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AN INTERFACE WITH
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Special

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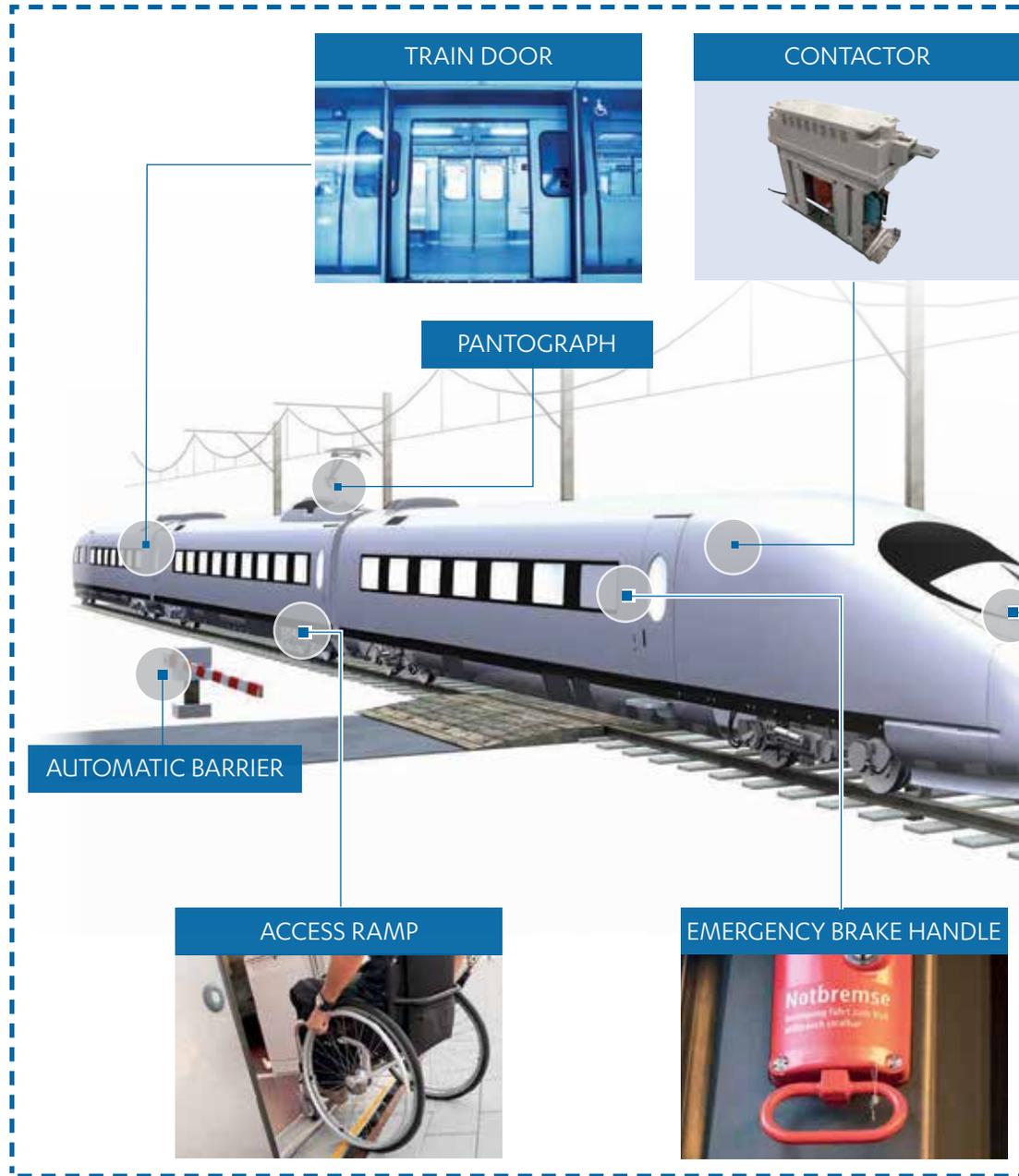
**PACKAGING &
MATERIAL HANDLING**

Special

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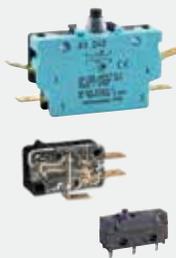
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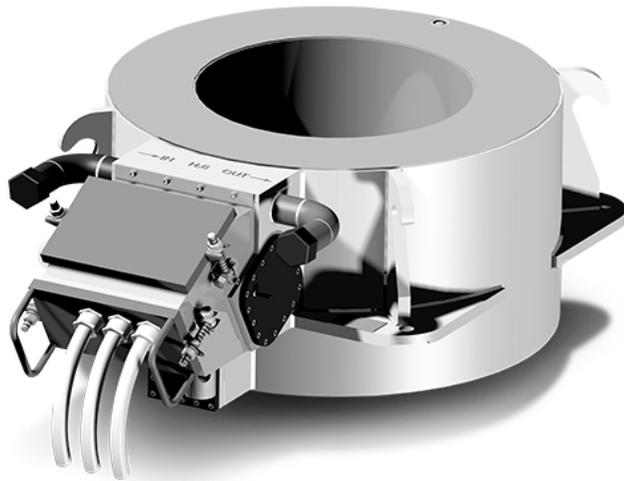


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From the CEO

Indian Casting & Forging Industry : The road ahead

Casting and forging are one of the key engineering segments supplying various components to end-user industries such as Railways, Automobile, Defence, Aerospace, Material handling, Construction equipment, and Mines. In this regard, the Indian casting and forging sector is in a good position to generate higher revenues from the auto sector. Major expansion of manufacturing units, by way of organic and inorganic growth, has been playing an important role in this industry.

Industry stakeholders are taking initiatives to acquire technology, knowledge, experience, and expertise in the industry. Meanwhile, the Indian casting and forging industry has upgraded itself to be in sync with international practices. In view of the enormous potential, domestic players have started building up world class capabilities by either putting up greenfield projects or acquiring sick global units and turning them around to set up foreign businesses in India.

