editions with our thermal processing technology, capability and expertise. Wishing all safe and health working and overcoming the pandemic with stable business. "

V Gokul Das

Chairman and Managing Director
HRS Process Systems Ltd.

Fulfilling India's Dream of Becoming a Global Manufacturing Hub

Video Link: <https://youtu.be/rTK0qj8RfUI>



Mrs. Vartika Shukla
Director Technical, Engineers India Ltd.

Vartika Shukla

Director Technical, Engineers India Ltd

Change is essential for survival and becoming relevant, hence development in the fields of automation and instrumentation is making us realise how the faster we adapt easier are the results attained. Interventions of automation play a very important role in every element whether it is planning in day to day operations, maximizing profits, marketing or maneuvering prices.

Vartika Shukla urges the industry to look up policies, collaborate or adopt, in public procurement policy of being domestically resourced and developing the best business model to not lose the market. She emphasizes on keeping in check the environmental damage in terms of water and waste management to bring the need of forming comprehensive solutions.

Building Robust Manufacturing Ecosystem

Video Link: <https://youtu.be/nbZHG3htU3E>



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P K Goswami

Director Operations , Oil India Ltd

Mr P K Goswami, Director Operations , Oil India Ltd talked about how Covid-19 impacted negatively on the existing global supply chain and our reliance on countries like China. India is slowly moving towards being a focal point of merging the global manufacturing and supplying chain and thriving to become the new nerve centre for multinational supply chains in a post Covid war era. The pandemic has brought a new awakening forces of change like using our population and turning the 1.4 billion people into customers.

Think Bigger Pumps

Video Link: https://youtu.be/Q9sunutMT_U

Mr. V R Sharma
MD, Jindal Steel & Power Ltd

V R Sharma

Managing Director, Jindal Steel & Power Ltd.

V R Sharma from Jindal Steel & Power Ltd with over 37 years of experience in the Steel, Power, Cement and Mining Industry. Sharing his motto of 'Think Big, Think Bigger Pumps', he shed light on the steel and chemical industry that is accelerating to produce advance pumps, valves and automation suppliers. Chemical pumps form an integral part of JSPL where they have installed the first coal gasification unit in the country that converts Indian, domestic, coal into Synthetic Gas. India needs to uplift the practise of substituting Natural gas with Synthetic gas to align with countries like South Africa, China that practises converting coal into liquid. "India being the third-largest coal reserve in the world still trails behind being the least extractor." Welcoming the times of the future technologies, he focused on the dream of not importing a single drop of oil or natural gas. The ideal stance of being truly Atmanirbhar can be achieved if we convert 350 billion tonnes of coal.

Automation & Digitization Resolves Cases of Emergency

Video Link: <https://youtu.be/TmL-LQLIFjw>



Rakesh Verma

CEO, Simon India Adventz Group

Rakesh Verma briefly talked about various topics like user and owner perspective, operator, consultant, the status of pumps and vaults, overall industry automation and control, need of digitalization in manufacturing processes, smart solution and innovation in the automation process. He highlighted the significance of pumps, valves and fittings, narrating his own experience while working some projects like the Adani's LPG terminal Mumbra Port and Dalmiya Cement Recovery Plant in Baroda. He shared thoughtful instances of demanding change and ways of reforming work that needs to be constantly upgraded and implemented. Mitigation action like radio waves technology, contact less signal gathering are some exemplary solutions. Well curated steps of guidance and assistance in form of assorted databases provided by vendors at times, can help lessen the cost of production and bring quick fixes. A great need of automation and digitization resolves cases of emergency and benefits being equipped with solutions.

Next Generation Valves & Actuators

Video Link: <https://youtu.be/YgNZqWVTqIM>



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Jose Mathew

Vice President and General Manager, Emerson Valves.

Jose Mathew from Emerson Valves shared some thought provoking information about Next Generation Valves & Actuators and its Reliability & Performance was discussed along with the history, evolution & next generation information about Valves & Actuators. Various types of Valves and Actuators was illustrated which are currently used in Oil & Gas industry. Global priorities will drive the evolution and next generation valves & actuator solution for increased reliability, safety and performance. Low emissions, discharge solutions, remote virtual inception, remote wireless monitoring, analytics and connected services undeniably follows environmental regulations using sustainable intelligent valve factory of the future

Fire Water Motor Reclassification: The Benefits

The paper is about the learning that derived during a refinery expansion project execution wherein one unit each of DHDT and HGU were added. The location review of fire water booster pump motors for both the units resulted in a motor reclassification from flame proof to increased safety type. The reclassification was achieved by increasing the foundation height of motors beyond the limit specified as per standard code. This reclassification offered two benefits. The first is the cost reduction of motors which has directly contributed to project cost saving by Rs 0.45 million. The second is the reduction in the delivery period by 50% for flameproof motors, specially when such motors are not readily available. Since post the receipt of motors, the related activities at site could be completed by 4 weeks ahead of schedule, and if the overall project could be completed matching the fire water system schedule, the projected turnover would be Rs. 21250 million. The spin-off benefit as a result of this learning is an opportunity to audit the entire layout of the existing refinery, or new refinery project at the proposal stage to achieve similar benefit and implementation in various other refinery projects which are under execution.

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Fire Water System Design Requirements & Basis (1)

The refinery expansion work consisted of adding a DHDT and HGU to existing set up. Figure – 1 shows relative location of the units in the plot plan.

Diesel hydrotreater unit is installed for improvement of Cetane Number and

reduction in sulfur content in raw diesel. Hydrogen required for DHDT was obtained through naphtha reforming.

The fire water system is designed to meet the minimum requirements of TAC. The other applicable requirements included OISD standards 113(2), 116(3), 117, 118, 144, 156, 169, and 173. Minimum requirement for process units and main buildings are as follows:

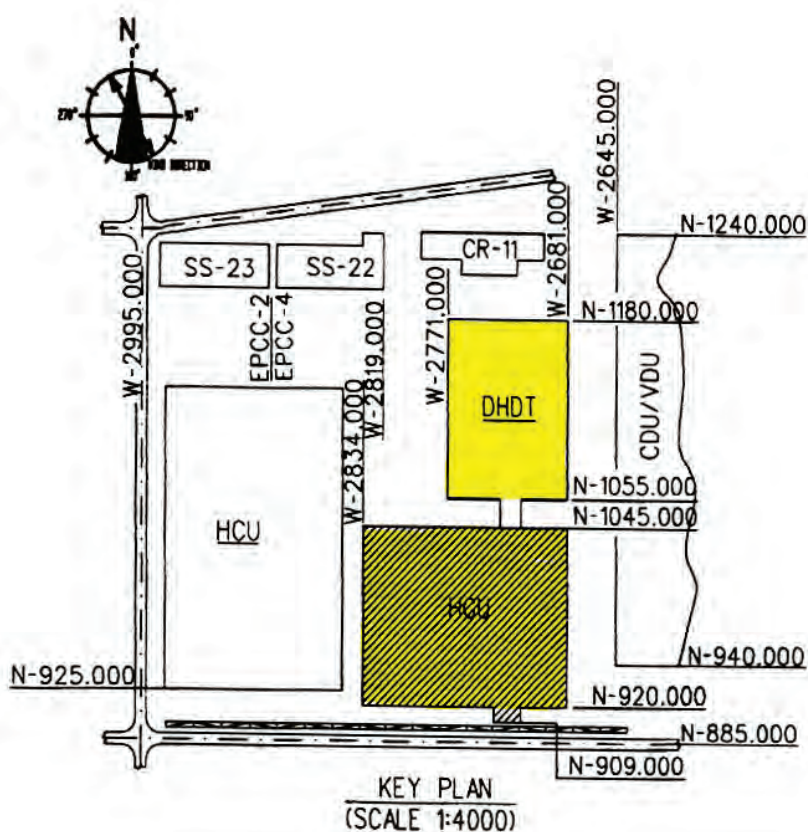


Fig-1: Refinery plot plan showing location of HCU & DHDT units

that the particular vessel was in full view for controlling the water throw on the vessel. The location was on the periphery of the unit area accessible from road side. Steel structural elevated platforms at 15-30 m height were provided to install remote monitors. Two such elevated monitors were provided to ensure the coverage of a single vessel or a group of vessels / columns. Similarly, the long-range monitors were located to cover the vessels which could not be covered by ordinary monitors due to obstruction in the horizontal throw.

As an additional provision, water monitors were provided at the top of technological structures, wherever feasible, to handle emergency situation for incipient fires.

1. Water Spray as per OISD-116 and OISD-173 for equipment and Transformer/Cable cellar in sub station
2. Dry risers for elevated platforms and tall towers
3. Elevated water/foam monitors and long-range monitors (OISD 116 Section 5.6.9). The vessels up to 10 m height are accessible by grade level hydrant. The range of hydrant was 30.0 m. Each vessel was covered at least from two sides. For vessels up to a height of 25.0 m were covered by ordinary water monitor having a horizontal throw of 45.0 m and vertical throw of 25.0 m. The monitor was so located

4. Header Pressure – The fire water system was designed for a minimum residual pressure of 7.0 kg/cm² (g) at the hydraulically remotest point of application at the designed flow rate at that point. (Section 5.3 OISD 116). The fire water network was kept pressurized at minimum 7.0 Kg/cm² at all the time.
5. Location of Pumps – Fire water pumps

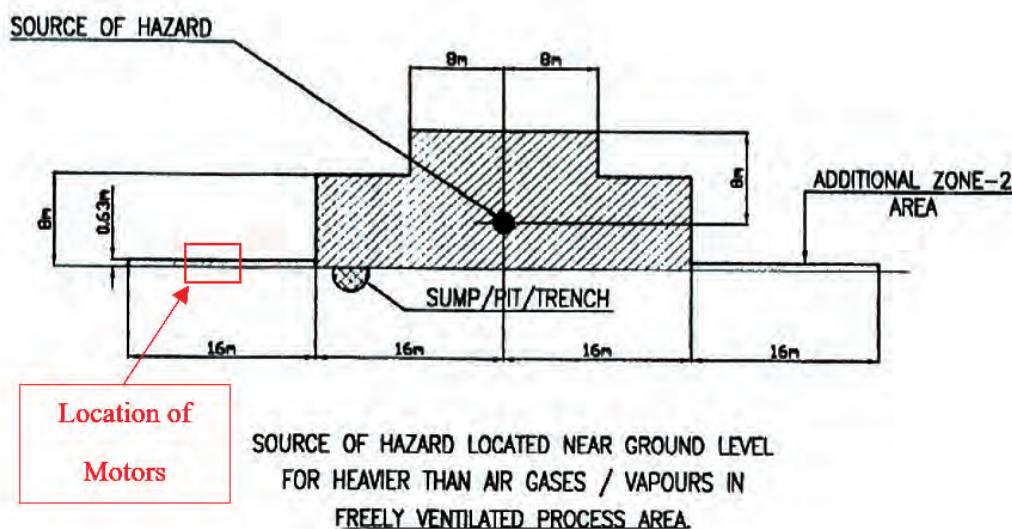


Figure-2: Source of Hazard located at grade level

were located as far away as possible, not less than 60 Mts from hazardous areas to avoid any damage in case of fire/explosion (Section 5.3 OISD 116).

6. Booster pumps were provided for increasing the pressure of fire water as per specifications. These pumps could be operated from remote location.

Formulation of the Problem

Booster pump: A booster pump is a type of fire water pump used to supplement the water supply pressure available from public or private sources whenever pressure requirements of the protection system exceed the available supply capability. In the system, the booster pumps were to be used to augment the supplied water pressure to the fire water monitor nozzles located at an elevation

of 24 meters and above.

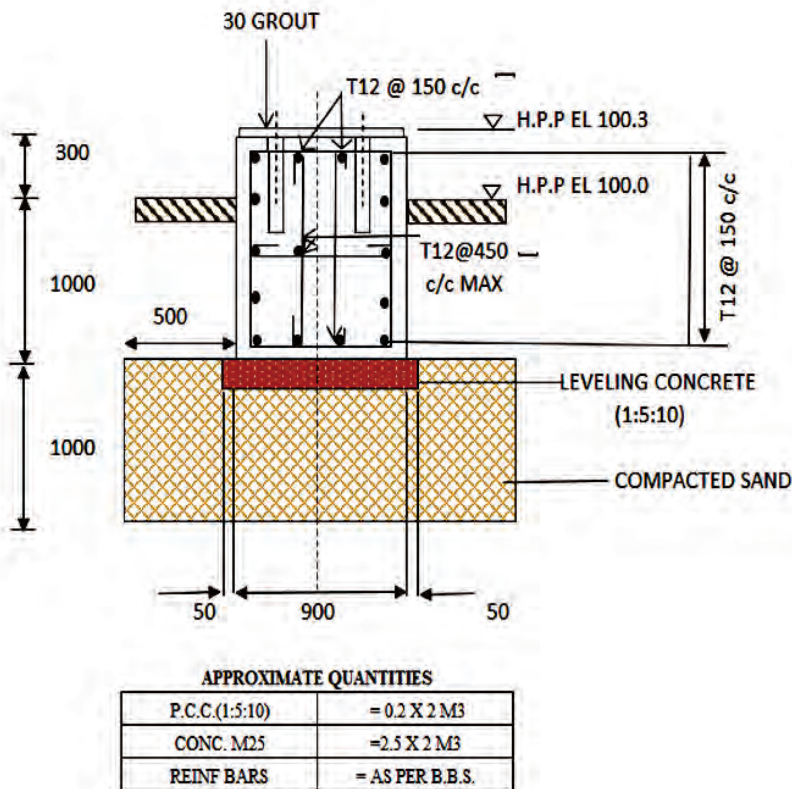
The booster pump motors had to be located near battery limit of the units as specified in the design requirements for both the locations. The applicable area classification was "Additional Zone-2", shown

in Figure – 2. Additional Zone-2 means where there is a possibility of hazardous vapour ingress.

The foundation drawing for the booster pump motors as per BID document is shown in Fig-3. The TOG was +0.3 M above grade level. As per job specification, the motor for booster pump shall be flameproof (Ex'd; IIC, T3).

Solution Adopted

It was realised that if the height of the foundation could be increased from +0.3 M to minimum +0.63 M specified under OISD-116 (Refer Fig-2), the motor could be located in the safe area. The proposed modification is shown in the Fig-4. Since the motors are relocated in the safe area instead of Additional Zone-2, these



incorporated in GA drawings as appended”.

Discussions

The increased cost of foundation-material due to modification was ₹5000/- , whereas the difference in the cost of Explosion proof motors is ₹ 0.45 million which is 30% savings in the budgeted cost. Similarly, the installation and labour cost for Ex ‘e’ motor is lower by 65% compared to Ex ‘d’ motor, which is a direct contribution to savings. For increased safety motors, deliveries were better by 8

weeks compared to Ex’ d’ motors which has directly contributed to furthering the project schedule. Table – 1 shows the projected additional turnover due to the improved schedule. Additionally, we can derive a benefit in terms of increased turn over / profit depending upon the criticality of delivery with respect to the complete project schedule. By taking credit of 4 weeks only on total completion of the project schedule, the estimated contribution to turnover becomes 21250 million.

The longer deliveries for Ex’ d’ motors

Fig-3: Elevation of Booster pump foundation (All dimensions are in mm)

need not be flame proof (Ex’d, IIC, T3), or explosion proof as per job specifications. This modification resulted in re-classification of motors from flame proof / explosion proof to “Increased Safety” type. The proposed modification is shown in Figure-4.

The proposed foundation modification for both DHDT and HGU units was taken up with PMC who approved the same. PMCs comment are reproduced below:

“The area classification related information indicated as in data sheet (i.e. raising foundation) is noted. However, same shall also be suitably represented /

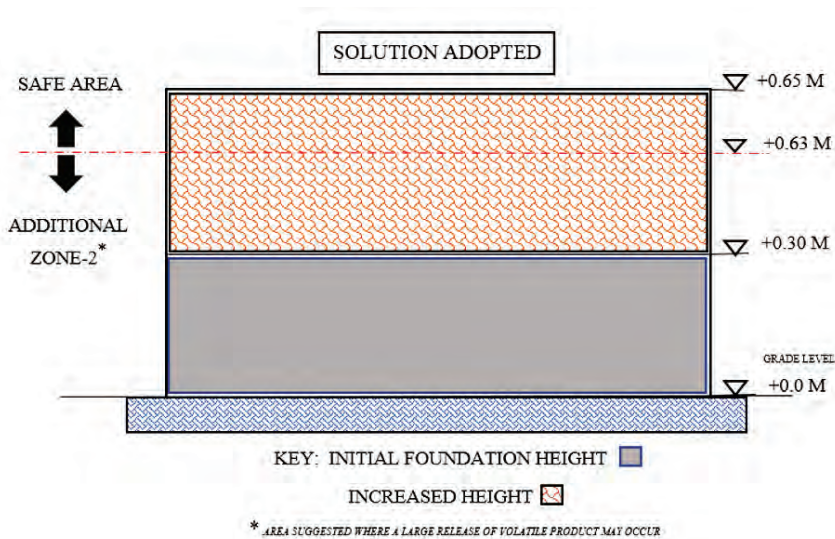


Figure-4: Proposed modification for Booster Pump Foundation

are due to the fact that each motor is tailor made as their applications are rare. Ameron (4) has concluded that the approach of some of the manufacturers to specify an Ex'd' motors from safety point of view as a sole criterion is incorrect. This is due to the fact that the installation costs for labour and material may be two to three times more than for increased safety Ex 'e' motors.