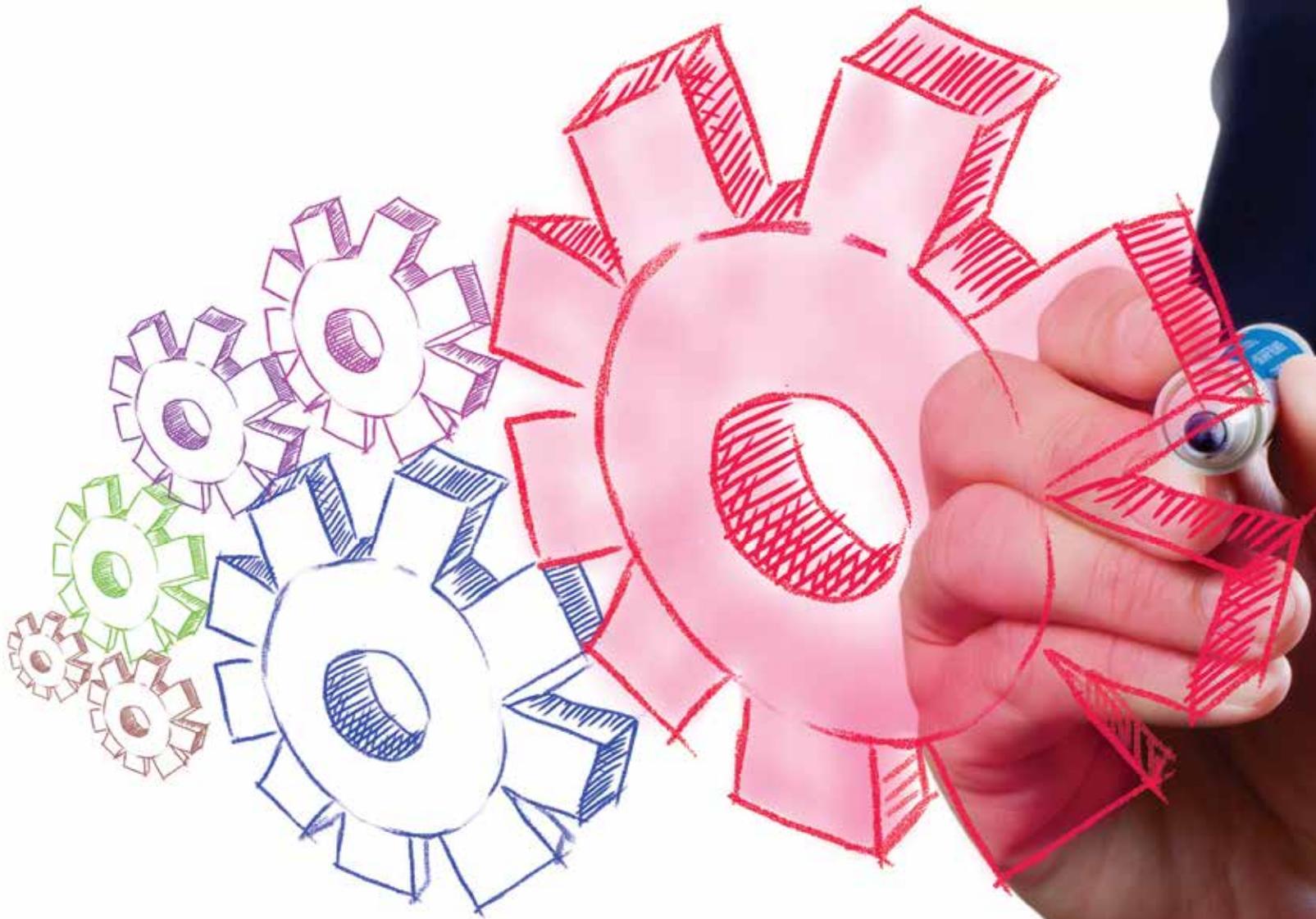
According to recent data coming in, the Indian automobile sector is presently moving towards faster growth in the new fiscal year with robust sales across all vehicle categories. Industry body, the Association of Indian Forging Industry (AIFI), recently said that in comparison to the usual trend of low production during the months of April-May, the year 2018-19 saw the industry facing continuous higher demand during the first quarter.

Government of India's 'Make in India' programme aims to raise the contribution of the manufacturing sector to 25 per cent of the Gross Domestic Product by 2025. The Indian Automotive industry commands 22 per cent of India manufacturing GDP and seven per cent of India's overall GDP.

Gradually, the market is opening up for exports. That's because of a paradigm shift in focus from China to India. The recent focus of the government on the manufacturing sector with initiatives like 'Make in India' and 'Skill India' has created a positive economic sentiment. The Indian Automotive industry commands 22 per cent of India manufacturing GDP and 7 per cent of India's overall GDP.

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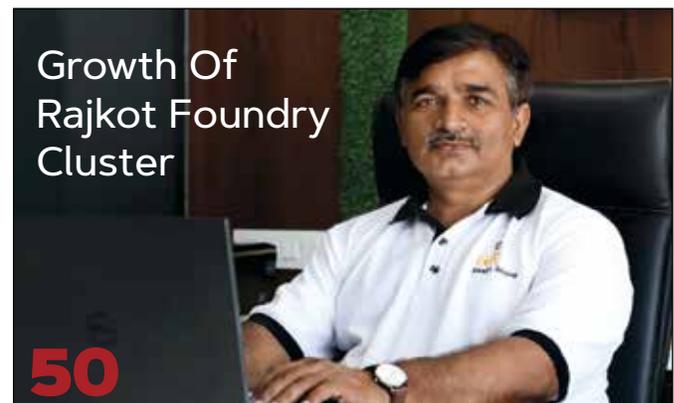
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Schaeffler India promotes sustainability, unveils beautified Jambua circle