Stadler & Jackson (4) have discussed drive motor protection principles and selection criteria. Flameproof motors must meet three basic requirements. Firstly, the temperature of the outside surface must not exceed the allowable temperature class; secondly, explosion resistance must not allow the spread of explosion to external surroundings; and thirdly, the pressure resistance protection of the motor should prevent any permanent damage or deformation that may occur as

a result of explosion inside the enclosure. The Ex'd' motors are suitable up to T4 temperature class, which is up to 135oC With special design, these can be put in to service up to T5 class – temperature 100oC max, or T6 class – up to 85oC maximum. Heating systems of the Ex'd' motors need not necessarily be Ex 'd' version. This is because the installed temperature is so selected

and located that they trip prior to motor surface temperature limit. It is for this reason other inverters can be used with Ex' d' motors provided company operating drive system complies with the regulations specified by the motor manufacturer. The Ex' d' motors have enclosures and shields to withstand high explosion pressures, which makes them heavier than increased safety motors. The Ex'd' motors offer the best flexibility since the time they can be designed for normal line operation, intermittent duty, inverter operation, and heavy duty starting. The Ex'd' motors can be started immediately after a power failure; or even after a planned shutdown, whereas the increased safety Ex'e' motors require purging before restarting. And the purging can be time consuming.

The increased safety motors are always de-rated to prevent hazardous

SN	DESCRIPTION	UOM	₹
1	Capacity	TPA	3500000
2	Working Days		365
3	On stream Hours/Year		8000
4	Density of Diesel @15.6°C	Kg/M3	851
5	Credit for 30 days	Hours	720
6	Production / Hour	TPH	438
7	Diesel Price	Rs/Ltr	57
8	Diesel Turnover (Cu M)	M3 Prodn* Credit Hours	370370
9	Rupees Turnover (₹)	Crores	2125

Table – 1: Projected turnover with 30 Days Credit for schedule

- A saving of ₹0.45 million in the DHDT and HGU project cost, and projected turnover of
- ₹ 21250 million due to improvement in project schedule
- Implementation of the learning in other ongoing projects such as Hydrocracker Unit

including LPG treater, PGA and associated facilities, and Coke Drum System finally result in value addition

- Leveraging the learning benefits during audit of plot plans for future projects for possible cost saving and improvement in project schedule
- Similar recommendations were received from PMC for refinery project transformer foundations
- The motor reclassification was relatively easy as the fluid handled was non-flammable. For other fluids, a thorough study of Area Classification is recommended
- Proper planning at the onset of project, and knowledge of Class, Division and Hazard location are not sufficient to help in readily getting the Ex' d' motor of given specifications. As the applications of Ex'd' motors are rare, these are tailor-made

temperature, sparks, and arcs during start up and normal operation. This feature is little unattractive and limits usage in only specific cases. Similarly, it handles only T-3 temperature class, Max 200oC upon checking the stator winding ignition risk assessments required for motors > 1Kv, as per EN60079-14(7). Space heater requirement is mandatory to prevent any condensation of moisture during the starting. Additionally, protection such as purging, measure of gas concentration, etc is also required.

The proposed modified foundation drawing was taken up with PMC and PMC approved the same for implementation.

In Conclusion

- The foundation modification has resulted in reclassification of motors for fire water booster pumps from Ex'd' Explosion proof / Flameproof to Ex'e' increased safety type

IEC Method	NEC/CEC Method	Max Surface Temp., °C
T1	T1	450
T2	T2	300
	T2A	280
	T2B	260
	T2C	230
	T2D	215
T3	T3	200
	T3A	180
	T3B	165
	T3C	160
T4	T4	135
	T4A	120
T5	T5	100
T6	T6	85

Temperature class of motor for a given application should not exceed Auto Ignition Temperature of gas

NEC-National Electric Code, CEC-Canadian Electrical Code, IEC- International, and Electrochemical Commission

Hazardous area classification

These zones are defined on the probability of hazard occurring in that area

- Zone-0 has a permanent threat of an occurrence
- Zone-1 Area in which explosive gas/ mixture is likely to occur in normal operation
- Zone-2 Area in which an explosive gas/air mixture is not likely to occur in normal operation and if it occurs, it will exist only for short time

- Additional Zone-2 Area wherein a large release of volatile products may occur

Symbols & Abbreviations

B.B.S. Bar bending schedule

DHDT Diesel Hydrotreater

EPC Engineering Procurement & Construction

Ex 'd' Explosion Proof Motor

Ex 'e' Increased safety Motor

HGU Hydrogen Generation Unit

HPP Highest point of Paving

LSTK Lump sum Turnkey

M Meter

M Million

OISD Oil Installation Safety Directorate

TAC Tariff Advisory Committee

TPD Tons per Day

TOG Top of Grout

UOM Unit of Measure.

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Case Study: Amplifying Energy Efficiency in Agro-processing Unit

Energy management is vital for any operation in an industry and more so in agro processing , where the cost accounts for approximately 70% of processing cost excluding that of raw material cost which is approximately same across all other agro industries. This case study brings insight into the pragmatic approach to revamp the facility and making it energy efficient.



The positive impact of using efficient energy management system in agro-processing industry

is very evident and visible on multiple fronts. On environmental aspect as this leads to lower consumption of power, fuel and water, reduction in need of resources, improvement in product quality, betterment of HSE standards reduction in downtime due to equipment breakdown, increase in overall life of equipment and helps to maintain low heat and sound levels thus creating better work spaces.

The practices of running smoother operations, lower requirement of resources, good energy management enable the manufacturers to be cost effective, economically viable, profitable

and most importantly stay ahead of the competition.

Electrical Energy

Earlier power and fuel consumption for normal grade products was 1500 KWH power per ton and diesel consumption was 120 litres per ton to meet heat requirements.

The team reduced the power consumption in the following manner and accomplished less than 1000 kWh per ton as well as reduced the consumption by 500 kWh per ton that was approximately 30-35%. The team conducted many internal and external audits related to power consumption and added the experience and observations during the operation.

In terms of power saving following steps and changes done to achieve 1000 kWh per ton power consumption.

The team carried out the studies and measurements of power consumption across different operations like – hydration, grinding, conveying of wet and dry material, sieving, reactors, blending and packing, lighting and cooling etc. The studies revealed that out of 1500 kWh per ton of power consumption 70-75% of power was getting used in grinding operation 10-12% in conveying operation and balance in rest of the operations.

- **Grinding Process:** To reduce power consumption, the team started with the grinding process and assessed the actual need of power. The first step was to pre- treat the material to reduce the power consumption during grinding and optimized power usage by simultaneously increasing the utilization level of power and reducing the losses by taking following steps:

- **Technology up-gradation** - Opted for proper grinding equipment with latest technology, which led to the reduction in energy losses in the form of heat, sound, vibration and unutilized oversized equipment.
- **Switch to efficient technology**
 - Replaced old grinders and low efficiency motors with energy efficient grinders and motors. In maximum cases, the payback period was 6-9 months.

- **Conveying Systems:** This phase, involved working on the conveying systems. The team replaced most of the lean phase pneumatic conveying systems with the dense phase pneumatic conveying systems and used gravity conveying wherever applicable. The experts redesigned all the lines, fans, cyclones etc. in the pneumatic conveying systems wherever necessary. This resulted in reducing the conveying power drastically by more than 60%.

This led to two positive outcomes from the process of redesigning the conveying system were reduction in operating equipment and increase in the product yield from 95% to 97% which thus led to to increase in production volume and cost reduction.

- **Reactors & Blenders:** This phase involved working on the reactors, blenders and the studies revealed that higher rotation per minute (RPM) led to more power utilisation and increased breakdowns. The team established the best suitable RPM with the help of Variable frequency Drives (VFD) installed on reactors and blenders. After changing gearboxes and motors, VFDs were removed from the system. Operating the equipment on best suitable lower RPM led to increase in efficiency of operation, decrease in power consumption and the very positive outcome of lesser equipment breakdown.

- **Other Initiatives:** Based on studies in rest of the areas like lights, cooling, packing etc. and observations, all the changes were made that were required to minimize the power consumption. And also installed roof solar power plant on available suitable roof spaces and wind mill also in Gujarat for production of low cost and eco-friendly generation of electricity.

The most important outcome was while there was targeted reduction in power consumption, this whole exercise brought remarkable change in the working conditions as well. There was significant reduction in sound and heat level of plants, drop in reworking since the operations ran more smoothly than earlier. Replacing the oversize older equipment with state-of-the-art, efficient technologies with the right capacity allowed us to have extra space. There was considerable reduction in the inventories that led to cost savings in operations and with lower maintenance costs and the plants could now be run for longer hours and increase the production.

The whole exercise has a very positive impact on improvement in working conditions directly and on the motivation levels of workforce on the shop floor to work. The manpower not only worked in a more disciplined way but there was also a notable increase in retention.

Reduction in electrical power consumption reduced the connected load and maximum

demand (MDI) requirement of electrical power from the state electricity board thus resulting in reduction in fixed cost of electricity up to an extent. After working on saving the electrical energy, there is regular monitoring of the facility for smooth functioning and for any further corrections that may be carried out to enhance power savings and sustain achieved standards.

Thermal Energy

For the process plants, 2nd main cost after electricity is the heat energy utilised for hot water, steam and hot air. The studies on heat energy consumption revealed that 75-80% is required for hot air followed by 10-15% for hot water and balance 5-10% in the form of steam. It was found that during generation of hot air about 45% heat is lost in the atmosphere and utilization of fuel is higher due to lower combustion efficiency, higher oxygen levels in flue gases and some losses during heat transportation because of improper line sizes, poor insulation and leakages etc.