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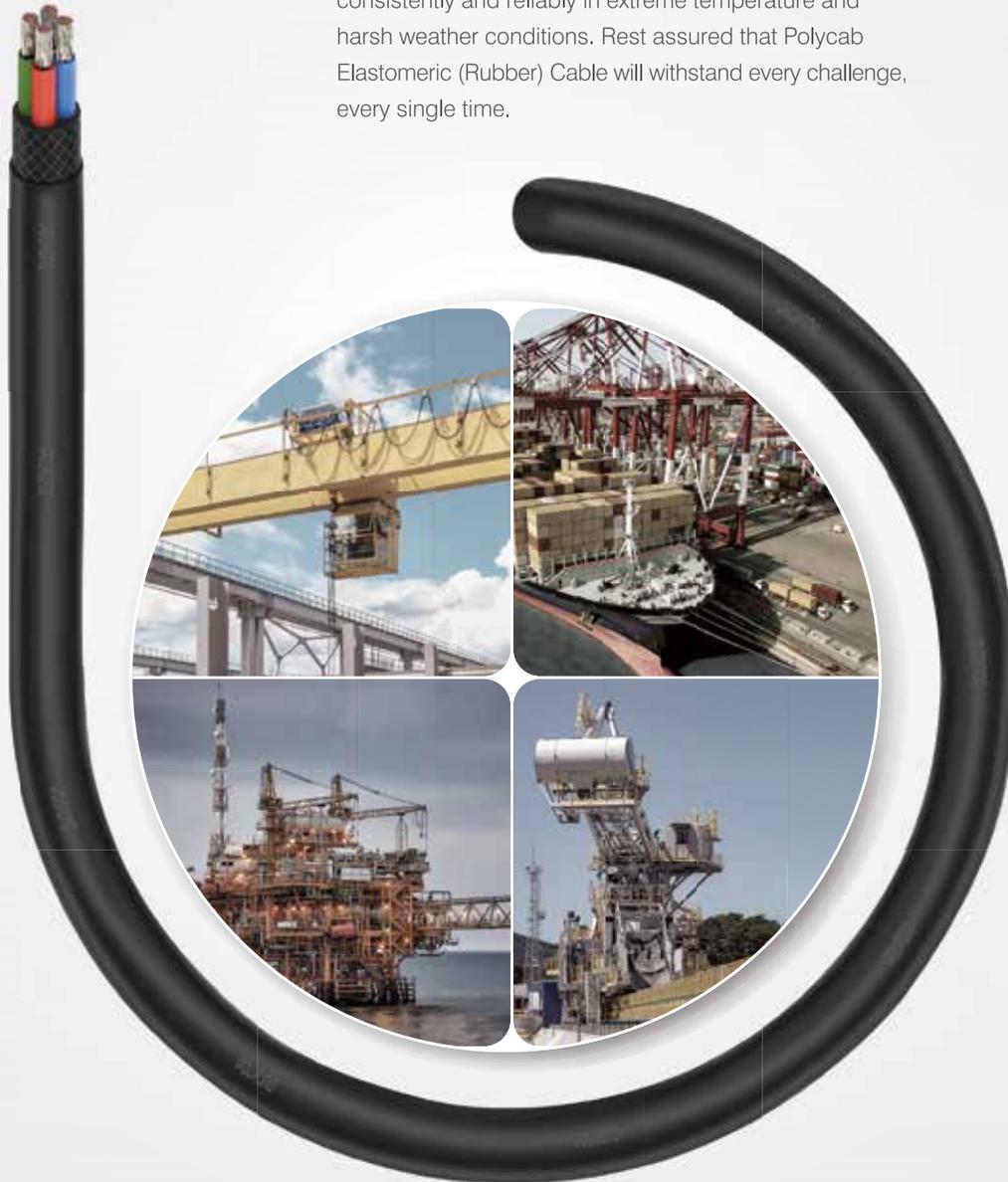




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K-Lite reconised with award in the National Architecture and Interior Design Excellence Awards & Conference 2021, Global Edition

K-Lite is proud and delighted to announce that we are once again proved of our dedication to keep the K-Lite flag to fly high by winning strings of awards in recent years, which were both artistic and commercial successes.



Recently, on 18th August 2021, "The National Architecture and Interior Design Excellence Awards & Conference 2021, Global Edition" has recognised the best efforts of K-Lite and Ms.Sharmila Kumbhat has been awarded with the following prestigious & coveted awards.

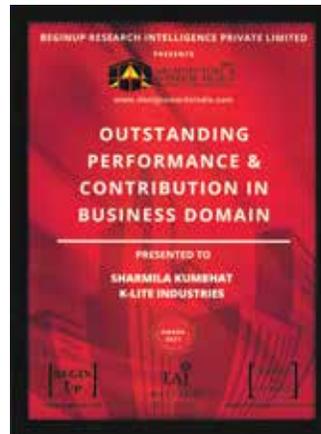
1. "Best & Most Innovative Lighting Company of the Year 2021 (India)" under Quality Products and Premium Projects category to K-Lite Industries.
2. "Outstanding Performance & Contribution in Business Domain" awarded to Ms.Sharmila Kumbhat.

These awards were presented in a glitterati function at Hotel Taj West End, Bangalore, which was attended by over 100 designers & architects

These awards are a testament to our team and innovation efforts centered around delivering the best value for our

consumers while also being conscious of our impact on the environment. With this added motivation, we will continue to work with renewed vigour towards achieving our vision of "Unlocking the extraordinary potential of light for brighter lives and a better world."

It's a major boost and a stepping stone for all of us to feel proud of this significant moment as Klite is the only company recognised in the lighting category. Together we can make a difference and make this world more sustainable. ■



Atlas Copco has acquired a German company specialized in positioning technology

Atlas Copco has acquired the assets of NATEV GmbH. The company was founded in 2010 and specializes in position solutions for assembly tools used in industrial production.

NATEV has ten employees and is located in Borken, in north-western Germany. In 2019, the company's sales amounted to approximately 1 MEUR (10.4 MSEK) and in 2020 approximately MEUR 0.5 (MSEK 5.2)

NATEV develops systems for real-time positioning and imaging solutions in close cooperation with key customers in the automotive industry. Products include hardware and software used to monitor and error proof defined production steps linked to the tightening processes.