- **Hot Air Unit:** Since the unit was using diesel as the fuel it was not possible to increase utilisation efficiency because of the smoke in the flue gases which imparted black colour to the product and degraded the quality of finished product. Additionally there were problems due to leakages in tube in heat exchangers that would create sudden problems such as uncertainty

in processes, unanticipated breakdowns which led to increase in cost and poor product quality.

The team considered replacing diesel with natural gas and after satisfactory evaluation on data and trials discarded the old diesel hot air generators and installed natural gas based hot air generators with high quality gas train and gas burners.

In the natural gas based utilisation mode, hot air with flue gases are injected directly into the system that leads to huge energy and cost savings. In place of 120 lit of diesel to produce 1 metric tonne of product, the unit requires only 65 SCM gas including 20 SCM of hot water and steam. This system is eco-friendly and enables and it is easy to maintain consistency in product quality. Since the Piped Natural Gas (PNG) is lighter than air, it eliminates the possibility of any untoward incidents in case of leakage, there is no requirement of having on-site fuel storage which further makes it a safer option. Moreover its availability, lesser fuel cost, reduced storage and transportation cost etc. offer cost benefits. The team experienced noteworthy changes as the new equipment could be installed in lesser space and required lesser maintenance.

- **Hot water & Steam:** After completing

the revamp of hot air unit, the team evaluated the quantity of hot water and steam for process as well as calculated the difference between generation and requirement. After bringing down the transportation losses up to desired levels and modifying the way of application for effective use, the team could save approximately 20-25% in quantity of hot water and steam.

After the PNG connection, the company went on to install natural gas based electricity generator of small capacity for back up with most efficient heat recovery unit to fulfil requirement of steam and hot water which could operate in case of unprecedented grid power failures.

Calculations & Results

The table summarizes the cost of product before and after the changes, all parameters are based on 1 tonne of production.

Considerations for calculation

- Average size plant capacity : 5000 MTPA (Approximate Difference: Rs. 6.5 crore per annum)
- **Product :** Difference in finished product and by product (low grade): Rs.100,000/ per tonne
- **Electricity:** Cost of 1 KWH = Rs.8/-

Parameter	Before	After	Achievement (%)	Saving (INR)
Electrical Power	1500 KWH	1000 KWH	33%	4000
Heat Power	120 lit Diesel	65 SCM natural gas	35%	9000-1950=7050
Product Yield	95%	97%	2%	2,000
Total	-	-	-	13050

Table 1: Parameters before & after changes were carried out

- **Diesel:**

Density of diesel = 0.85 kg/ lit,
 Calorific value of diesel = 10,000 kcal/ kg,
 Average price (as on 11th August)
 = Rs. 75/ per litre

- **Pipe Natural Gas:**

Density of PNG = 0.8 kg / cubic meter,
 Calorific value of Natural Gas= 12500 K cal / kg
 Price of PNG = Rs. 30/ SCM

Thus the calculation shows energy cost reduced from Rs.21000/- per tonne to Rs. 7950/- per tonne that translated to approximately 62% saving in energy and had many other positive benefits.

anaerobic reactor. This eliminated the use of chemical and since the requirement of oxygen could be reduced, this led to increase in major savings in power consumption. The anaerobic reactor produces considerable amount of methane gas which is utilised to meet the heat requirement.

The journey to become energy efficient set the company on the path of attaining sustainable growth through use of eco-friendly technologies which led in creating safer work places, maintaining consistency in product quality, improving operations to become commercially viable as well as cost effective. ■

Effluent Treatment Plant

The team worked on reducing energy cost in Effluent Treatment Plant (ETP) that was earlier based on aerobic treatment and required large quantities of chemical and oxygen provided with the help of air blowers. Effluents can be treated in agro based industries using anaerobic processes. The team took the initiative to redesign the ETP plant and added the



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Industrial All Risk Policy for Chemical Plants

Arun Garg & P Narayanan recommend Industrial All Risk policy for the chemical plants which offers comprehensive coverage for fires, explosions theft as well as to an extent for material damage & business interruptions. The authors point out the important clauses and add on covers that must be added while selecting the policy.

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Operating an industrial or manufacturing unit is fraught with several risks which can threaten to put a halt to business operations. Apart from trade risk, chemical plants (and fixed assets thereof) are exposed to physical loss or damage due to operational and 'Act of God' perils. Many of these hazards and perils are covered under the standard insurance policies: Fire policy, Machinery/boiler explosion/electronic equipment policy and Burglary policy. Banks and financial Institutions insist on such insurance protection from industrial customers.

The aforementioned policies are called peril policies, and perils are clearly defined. Loss or damage to the insured property due to the act of these defined perils is reimbursed as per policy terms.

Industrial All Risk (IAR): A more comprehensive policy

However, there are gaps in these policies which are insured to some extent under the Industrial All Risk (IAR) policy. This is a package policy providing cover against material damage and business



Pic 1: Peril policies: Protection against fire, explosions, and theft

interruptions of an enterprise. This policy (sum insured should be more than Rs 500mn, including gross profit) provides cover against all risks/perils other than those excluded in the policy under the following sections:

Section I - Material damage

The policy provides compensation in case the property insured is lost, destroyed or damaged accidentally other than in circumstances excluded in the policy. The insurance company will pay to the insured the value of the property at the time of

its accidental physical loss/destruction/damage, or, at its option, reinstate or replace such property or any part thereof.

The basis of valuation in respect of buildings and contents (other than stock) shall be on reinstatement value. Revaluation of gross block assets is to be done every year. Note that capex budget is to be included in the sum insured. In respect of stock, valuation shall be on market value. The insured has to make sure that all stocks stored inside and outside the plant (including 'Held in Trust') are covered.

Add-on covers make the policy a must-buy

Add-on covers	Exclusions
▪ Fee clause removal of debris & architects, surveyors and consulting engineers	▪ Collapse or cracking of buildings
▪ Clause on designation of property	▪ Larceny
▪ Omission to insure additions, alterations or extensions clause	▪ Coastal or river incidents
▪ Clause on temporary removal of stocks	▪ Cessation or delays in works
▪ Catalyst and thermic fluid cover	▪ Destruction of property by order of any public authority section
▪ Air freight and express freight cover	
▪ Ingress & digress of flood water cover	
▪ Brand protection clause	



Pic 2: Material damage: Compensation if property insured is lost, destroyed or damaged accidentally

Section II - Business Interruptions

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The policy will cover the amount of loss (or gross profit, as the case may be) resulting from business interruptions or interference in consequence of loss, destruction or damage covered under Section I, up to the limit of sum insured.

The sum insured under this section should represent the estimated annual gross profit.

Key terms

- Gross Profit – Difference Basis: Loss of gross profit due to reduction in business turnover (including increase in cost of working) because of admissible loss/damage under Section I of the policy.
- The SI-GP should be declared corresponding to the indemnity

period if the indemnity period is >12 months.

- Indemnity period: Compensation required for estimated stoppage of production in terms of months to rebuild operation or come back to normalcy 100% (generally varies from a few hours to more than years based on the nature of loss).
- Policy excess (called time excess): Minimum 7 days GP will be detected from the claim amount to avoid small losses.

Add on covers

- Extension of supplier and customer premises.
- Failure of utility services at terminal ends.

Business Interruptions – Key clauses

- **‘Departmental’ clause** : “If

the business is conducted in departments, the independent trading results of which are ascertainable, the provisions of the basis of cover in respect of any item on gross profit will apply separately to each department affected by the damage, except that if the sum insured by any item of gross profit is less than the aggregate of the sums produced by applying the rate of gross profit for each department of the business (whether affected by the damage or not) to the relative annual turnover (or to a proportionately increased multiple thereof where the maximum indemnity period exceeds 12 months), the amount payable will be proportionately reduced."

- **'Accumulated stocks' clause :**
"In adjusting any loss, account will be taken and an equitable allowance made if any shortage in turnover resulting from the damage is postponed due to the turnover being temporarily maintained from accumulated stocks of finished goods in any warehouse or depot."
- **'Goods Held in Trust' clause :** If the policy states it covers goods held 'in trust', it covers the full value

of goods. However, if the policy covers goods 'in trust for which the insured is responsible', the insurance only covers the liability in respect of goods, and not the goods themselves.

Exclusions

The policy does not cover losses resulting from interruptions of or interference with the business, directly or indirectly, attributable to the following:

- Interruption of water supply, gas, electricity or fuel systems or failure of effluent disposal.
- Any restriction or reconstruction or operation imposed by any public authority.
- Interruptions due to electronic installation, computer and data-processing equipment.
- Cessation of work/delays.
- Deliberate erasure loss, distortion or corruption of information.
- Deductibles stated in the schedule.

Our View

Industrial all risk insurance is a wider cover than the traditional 'Standard Fire and Special Peril Insurance Policy', and

guards of against disasters and sudden calamities that can bring factories to a grinding halt. The IAR policy covers a wide range of perils such as fire and allied dangers, burglary, accidental damage, breakdown and business interruptions. This cover is available with add-on covers and low premium.