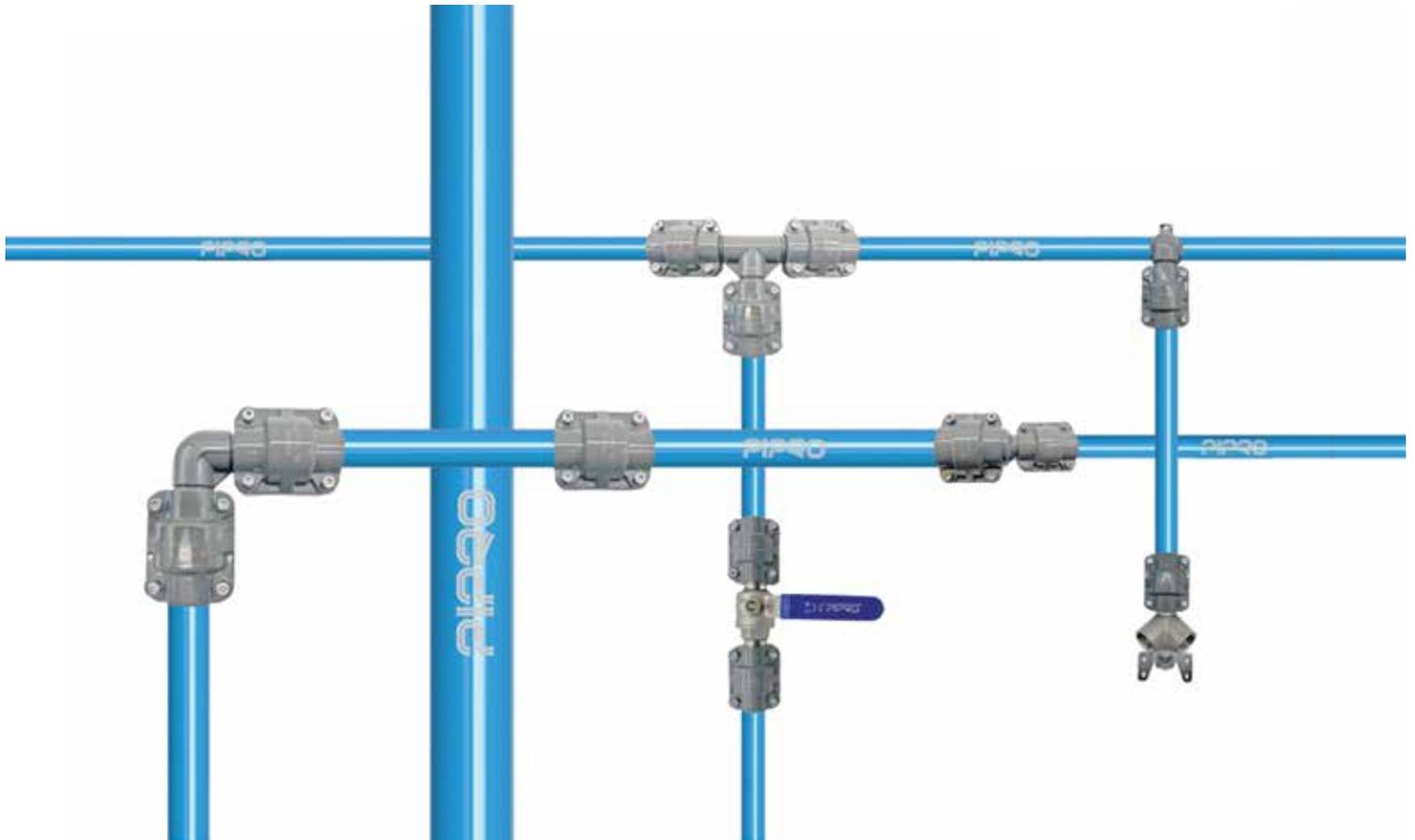
"Through NATEV's solutions we will be able to expand our offering of positioning solutions", said Henrik Elmin, Business

Area President Industrial Technique, "This is an important technology to enable flexible production in line with the Industry 4.0 vision".

The purchase price is not material relative to Atlas Copco's market capitalization and is not disclosed.

The business will be integrated into the MVI Tools and Assembly Systems Division in the Industrial Technique Business Area. ■

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Grundfos launches SCALA1 to redefine domestic water boosting in India

Grundfos India, a global leader in advanced pump solutions and a trendsetter in water technologies, announced the launch of SCALA1 today. The SCALA1 is an all-in-one pressure booster with high-efficiency motor and hydraulics with low noise operation. It is easy to install and serves as an energy efficient solution to address pressure boosting challenges at home.

Homeowners in India are currently looking for intelligent and efficient solutions that operate through minimal intervention. They also prefer systems that are easy to install, operate and perform effectively in the long run. As a fully integrated, all-in-one, self-priming pump designed for optimal pressure boosting, SCALA1 is the ideal solution to transform domestic water boosting. It is



compact, lightweight and comes with a plug & play system that does not require skilled manpower to install.

SCALA1 also enables homeowners to monitor, troubleshoot and control their pumps through their smart devices, at the touch of a button. In a push towards digitization, SCALA1 has a built-in two-way communication system that

connects to the intuitive Grundfos GO REMOTE app, a Bluetooth-enabled application for remote product control.

"Today, in residential properties, pressure boosting has become an integral part for equitable distribution of water. SCALA1 will take the users' boosting experience up a notch, by providing optimal pressure boosting solutions which is ready to install and operate. Building on its predecessor SCALA2's success, this new version of SCALA1 pump has user-friendly features like Bluetooth connectivity, that enables customers to seamlessly communicate with the pump and vice versa," said Venkataramanan Vishwanathan, Area Sales Director - Domestic Building Services, INDO Region, Grundfos. ■

Analog Devices Completes Acquisition of Maxim Integrated

Analog Devices, Inc. (NASDAQ: ADI) recently announced the completion of its previously announced acquisition of Maxim Integrated Products, Inc. (NASDAQ: MXIM). The combination further strengthens ADI's position as a high-performance analog semiconductor company with trailing twelve-month revenue of over \$9 billion, industry leading margins, and free cash flow of over \$3 billion on a pro forma basis.

"Today is a tremendous milestone for ADI and I'm delighted to welcome the Maxim team, who share our passion for solving our customers' most complex technology problems," said Vincent Roche, President and CEO. "With more than 10,000 engineers and the increased breadth and depth of our best-in-class technologies, we are well-positioned to develop even more complete, cutting-edge solutions for our customers. Together, we will drive the next waves of analog semiconductor innovation, while engineering a healthier, safer and more sustainable future for all."

Under the terms of the definitive agreement, Maxim stockholders received 0.63 of a share of ADI common stock for each share of Maxim common stock. Maxim common stock will

no longer be listed for trading on the NASDAQ stock market.

Combined Board of Directors

In connection with the closing of the transaction, Tunç Doluca, former President and Chief Executive Officer of Maxim, and Mercedes Johnson, former Founding Executive of Avago Technologies, will join the ADI Board of Directors. Mr. Doluca and Ms. Johnson served on Maxim's Board of Directors until the closing of the transaction.