We strongly recommend an IAR policy for chemical plants due to the following reasons:

- **Fire LOP (loss of profits) is covered under the policy and is required for process industry** as it operates with batch process and its business plans are based on batch/schedule dispatch orders and business commitment.
- **Opportunity lost due to unfortunate accidental losses** leads to financial losses, and cannot be compensated.
- Fire & explosion hazards are relatively more in the chemical Industry and the **period of production stoppage** on an average is more than 10 days. Hence, they are susceptible to FLOP (fire loss of profit).
- This policy will **generate confidence on new business** expansion among cliental.

- **Premium** for machinery breakdown section of this policy is **much lower** than normal premium.
- Fire section is insured on R/I value, and the **claim will be settled for new replacement value.**
- **Claim deduction** under the heading 'Under Insurance' is not applicable for cases up to 15% of Sum Insured
- There will be considerable savings in insurance premium. ■

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Use of High-Efficiency Mist Cooling System as a Superior Alternative To Cooling Tower



Water Cooling has played an important role in all types of Process industries & Power Plants since its inception.

Efficiency of a Process or a Power plant largely depends on availability of designed cold water temperature through-out the year, but mainly in summer & monsoon. During these months when humidity is high, cooling tower fails to achieve desired cold water temperature which results in drop in vacuum maintained at exhaust of a turbine and in turn drop in Power plant capacity. Now it is time's need to find new solution to get desired cold-water temperature throughout year.

The ultimate Mist Creation Technology is the best alternative to conventional cooling towers. This advanced mist creation system can achieve an approach of 1 to 2°C to WBT as against 5 to 6°C approach for conventional cooling tower. Hence guaranteed cold water temperature of

around 30°C could be obtained throughout the year tropical climate. Also, the spraying head is equivalent to the height of cooling towers thus requiring same pumping power. As mist creation- system does not require fans for cooling it saves huge amount of power. Also, as there are no moving parts involved in Mist creation system the maintenance cost is negligible and system runs trouble free.

In Process / Chemical Plants, product vapour generated in the process is condensed in a Heat exchanger and is recovered back.

The condensation of steam / Vapour requires a cooling medium. In early days this was achieved by using water from a river, a basin or seawater. The cold water is pumped through a heat exchanger and the warm water is discharged back to the water source. This is called Once Through cooling system.

A once through system is an open loop system. The necessity to reduce the huge amount of water gave birth to the idea of closed loop system. Thus the Wet Cooling system came into effect.

In a wet cooling system, water is circulated to condense the steam in the same type of heat exchanger that is used in the once through cooling. The warm water, instead of being sent to the water source, is cooled in a cooling tower using air as the cooling medium. Only the water carried away due to evaporation, drift and blow-down needs to be replenished by make-up water. Thus requirement of water quantity is vastly reduced.

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Wet Cooling Systems

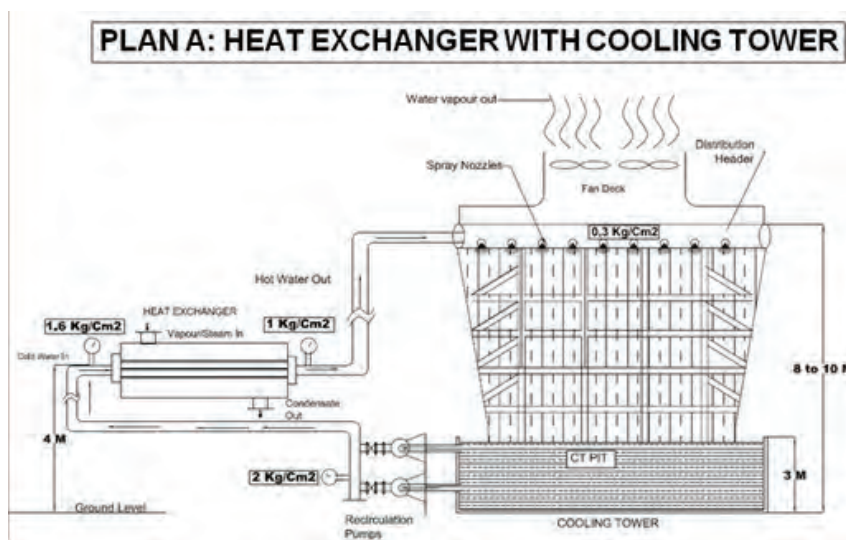
The wet cooling tower system is based on the principle of evaporation. The heated water coming out of the surface condenser is cooled as it flows through a cooling tower, where air is forced through the tower by either mechanical or natural draft.

Now a days, mostly, all wet cooling towers are mechanical draft cooling towers, where the air flow is accomplished by fans.

The Principle cooling device used in an Induced /forced draft cooling tower are Fans which run at the top of Cooling Tower (CT). Air enters through side louvers and escapes from the top. Water enters at the

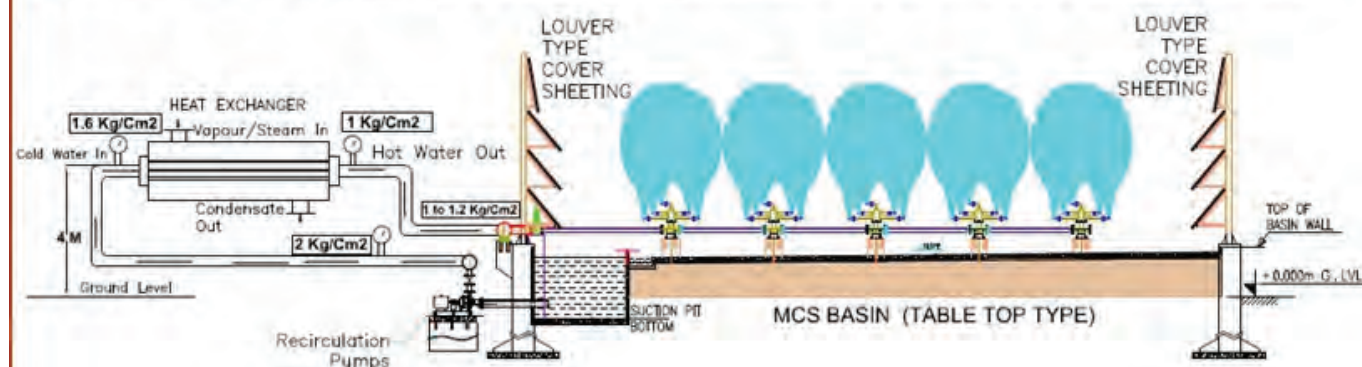
top and trickles down while getting cooled by air draft. A correctly designed induced draft CT can give an approach of 4 to 6°C to wet bulb temperature with a temp. drop of 10°C. Even a very highly efficient CT can not give an approach less than 4°C to WBT. Moreover, if ambient temperature or humidity levels rise, efficiency of CT reduces.

For a Chemical Plant, an induced draft cooling tower is designed to maintain Cold water temperature of 32°C at a WBT of 28°C with an approach of 4°C. Cooling Tower performs as desired during winter, early summer months. But during peak summer / Monsoon, efficiency of cooling tower reduces as humidity rises & its approach to WBT reaches beyond 6°C from design 4°C. Thus due to this rise in Cold Water temperature, these industries always experience loss in production by at least 5 to 7%. These losses do not occur in winter months. This means that the plant



Circulation Water Cycle in Cooling Tower Plan A:

PLAN B : HEAT EXCHANGER WITH MIST COOLING SYSTEM



Circulation Water Cycle in MCS Plan B :

will operate at a reduced efficiency for almost 5 to 6 months in a year.

Mist Cooling System

MREPL has come out with a solution by designing MIST COOLING SYSTEM which is a high efficiency system, which ensures an approach of 1°C to prevailing wet bulb temperature with a Temp. drop of 12 to 15°C even in adverse climatic conditions.

In tropical conditions, worst wet bulb temperature even at coastal applications is maximum 30.5°C. Hence MCS will always maintain Cold Water of around 31°C+1°C throughout the year. No other cooling system can operate with such efficiency and it makes cooling tower/spray pond systems obsolete.

Salient Features Of Mist Cooling System

Cold Water Temperature

Mist Cooling System ensures an approach

of 1°C to WBT with a temperature drop of 12°C to 15°C.

Energy Savings

Due to increase in DT, water quantity required at the process side is much less. MCS requires water pressure equivalent to the height of cooling tower as shown in the following diagrams. Hence, considerable amount of energy is saved on circulation water pumping. Also, MCS does not require any fans for cooling. Thus, a huge amount of energy is saved on circulation and cooling.

Maintenance

MCS has no moving parts. Also the material used in the mist cooling system is special grade saran polymer, a highly non-corrosive material having a life of more than 10-15 years. This makes MCS absolutely maintenance free. As against this, cooling towers require a heavy maintenance in form of replacement of louvers, fan blades, clamps etc. every year.

COMPARISON TABLE BETWEEN
INDUCED DRAFT COOLING TOWER / FAN LESS COOLING TOWER &
LOUVER TYPE MIST COOLING SYSTEM

Sr. No.	Feature	Induced Draft Cooling Tower (IDCT)	Fan less / Jet Cooling Tower	Louver Type Mist Cooling System
1	Approach to WBT	4 to 5 degrees.	6 to 8 degrees.	1 to 2 Degrees.
2	Temperature Drop	8 to 10 Degrees	6 to 8 Degrees	Regular: 12 Degrees. Advanced Model guarantees up to 40 Degree C in a single stroke
3	POWER CONSUMED (Comparison for a 1000 m ³ /hr circulation flow assuming IDCT's Total Power as 100%) (Please refer PLAN-A & PLAN-B)	100 HP : 100% $\left(\begin{array}{l} 70 \text{ HP : 100\% on} \\ \text{Pumping \& } \\ 30 \text{ HP : Fan} \end{array} \right)$	100 HP : 100% $\left(\begin{array}{l} 100 \text{ HP : 140\% on} \\ \text{Pumping \& } \\ 00 \text{ HP : Fan} \end{array} \right)$	70 HP : 70% $\left(\begin{array}{l} 70 \text{ HP : 100 \% on} \\ \text{Pumping \& } \\ 00 \text{ HP : Fan} \end{array} \right)$
4	Nozzles	Ordinary type which choke frequently	Ordinary Jet type which choke frequently	Special whirling type, choke-less design incorporating non-moving parts with 25 mm bore opening.
5	Water droplet size	5 mm	2 to 3 mm	Atomized to 5 to 50 Microns
6	Travel time	Less due to Downward fall only.	Less due to Downward fall only.	Two time travel due to upward & downward travel leads to Double air retention time
7	Fills/ fins	Various types used - prone to scaling, need Periodical changing	Various types used - prone to scaling, need Periodical changing	ABSOLUTELY NO FILLS / NO FINS REQUIRED.
8	Drift Loss	Same	Same	Same
9	Make Up Water	same	same	Same due to similar hold up.
10	Flexibility	Limited	Limited	Individual Line Isolation offers max. flexibility to use capacity as per requirement.
11	Standby	Required	Not Required.	Not Required.
12	Erection/delivery	Substantially high	Low	Fairly less
13	Maintenance	Very high due to replacement of fills/ fins/ fan blades etc. Also due to deposition of dust on fills, efficiency reduces with time.	Very high due to replacement of fills/ fins etc. Also due to deposition of dust on fills, efficiency reduces with time.	Negligible maintenance due to choke less operation and non-moving parts.
14	Aesthetics	Bulky, Generally most neglected part in a Plant	Untidy	Appears Fresh and Dynamic resembling active water like fountain
15	Civil Construction	Heavy due to static and dynamic load	Less	Simple due to table top construction with static load
16	Total Footprint	Less	Higher than CT	* More by 2 to 4 times to IDCT

* Note: As capacity (Flow, M3/Hr) through MCS increases, ratio of area required between MCS and CT reduces.

Chokeless Design

MCS operates with a chokeless design. Size of smallest opening in MCS is more than one inch (25 MM) in diameter. Hence chances of particles choking the system are minimum.

Various Designs Of Mcs To Suit Site Conditions



Open Pond MCS: Here, MCS ensures an approach of 1°C to WBT with a ΔT of 12 to 15°C. Water loss due to drift is 0.1 to 0.25% depending on wind load.

Louver Type MCS: Here MCS pond is closed from sides, up to a height of 8 to



10 mtrs. by louver type cover sheeting.

This reduces the plot size by 60% of open pond design. MCS ensures an approach of 2.5°C to WBT with a ΔT of 12 to 15°C. Drift loss comes down to 0.02% and also space requirement reduces considerably.

Hybrid Mist Cooling Tower : MCS/ LTMCS requires larger plot size in



comparison to the Induced draft cooling tower. To enable some clients having space limitation at site to get advantages of MCS, The Hybrid Mist cooling tower design is introduced. Here, technology of MCS and Cooling tower is combined by using lower power fans to operate in combination with MCS.

System Flexibility (Capacity Turn Down Ratio)

We offer MCS with individual line isolation

valve. MCS is the only system, which gives you such a high flexibility in operation.

Chemical Treatment

Chemical dosing requirements are similar to that of cooling tower as same hold up of water is maintained in suction pit due to Table top design of basin.

Make-Up Water Requirement

Due to latest Louver Type design, drift loss through MCS is reduced to 0.02% while maintaining an approach of around 2°C to wet bulb temperature. Hence, Overall make-up water quantity required is approximately same as compared to cooling towers. Pay Back Period: Considering All Above Benefits Of The Mcs Will Be Less Than One Year Only. ■

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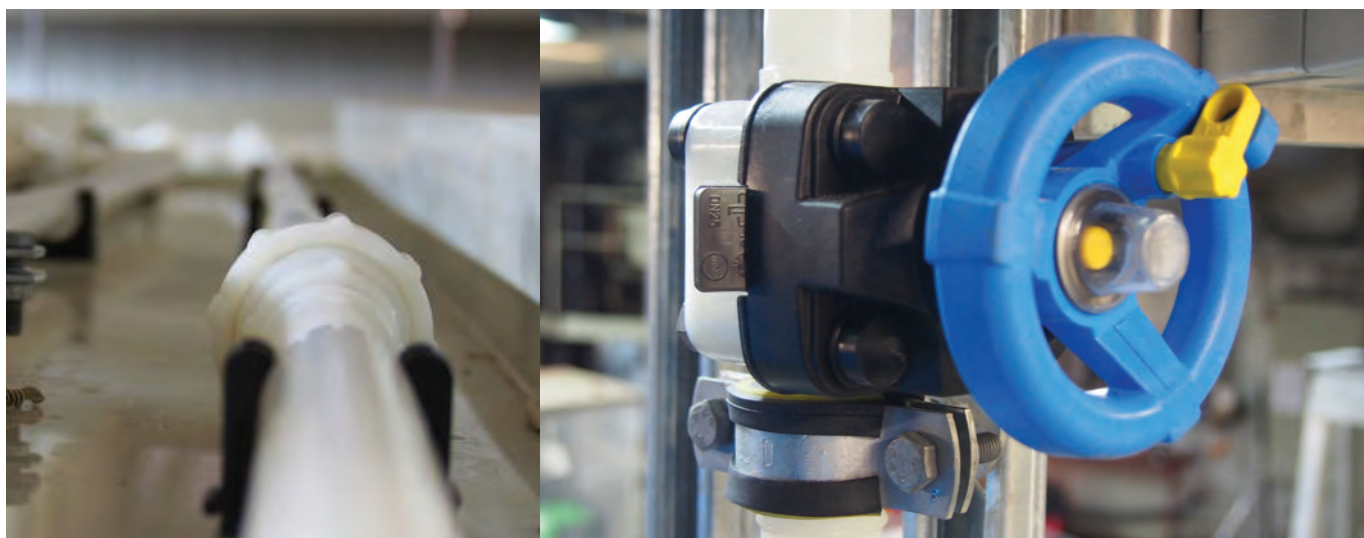
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Supply Lines In An Industrial Laundry Company



ECTFE and PVDF pipelines in channels made of PP grey

Installed ECTFE diaphragm valve of AGRU

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ECTFE and PVDF pipes, fittings, valves and semi-finished products made from PP

AGRU's partner in Finland, Atolli Oy (Fluorotech), provided the concept, the technical advice, the materials / products, the installation and the maintenance plan for two plastic pipe systems. ECTFE was used for the transport of caustic soda (NaOH concentration: 50%) and PVDF was selected for sulphuric acid (H₂SO₄ concentration: 90%). The two piping systems transport chemicals from outdoor tanks to the cleaning process into the factory.

Project Date: 2019/2020

Design/installation: Atolli Oy (Fluorotech)

Piping system: Pipes, fittings, valves in ECTFE and PVDF (32 mm; SDR21)

Channels for secondary containment: Extruded sheets made of PP-H grey

Chemical media: 50% caustic soda (NaOH), 90 % sulphuric acid (H₂SO₄)

Pressure: up to 4 bar

Temperature: maximum 60°C

Plastic Replacing Metal Pipes

Historically, the use of metal pipelines

in process and chemical industrial applications has been more wide-spread than the one of plastic pipes. While customers are often concerned about the mechanical strength as well as temperature limitations of plastics, in many cases they can provide better solutions than metals. Especially in applications where they can exploit their advantage of corrosion resistance. In this project two metal pipelines had to be replaced. Due to the outstanding chemical resistance, ECTFE and PVDF was selected for the new systems.

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About The Project

The routes for the metal pipes, which were already installed (and to be replaced), were used for the design of the new thermoplastic pipelines. The company Plasthouse Oy made a design having a main focus on cost-effectiveness and at the same time the operational requirements. Special attention was paid on safety, as the media are dangerous to human beings and the environment.

Avoiding

constructional obstacles was one of the main criteria for the design of the new plastic piping systems, since too much complexity of the pipelines would have caused a too high-pressure loss. Since the pipelines are installed at a certain height and people are working beneath the piping systems, a safety channel was installed in order to protect from any possible leakage (see figure 1). In case of an accidentally hit by a vehicle or a crane, the channel will act as a safety system. The continuous channel below the pipes was made of AGRU's extruded PP sheets. PP is a cost-effective solution and provides sufficient temporary protection against these media, keeping the costs low.