Special Investor Conference Call and Webcast

ADI plans to host a webcast to discuss its upcoming capital allocation priorities and the updated fourth quarter fiscal 2021 outlook. The webcast is scheduled to begin at approximately 8:30 a.m. Eastern Time on September 8th, 2021 with Vincent Roche, President and Chief Executive Officer, Prashanth Mahendra-Rajah, Senior Vice President, Finance and Chief Financial Officer, and Michael Lucarelli, Senior Director of Investor Relations. ■



Assistance to Re-Energize Capital Investments by SMEs (ARISE)

Objective:

- Financial assistance shall be provided to brownfield / existing entities for undertaking expansion / modernization / capital expenditure in the same line of business.

Key Features:

- Attractive RoI
- 100% financing for loans upto ₹3 crore, based on FD upto 25% (interest bearing)
- Quicker sanction
- Facility of TL/FCTL available

Eligibility:

- Minimum two years of operation and audited accounts [for at least two full years]
- Cash profits in last audited financial results
- Standard Norm apply (CIBIL/CMR, due diligence etc.)

Target Group:

- MSMEs engaged in high growth and priority sectors (including sunrise sectors)

Loan Amount:

- TL upto ₹700 Lakh, subject to maximum of 80% of the project cost

Validity of Scheme :

- Upto March 31, 2022 for sanctions

Interest Rate and Repayment:

- Interest Rate- 5.50% to 6.80% pa for first year with reset applicable thereafter (as per internal rating)
- Repayment – Generally upto 7 years
Moratorium-Upto 2 years

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Lubrizol announces partnership with Prince Pipes and Fittings Ltd. for Manufacturing and Sale of Corzan® CPVC Material & Piping Solutions in India

Lubrizol Advanced Materials, Inc., inventors and the largest manufacturers of CPVC compound worldwide and Prince Pipes and Fittings Ltd., recently signed a definitive agreement of Corzan® CPVC Processor for the manufacturing and sale of Corzan® CPVC Material and Piping solutions in India. With this collaboration, Lubrizol will broaden its product offerings in the Indian industrial piping sector and will strengthen the position of Prince Pipes and Fittings Ltd in the industrial piping systems in India.

Corzan® CPVC will be available across India through Prince Pipes and Fittings Ltd. starting September 2021.

Lubrizol is a pioneer in CPVC piping technology and its Corzan® CPVC has a long history of withstanding high pressures and corrosive chemicals. Corzan® CPVC is known for its reliability, consistency, efficiency, and productivity without disruptions. It is mainly used for transporting chemicals, industrial water treatment, mineral processing, and oil & gas applications. Corzan® CPVC is recyclable and is used again as an additive in other vinyl compounds in line with Lubrizol's sustainability goals of Move Cleaner, Create Smarter, Live Better.

"Precisely engineered and real world tested, Corzan® CPVC technology embodies the highest standard of product quality and performance when a long, reliable service life is essential. We are excited to share that Corzan® CPVC Material and Piping solutions will be launched in India with a new, globally refreshed brand identity that will be visible through a reimagined font and innovative companion icon design. Our new branding embodies that precision,

innovation, and reliability. India's industrial engineers, consultants and clients have been reassured by Corzan® CPVC's higher performance which meets global standards and ensures peace of mind for customers." said Michael Fornes, Global Director - TempRite® Engineered Polymers on the announcement.

Commenting on the collaboration, Scott Mold, General Manager - TempRite® Engineered Polymers, "I am excited for our expanded partnership with Prince Pipes to launch Corzan® CPVC material and piping solutions in India. It further supports Lubrizol's long history and commitment to the Indian market and aligns with India's "Make in India" initiative. Together with Prince Pipes and Fittings leadership, I am confident this partnership will prosper and deliver the highest standard of quality and performance to the Indian industrial market."

Commenting on the collaboration Mr. Nihar Chheda, VP, Prince Pipes and Fittings Limited, said, "We are delighted to associate with Lubrizol once again. Prince Pipes is not about creating products that are different but providing solutions that make a difference. We have driven change in the industry by replacing conventional products, with high-performance user-friendly solutions. The Indian Industrial piping market has huge potential of ~INR. 160 billion. This is today dominated by the conventional pipes and low adoption of CPVC, which is majorly used only for domestic applications. Whereas globally, Corzan® CPVC pipes are well accepted for Industrial applications. This association strengthens Prince Pipes' portfolio of existing range of industrial solutions.

Prince OneFit with Corzan® CPVC Technology will solve corrosion issues while decreasing the downtime enabling continuous production. This reflects our strong intent to continue to drive high-impact change for higher value creation."

About The Lubrizol Corporation

The Lubrizol Corporation, a Berkshire Hathaway Company, leverages its unmatched science to unlock immense possibilities at the molecular level, driving sustainable and measurable results to help the world Move Cleaner, Create Smarter and Live Better. Founded in 1928, Lubrizol owns and operates more than 100 manufacturing facilities, sales and technical offices around the world and has approximately 8,800 employees. For more information, visit www.Lubrizol.com | www.corzan.com/en-in | Toll Free 18001021520

About Prince Pipes & Fittings Ltd.

Prince Pipes and Fittings Limited (PPFL) (NSE: PRINCEPIPE | BSE: 542907) is one of India's largest integrated piping solutions & multi polymer manufacturer, based in Mumbai, Maharashtra. Incorporated in 1987, Prince is one of the fastest growing companies in the Indian pipes and fittings industry. Over 3 decades, the company has been engaged in the manufacturing of polymer piping solutions in four types of polymers - CPVC, UPVC, HDPE, PPR. In August 2020, the Company announced its association with Lubrizol - inventors and largest manufacturers of CPVC compounds worldwide, headquartered in the United States; and thereafter launched Prince Flowguard Plus CPVC plumbing systems. ■



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Stronger. By Design.

Schaeffler India promotes sustainability, unveils beautified Jambua circle

- The initiative is part of company's commitment to clean & green Vadodara mission
- The sustainable installation is dedicated to the Vadodara city under the Swachh Bharat Abhiyan program
- The unique engineering marvel is synonymous with company's pioneering spirit to keep technology progress in motion

Schaeffler India, the leading integrated supplier of industrial and automotive components, today handed over the transformed Jambua Circle to the city of Vadodara.

The green isle is located near the golden quadrilateral route NH 48 and forms the entry point to Vadodara through Maneja. As a responsible corporate with a long-standing association with city of Vadodara, the company adopted the circle and has transformed it into a strong symbol that promotes the message of sustainability. The island's layout incorporates a unique engineering marvel in the form of a Granite Globe Fountain at its center, which rotates entirely through water pressure without the need for electrical or mechanical parts. The installation symbolizes company's pioneering spirit, to continue technological progress in motion.

The installation was unveiled by Mr. Shamsheer Singh, IPS, Commissioner of Police, Vadodara, and Mr. Sudhir K Patel, (GAS), Dy. Municipal Commissioner, Vadodara in presence of Schaeffler India's leadership team.

Sharing his thoughts, Mr. Harsha Kadam, MD & CEO, Schaeffler India said, "Schaeffler India has a longstanding association with Vadodara city and as a responsible corporate, our vision is to go beyond business and focus on creating sustainable economic and societal development in the region. Our social commitments for the city are well documented and the transformation of Jambua intersection into a strong message of a



clean and green city is another step in that direction."

Mr. Santanu Ghoshal, Vice President – Human Resources and Head – CSR, Schaeffler India added, "As a responsible community leader, we take active responsibility in initiatives that supports inclusive development of community while promoting values of innovation and sustainability. Such

programs contribute to the prosperity of all stakeholders through our economic success."

The granite globe fountain is a unique blend of engineering and art that perfectly complements Vadodara's rich architectural vibrancy. In addition, to community development projects the company is also working in the areas of Health Care, Professional Skill Development for Employment, Preserving the National Heritage Art & Culture, and Society Empowerment. ■





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A man in a dark suit and yellow tie stands in an office setting. He is smiling and has his right hand on a black leather chair. The background shows a white wall with horizontal lines and a green patterned curtain on the right.

Varun Arora,
General Manager
Exor India Pvt. Ltd.

EXOR : Catalysing growth with automation technology solutions

Q. Please brief us about your company's global reach & latest initiatives in industrial automation space? Which are your focus areas?

Exor is a Global Manufacturer of IoT enabled HMI & HMI with Control solutions focused on enhancing the User Experience. Exor International S.p.A. offers the World's Largest Family of HMI solutions for factory, building, marine automation and harsh environments to meet your application and budget requirements. Founded in 1971, and developing HMI since 1990, Exor has been making significant advances in the world of HMI programming software and hardware producing high quality, innovative, and visually appealing Human Machine Interface solutions. Today we have 180+ employees across Italy, Germany, USA, India and Australia and supported by local distributors in over 50 countries worldwide. Each EXOR branch is run and staffed with local skilled professionals to offer

guidance, consultation and technical support in your time zone.

In our headquarters we have opened in March this year a 100% fully digitalized factory. Not one piece of paper exists in this factory. The data we are acquiring from the factory, coupled with our ERP, MES and HR databases is allowing us to become more effective.

With the experience gained of digitalizing our own factory, our focus areas will be to share this knowledge with our factory owner's customer base, offering both technical solutions and the hands-on experience of knowing what actually it means to implement industry 4.0 in one's facilities, we believe we will grow.

Q. What are the market opportunities for Exor products in India? How do you plan to position these products?

A precise business philosophy is followed which influences all

the choices that are made: everything in the company is the result of the collaboration of experience and talent, shared with new ideas and given space for our young engineers to express themselves. In an ever-changing economic environment rather than employing our resources on what might change,

We prefer to focus on what will not change:

1. The need of our customers for our technology that reliably improves performance and security
2. The awareness that when entrepreneurs make a choice for their automation processes, they know they are committed for many years. We are aware that the entrepreneur who signs a contract which implements work runs a certain level of process risk. In this risk taking we have to be a guarantee with our products and our support.

Q. What is your marketing strategy for India?

Indian Industrial Automation market is growing at a very fast pace over the last few years and it is expected to gain even more momentum going ahead as well. Exor India is continuously doing additions to the Sales & Support team and Channel Partners to reach & cater to the maximum geographies and customer segments. To aid in this effort to reach more audience we are actively participating in more and more exhibitions (barring the COVID-19 period of course) and also increasing our presence through digital and print media.

Q. What is the role of R&D activity in your company?

EXOR controls all the macro areas of product design and development.

EXOR is the only company in the global sector that engineers from the edge to the cloud, from the level of System on Module to the Industrial cloud.

The research and development department of EXOR brings nearly 50 years of practical experience to resolve your challenges by covering the following areas:

- EXOR develops Systems on Module down to the micro and nano level with PCB design and FPGA used in product industrialization.
- EXOR develops HMI Software, including BSP, firmware, soft PLC and multiple protocol communications.
- EXOR completes the mechanical design of plastic and die



- casting moulding with extensive certification expertise.
- EXOR has an Industrial Cloud constructed with state-of-art technology specifically mapped for scalability, reliability and fault tolerance.

Q. Brief us about the quality policy for your business?

Exor Mission is to Design, produce and market automation and control systems in a global market.

These systems must meet the needs of the individual customer and respect “man and the environment”, our slogan is “Technology for life”.

Disseminating the culture of quality, environmental aspects and safety obligations within the company through appropriate training actions, safeguarding the work environment and worker safety. We operate in a highly competitive market; therefore, we are constantly looking for differentiation, market niches and special applications that can enhance and exploit the potential of the Product

We also focus on a highly qualified post-sales activity to give our customers a fast and professional service.

We want our products to be reliable over time, to meet the needs of the market, the individual customer and we are committed to ensuring that they comply with the mandatory requirements.

We make sure that our products must be versatile and easily customizable:

- From the Hardware point of view, at various levels, maintaining the characteristics of the standard product unchanged.
- From the Software point of view, having cutting-edge programming tools and user interfaces that are easy to understand and use.

Through a careful process of design and industrialization we guarantee the optimization and the evolution of the product and the manufacturing process, the life cycle of our products is always analyzed both from a qualitative and environmental point of view.



Q. Could you brief us on Indian & Global perspective of your industry?

The industrial automation market is expected to register a CAGR of 9.3% from 2020 to 2027 to reach \$306.2 billion by 2027 from \$164.2 billion in 2020. The industrial automation market is growing rapidly due to the high adoption of automation solutions in the manufacturing sector. Manufacturing companies are increasingly investing in industrial automation technologies to improve system reliability & efficiency and eliminate production errors caused by human labor.

The COVID-19 pandemic has drastically impacted several manufacturing and processing industries across the globe.