Pressure Relief Valves/Fittings Outdoor

Outdoors the valves were installed



Fittings and valves inside a box



SP 110S V3 IR welding seam (AGRU Infrared welding machine)



Pressure relief valve of AGRU

in insulation boxes in order to avoid malfunctions due to the low temperatures down to -20°C . In Figure 3 you can see AGRU diaphragm valves inside an insulation box.

Pressure relief valves were installed as a safety precaution (see figure 5). They are designed to open at a preset pressure and discharge fluid until the pressure drops to acceptable levels. This feature protects the line from possible pressure peaks coming from the pump.

Installation And Welding

One of Atolli's installation teams did the installation. IR welding, using an Agru SP 110S V3 welding machine was used, because this welding method provides the best quality of the welding beads.

It is a controlled welding process, which

creates a very low level of internal stress in the welding zones, and therefore, it will maximize the lifetime expectancy of the pipes and fittings. Besides, the welding seam is very small compared to the ones of other welding techniques, meaning that the flow loss is lower and the surface of the welding area is smoother. ■

Unique Dosing Systems Offers Total Solution To Plant, Process And Sites



Author

Mahendra Kasar

Proprietor
Unique Dosing Systems

Unique Dosing Systems are bound to serve clients with simply of best products range of Dosing Pump & System. Products are Easy installation, low maintenance, robust constructions are few of the features that make their range the preferred choice of clients in vast application i.e. Drug & pharma, Paper, Chemical, sugar, Power, oil and gas Exploration and food & beverage industries.

Having 20 years of industrial experience, Mahendra Kasar Proprietor, Unique Dosing Systems has played a vital role in establishing their strong foothold in

industry. His customer-oriented approach and ethical business policies has helped them to gain wide appreciation nationwide. Owing to his tremendous guidance, they are successfully accomplishing growing clients demand.

Unique Dosing Systems started in 2003 is an ISO 9001-2008 (Bureau Veritas Certification Agency) certified company. Pumps are design and manufacture agitators, and chemical dosing and metering Pumps and complete skid-mounted systems as per the customer requirements, production standard and system. Dosing Pumps are tested as per API 675 Standard.

UDS have sold products to government and semi-government organisations, PSUs like IOCL, DAE, BARC, ONGC, NTPC, BHEL, NPCIL, State Power, multinational and private limited companies and also exported to Bangladesh, Egypt, Zimbabwe, Qatar, Kuwait, Nigeria, South Africa, etc.

Dosing Pumps, positive displacement / reciprocating Pumps consist of two mechanisms: drive-end and liquid-end. The drive-end is filled with lubricant oil whereas, the liquid-end (head) is selected as per the compatibility of the liquid, ie, chemical being Pumped/dosed. These positive displacement/reciprocating Pumps are available in Monel, Alloy-20, Hastalloy B/C, AISI-304, AISI-316, PP, PTFE, PVC, GFT and ceramic-coated liquid heads. The accessories for Pumps and dosing systems are pulsation dampener (coated with PP, PTFE, HALAR, ETFE), anti-syphoning valve, Y-type strainer, NRV, pressure relief valve and external back-pressure valve.

Over the past 3 to 4 years, continuously investing in R&D has improved productivity. Hence, dosing Pumps and other products are with innovative design, quality workmanship and reliability.

Change in customers' requirements and the focus on customer satisfaction capable to stay ahead of the competition. Underlying code for product design/development is reliability, efficiency and productivity.

UDS vision is to become the world's leading product manufacturing company willing to serve and revolutionize and to have the strength of a big company combined with the leanness and agility of a small company.

UDS mission is to exceed our customers' requirements and expectations in quality, delivery, and cost through constant interaction and continuous improvement.

UDS also value the time, skill and expert opinions of employees and are committed to provide fair and reasonable wages, structured work schedules, and clear duties and responsibilities for each team member.

- Some Core Organisational Values
- To understand our customers' priorities and to deliver as per our commitments.
- To create relationship of sincerity, trust and honesty with people whom we deal with or matter.
- To anticipate, listen and respond to customers' needs and provide them safe, effective and caring service.
- To achieve our common goals as a team, bringing out individual talent, experience and expertise.

Unique Dosing System dedicated product management and engineering team work on understanding the customers' needs or requirements and then work on self-state-of-the-art technologies based on efficiency improvement and sustainability.

Competent professionals have worked with customers and demonstrated domain knowledge to design, execute and commission equipment as per the system and/or process equipment.

Unique Dosing System moto is providing solution to customers' project or process through quality inclusive of after sales service cost, cost of product and delivery commitment. Quality Cost & Delivery are essential on long-term relationship with customers. With a strong team of professionals we are able to provide services to customers at any given time.

Unique Dosing System believes that even small improvements are important and place strong emphasis on R&D. The cost of quality, ie, appraisal cost and in-process cost affects the quality of service cost. Now essential and is a greater demand for energy efficient – operating cost or low life cycle cost and minimum maintenance – high reliability Pumps. A significant amount of revenue, about 20 per cent, is dedicated towards R&D to improve existing and developing innovative technologies. Unique Dosing System is constantly innovating products and solutions that are relevant to our customer.

Unique Dosing System customer faith and belief on our quality is inherent characteristics and achieved through quality management systems and achieved ISO Certificate.

As per statutory requirement obtained NSIC, Import/Export Certificates, and

participate in several exhibitions in India and abroad. Unique Dosing System products are tested and certified by third party inspection authorities like Lloyd, TCE, NTPC, NPCIL, BARC, etc.

New goals are to achieve CE and ISO 14001 Certification, approvals from major consultants like EIL, TCS, Lloyd, Mecon, etc, and preparation for making whole plants.

Unique Dosing System has a separate team to ensure that all raw materials and components are tested as per the quality plan.

Unique Dosing System developed various competencies of engineering, procurement and process management. Continuously improves the effectiveness of the QMS by quality objectives and work plans. Separate team to ensure that all raw materials and components are tested as per the quality assured plan. Employers are upgraded with the capabilities of technical and administrative employees through training along with technical quality awareness.

Unique Dosing Systems are committed to satisfy customers by designing, manufacturing and servicing of chemical dosing Pumps and systems through continual improvement in all areas of operations. Customer satisfaction is approach of UDS.

To achieve quality policy following quality objectives are kept in mind whilst carrying out all our activities.

To achieve customer satisfaction through data generated from the customer feedback received from customers.

- Improve timely deliveries.
- Reduce design and development time,
- Improve customer satisfaction and reduce customer complaints.
- Technology upgradation.
- To upgrade competence of our employees.
- To increase production.
- To train employees for their job related knowledge and skill, and improve their capability.
- Preventive maintenance in time.
- Purchase of material as per relevant code in time.

Nowadays, changes in global scenario Market opportunities are governed by the mega trends that define economic progress. Solid and liquid segments of the pharma, drug, chemical and pigments, sugar and food industries are driving market growth for Pumps and system. Indian markets are one of the fastest growing markets in the next 50 years our national economy (GDP) depends on industrial growth and service industries. At present international business has slightly declined for new projects, which will go up by end of 2022. "Make in India" is a positive step to further accelerate industrial developments in India.

Unique Dosing System not only provide

dosing/metering Pumps but other equipment's like dosing systems, agitators and accessories for Pumps & dosing systems. Innovative products developed as import substitute will increase self-reliance and country should make an attempt to reduce foreign dependence. Unique Dosing System achieve fast deliveries through mass production in standard Pump and increase the sales and service centres all over India through deployment of employees and channel partners.

At present setting up a strong network of sales and after sales service hubs across Tunisia, Saudi Arabia, Chennai, Hyderabad, Kolkata, New Delhi, Vadodara, Jaipur and Indore also increasing warehouse facilities.

Unique Dosing System, in the last 4 to 5 years expanded technology and product through in-house research and development as well, as a result of observed strong internal and external growth.

Unique Dosing System products and solutions are increase efficiency and productivity of customer plant, process and sites. ■

For more information

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Continuous Chemical Charging Application



80

Boyser Indl Hose Pump Set

Application

In many API plants – pharmaceutical, specialty chemical & agri-chemical, one of the batch production processes involves dosing acids, alkalis into a reactor for a specified time whilst the reactor contents are under circulation. This is called Continuous Chemical Reactor Charging.

Pumping Options for Continuous Chemical Charging (Dosing) Application

AODD Pumps

The dosing accuracy of aodd pumps is typically +/- 5%. The advantages are the pump is cheap but will have regular

maintenance issues resulting in higher spare consumption & down time. Also due to poor dosing accuracy, more process time for balancing the composition of the end product is required resulting in longer & more expensive processes.

Single Diaphragm Motorised Pumps

The dosing accuracy of motorised single diaphragm pumps is typically +/- 3%. The advantages are the pump is cheap but will have regular maintenance issues due to non-return Ball valves, O-rings, Valve seats & other wearing parts in the pump - - resulting in higher spare consumption & down time. Also due to less accurate dosing accuracy, more time for balancing the composition of the end product

is required resulting in longer & more expensive process time.