The industrial sector was severely impacted by the pandemic due to the reduced consumption of high-cost products and the consumers' inclination to spend on only the most essential goods & services. During the nation-wide lockdowns, consumers restricted their spending on consumer goods, high-cost electronics, textiles, automobiles, and machinery, which impacted the major application sectors for the industrial automation market. With countries resuming trade and economic activity and stability in consumer lifestyles, the spending on these products and services is expected to increase, boosting the demand for automation solutions over the coming years. The market is expected to recover in 2021 and 2022 due to restrictions on the volume of human labour allowed at manufacturing facilities and keep growing in the coming years, especially with increasing focus on digitalisation and servitization.

Q. According to you what are the factors affecting to your business?

The current global component shortage issue of course. But the underlying trend is for more edge devices to be sought. This will only increase with the introduction over the next few years of 5G networks.

Q. What are the key technological trends that are driving industrial automation industry?

The market evolves at a pace that is consistent with the principal

needs of the participants: safe, durable technology that helps the real needs of industry. The market is understandably cautious in its adoption of new technology as the risk of production line disruptions have a high cost.

That said, in recent times the concepts of digitalization of the factory and servitization of the machines, have become more in focus. We believe this trend will accelerate in the coming years and require a renewed attention upon smart edge devices capable of high compute AI and deep machine learning.

Q. What is your vision for your company?

To be considered the "Trusted Partner" to our customer base for the entire spectrum of IoT platform. Basically, to help our customers remain competitive in a challenging world.

Q. What are the issues you need to address that are related to your industry?

The major issues fall into 8 distinct categories where every company is or will be competing within:

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3. Data-driven Quality Improvement
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5. Human data interface
6. Predictive Maintenance
7. Remote Servicing
8. Virtual Training and Validation

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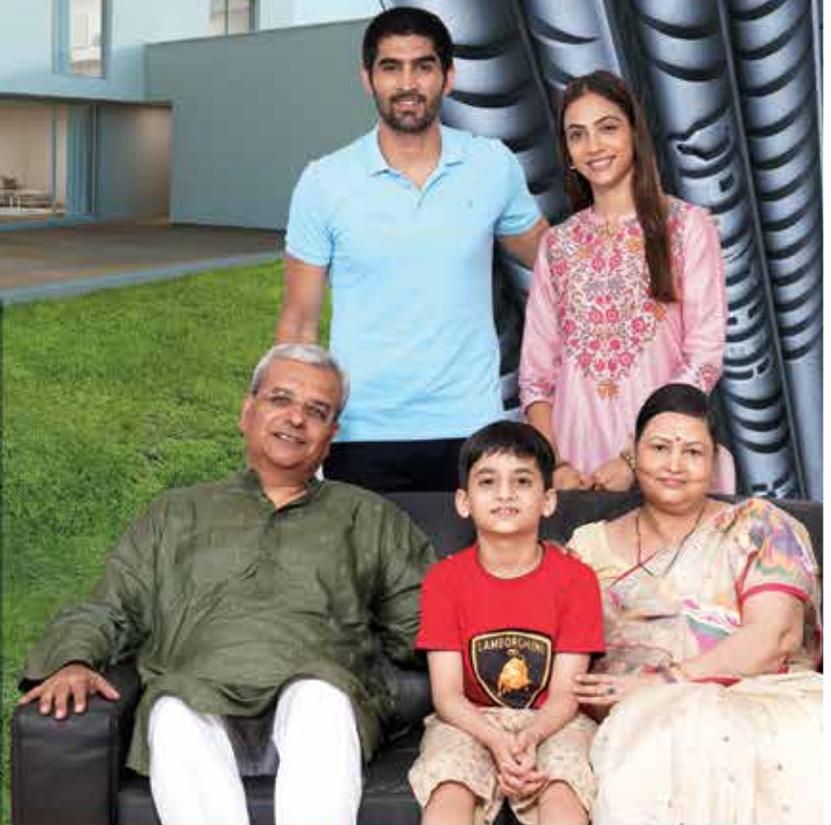
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Williams Advanced Engineering (WAE) agree a strategic collaboration with Molicel covering current and next generation battery cells

- Williams Advanced Engineering (WAE) and Molicel have signed a strategic collaboration designed to support the current and next generation of power-optimised battery cells
- Molicel currently produces a range of power-optimised cells and is already involved in a number of key projects with Williams Advanced Engineering (WAE), supporting revolutionary new cell development for future applications
- Molicel has accumulated extensive expertise and know-how in chemical research and manufacturing engineering during the last 40 years in addition to database design and validation methodologies
- WAE will work with the Molicel team on product design and manufacturing engineering to advance future technologies

Williams Advanced Engineering and Molicel have agreed a strategic collaboration to support the next generation of high performance, superior quality, lithium-ion power battery cells.

The collaboration will bring together power-optimised cell technology from Molicel, together with WAE's advanced system design and control systems know how to deliver a shared vision of high performance battery systems, optimised for power, while also delivering energy density, across a number of industries.

Molicel has accumulated extensive expertise and know-how in chemical research and manufacturing engineering during the last 40 years in addition to database design and validation methodologies. The relationship will initially focus on collaboration to assess and develop technology to support demonstration activities aimed at growing market awareness of this exciting technological development.

"We are committed to the



engineering challenge of cell technology development and in conjunction with Molicel, believe we can address a number of opportunities across a wide range of applications and we look forward to working with the team at Molicel," said Paul McNamara, Technical Director, Williams Advanced Engineering.

Casey Shiue, President of E-One Moli Energy (MOLICEL), added: "Molicel is on

a mission to produce outstanding cells to drive the electric evolution. We will bring our expertise and experiences on consistent high power, low impedance and fast charge to our collaboration with Williams Advanced Engineering (WAE). Our technology is well suited to the arenas that WAE operates and we are happy to be part of this exciting collaboration". ■



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Carbon Steel

ASTM A179, 192, 210, 556, 519 106 Gr. A / B / C, A-333 & 334 Gr.1/3/6 & their equivalents in ASME, DIN, EN, BS etc.
"BS-1775, 3059, 3601, DIN-1629, 2391, 2448, EN10216-2 St-35.8, 45.8, 52, P195, P235, P265, P235GH, P265GH, AISI 1026, 4130, 4140, 8620, etc. "

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SinnovaTek announces Nomatic Precision Processing System

Provides advanced technology for smooth food and beverage products

SinnovaTek, a leading developer and integrator of advanced food processing equipment and technology, announces the availability of the Nomatic Precision Processing System, ideal for smooth food and beverage products produced on a small scale. With a throughput range of 1-3 liters per minute (lpm), Nomatic ensures retention of nutrients, quality, color, and flavor. It is a good choice for producing baby food, sauces, fruit and vegetable purees, as well as coffee and smoothies. Featuring a portable design and small footprint, Nomatic is easy to move and can fit through a standard door. The integrated clean-in-place (CIP) system means the system is easy to clean and the user-friendly control panel ensures simple operation and control.