Peristaltic / Hose Pumps

With a finer accuracy of +/-1%, these offer the best solution in terms of end product quality, lower process time, acceptability to QA & repeatability. The pump has minimal downtime due to spares consumption as the hose is the only, single wearing part. Energy consumption is very low compared to aodd pumps.

Our Solution

For Continuous Chemical Charging applications, we offer the BOYSER make Peristaltic Pump models of the AMP, FMP or RBT ranges. BOYSER hose pumps can deliver flows from 30 lph to 15000 lph & upto 15 bar differential pressure. Variety of hoses available are NR, NBr, EPDM, Tygon, Norprene, Silicone, Hypalon, Viton, etc. Hoses need to be compatible to the chemicals being pumped. In case pulsating flow is not acceptable, we offer static & active dampeners for more linear flows. Pumps can be offered with FLP or non-FLP motors.

Advantages

Advantage to use Boyser Peristaltic Pump for this application is repeatable accuracy of +/- 1%, easy variation of flow rate by changing motor rpm through VFD, high end product quality, QA acceptance in the first pass thus saving time, money & man-hours. Minimal spare requirements result

in lower down time of the equipment. In hose pumps the flow rate is directly proportional to motor speed which is controlled through VFD.

Customers

This pump can be used in Pharmaceutical Industries (API), Specialty Chemical Industries and Agri-Chemical Industries (Active Ingredient). We have been successful in applying the BOYSER hose pumps for this application in many API pharma plants.

Case Study

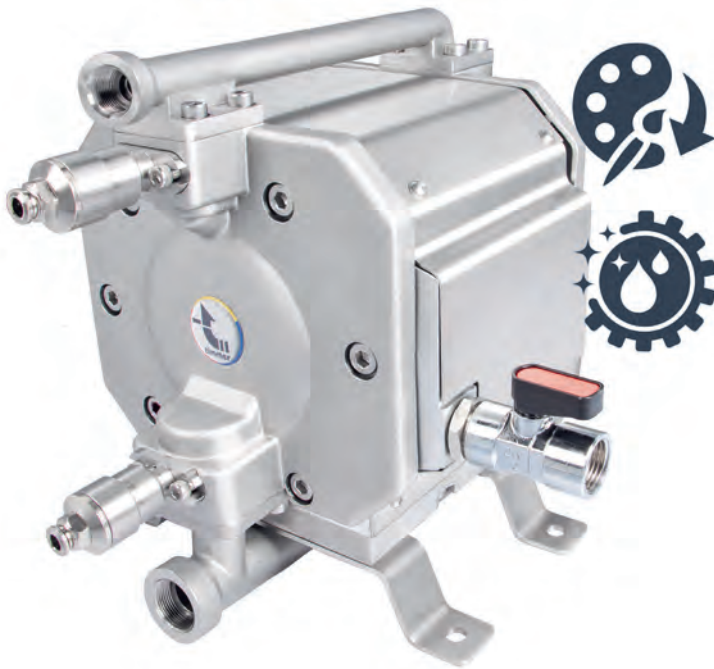
A leading Indian MNC was using aodd & single diaphragm motorized dosing pumps for continuous chemical charging applications earlier. Since the past 4 years we have supplied different models of BOYSER Peristaltic Pumpsets to them for flow duties from 200 to 800 lph @ 2 bar. They have been successfully using our BOYSER Peristaltic Pumpsets for continuous chemical charging applications at their multi-locational API plants across India. With successful usage we have received repeat orders from these plants over the past 2 years. The pumps are used for dosing chemicals as varied as 4-5% Sodium Hypochlorite, Brominated water, 50% Tetra Hydro Furan, HCl, dilute HNO₃, etc. ■

For more information

www.shanbhags.com
info@shanbhags.com

Tim®BOOST Pump Offers Paint Savings Of Up To 60 Percent

tim® BOOST



Timboost With Residual Emptying

Significantly reduce consumption of paint and solvent: With the tim®BOOST series high-pressure double diaphragm pump Timmer GmbH offers its customers in the painting industry an efficient solution. As a further development of the standard pump, with the model PTI-MHD1050 double diaphragm pump, which is optimised for residual quantities, significantly less paint remains in the pump after a paint change. This makes it possible to change special paints faster and conserve resources. In this regard, users benefit not only from the approximately 60 percent reduction

in residual quantity, they also benefit from the optimised rinsability of the pump.

Moreover, the pump is available as a variant with additional emptying of residual quantities for virtually complete recovery of paints.

“The requirements in the painting industry relative to absolute colour precision and reliable processes are increasing, while the use of more and more special colours is a huge trend in the market. With the development of a new, pump optimised for residual quantities, we facilitate the work step between the individual paint change processes”, explains Christian Thora, Timmer GmbH Sales Manager.

Timmer develops double diaphragm pump optimised for residual quantities

Previously, when painting auto parts, plastic parts or attachments, when changing paints, all line systems and pipes had to be cleaned, so that new paint could be processed without any loss in quality. “In doing so, frequently there is risk of contamination and you do not end up with the desired colour tone”, explains Thora. “In addition, the prices of paints, cleaning agents and solvents have increased drastically in recent years.” With the new model PTI-MHD1050 double diaphragm pump from Timmer, users now benefit

from an optimised cross section, which causes less residual volume to accumulate in the pump. Moreover, Timmer has improved the sealing surfaces, so that paint can no longer accumulate behind the seals. The improved sealing surfaces also have a positive effect on the rinsing process, as the pumps require less rinsing agent for cleaning.

The new double diaphragm pump from Timmer is available in two versions. A variant that is optimised for residual quantities and a variant with additional emptying of residual quantities. For the version with residual emptying, pneumatic actuators lift the media valve balls out of their seats.

Moreover, both variants are equipped with an intelligent sensor (iHZ) that can enable real-time testing of stroke signals, incl. process-relevant data, by means of a customer PLC. In addition, the pumps are suitable for the new tim[®]IOT system, which has been available since 1 May, 2021; read-out as well as statistical analysis of extensive pump data are possible. With connection to the tim[®]IOT smartbox Timmer enables many useful new features that increase profitability, process reliability and that facilitate preventive maintenance. ■

Contact

No More Compromises With The New Alfa Laval Duracirc Circumferential Piston Pump



Performance, hygiene and simpler service are essential to hygienic processes. Yet manufacturers across the dairy, food, beverage, confectionery, and home-personal care industries must often compromise on one essential to achieve another. Not anymore. The new Alfa Laval DuraCirc[®] circumferential piston pump delivers it all: robust design, high efficiency, and reliable operation; hygienic assurance with EHEDG as well as 3-A certification as standard; and, ease of maintenance.

"The DuraCirc is a gamechanger," says Russ Kelly, Portfolio Manager, Pumps, Alfa Laval. "It's everything users want, all in a single pump – the perfect balance of

supreme performance, superior hygiene, and simpler service."

Engineered for durability, reliability and efficiency, the DuraCirc extends the boundaries of process performance. With a robust construction, the pump range features a high efficiency design, wide performance envelope and low net positive suction head (NPSH) requirement. With flow rates up to 150 m³/h (660 gpm), the pump is capable of handling operating pressures up to 40 bar (580 psi), which is 15% higher than all other circumferential piston pumps available today.

84 Certified to meet EHEDG guidelines and 3-A Sanitary Standards, the DuraCirc pump assures process integrity and product quality. For a crevice-free design with no dead zones, all product-wetted elastomers are made of FDA-conforming materials and profiled and defined compression as standard; this reduces contamination risks and cuts both cleaning time and costs. Seal positioning with seal faces fully immersed in the pumped media further boosts cleaning efficiency. Heavy-duty bearings support rigid shafts located in a solid stainless steel gearcase; this reduces shaft movement, minimizing pump-head contact and therefore the risk of media contamination.

Among the DuraCirc's innovative design

features: a truly front-loading single seal; long-lasting bearings; a single, long-life gearbox lubricant; external shimming; and fully interchangeable components. These eliminate complex, costly, time-consuming rebuild procedures, simplifying maintenance.

Pump options make the DuraCirc highly adaptable, increasing application scope. Available options include a wide range of sealing alternatives, an aseptic model, a heating/cooling jacket, horizontal and vertical mounting, and rectangular inlet for high-viscosity products. Moreover, fitting an Alfa Laval CM, a wireless vibration monitoring system, to the DuraCirc protects both pump and process whilst preventing unplanned downtime. ■

Contact

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Chemtech will organize **Oil & Gas World. IE 2021**, international integrated energy show scheduled to be held online from 28th to 30th September, 2021 to engage the stakeholders from up, mid & downstream of hydrocarbon industry to see the display of technologies and engage in knowledge sharing sessions with the experts in focused conferences for E&P, Natural Gas & LNG and Refining & Petrochemicals during 3 days of online tradeshow. The event will allow the participants to engage and interact in real time around the clock to explore business opportunities across the up mid & downstream of hydrocarbon sector.

3
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