Configurable for extended shelf-life

(ESL), hot fill, or aseptic processing, Nomatic enables the testing of numerous product types. It can replicate a range of processes and process a wide range of viscosities, offering operators tremendous flexibility in product categories. Nomatic's size makes it a good choice for producing small batches, as little as 5 gallons for trial purposes.

Up to six controllable heating sections enables Nomatic to replicate the thermal processing parameters of large scale systems. The system runs on microwave energy, an electric energy source offering minimal thermal degradation of product. The entire processing system is under positive pressure during processing so there is no loss of volatile and sensitive flavors.

To learn more, schedule a trial, or

purchase a Nomatic, contact us at <https://www.sinnovatek.com/contact.html>.

About SinnovaTek

SinnovaTek is a leading developer and integrator of advanced food processing equipment and technology through its family of companies including SinnoVita and FirstWave. As a certified B corporation, SinnovaTek's mission is to promote worldwide health and wellness by fostering the delivery of high quality, healthy foods through sustainable methods.

The SinnovaTek family of companies provides several pathways to service its customers' needs:

- SinnovaTek. Provides high-quality continuous flow microwave processing systems and pumps to food manufacturers along with the engineering and R&D support to make them successful.
- SinnoVita: Provides science-backed VITERO ingredient technologies to reduce food waste and increase nutrient delivery.
- FirstWave. Provides a platform for companies to launch and test new products in a high quality aseptic format without the minimum order quantities that are normally required for a launch, enabling SinnovaTek to service customer production needs before they are ready to move to a larger scale. ■



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Casting and forging industry expects to deal with Covid third wave better

The fourth largest sector in the country, the Indian Automotive Industry is on the upswing and all big producers are relocating their manufacturing in this region to be near the upcoming biggest consumer markets. At present, India is the world's third-largest casting producer and this ranking should open more opportunities for the casting and forging industry both for domestic production and for exports.

Casting and forging mechanism is widely used in automobile, mining, construction and other industries. Global casting and forging market is expected to grow at a steady rate between 2021 and 2026.

The scourge of COVID-19 has affected the global economy primarily in three ways: by directly affecting production and demand, by creating supply chain and market disruption, and by its financial impact on firms and financial markets. Industry stakeholders monitoring the situation across the globe have observed that the market will generate remunerative prospects for the producers post COVID-19 crisis. They have also provided an additional illustration of the latest scenario, economic slowdown, and COVID-19 impact on the overall industry.

Fundamentally, the manufacturing processes of casting and forging are used to provide intricate shape to industrial components. The primary difference between both the processes is that forging is extensively performed through the usage of iron and steel metal. Incidentally, no industrial product can be considered complete without the processes of casting and forging. Both the processes have been in use since the beginning of the industrial revolution. However, forgings are preferred over casting because of superior directional strength, high impact toughness, fatigue properties, and structural integrity.

Being two of the key engineering segments, casting and forging, have been supplying various critical components to end-user industries such as railways, automobile, defence, aerospace, material handling, construction equipment, and

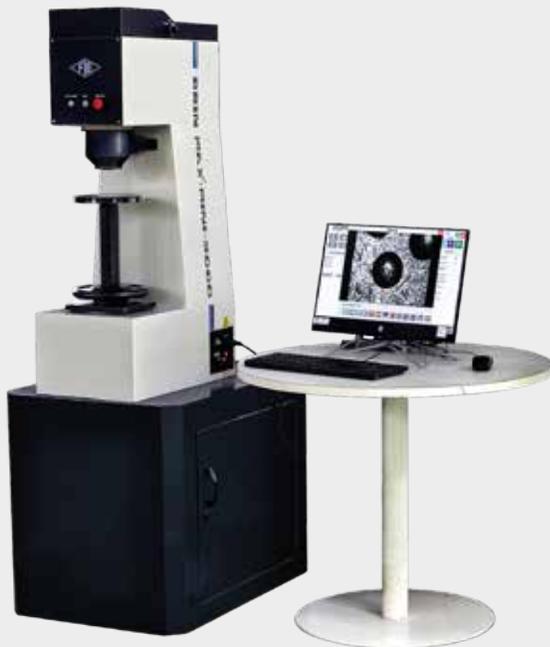


mines. The Indian casting and forging industry have evolved enough to retain its role in accelerating revenue from the auto sector. Huge expansion by way of organic and inorganic growth has been playing an important role in this industry. Forging players are taking initiative to acquire technology, knowledge, experience, and expertise from various sources. The domestic casting and forging industry have upgraded itself to be in sync with the international practices. In view of the enormous potential, frontline domestic players have started building up world-class capabilities by either putting up Greenfield projects or acquiring sick global facilities and turning them around as business solutions for setting up a foreign business in India.

The Indian automobile sector was moving towards a higher

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Casting

growth trajectory before the pandemic struck with robust sales growth across all vehicle categories. The Association of Indian Forging Industry (AIFI) stated a few years ago that in comparison to the usual trend of low production during the months of April-May in a fiscal year, the year 2018-19 saw the industry moving on a continuous higher demand during the first quarter. However, that changed once the pandemic related lockdown was imposed.

Forging is considered an integral part of manufacturing industry. Just like the casting industry, the forging industry also supports economic growth of a country through vital sectors such as automotive, heavy industrial machinery, power, construction and mining equipment, railways and engineering in general.

The focus of the government on the manufacturing sector with initiatives like 'Make in India' and 'Skill India' has certainly created positive economic sentiments amongst the business community albeit with riders. Many international OEMs and Tier-I players have started setting up purchasing offices in India and looking at procuring quality products.

Indian forging units are typically classified in five broad categories namely, very large (with capacity over 75,000 MT), large (capacity ranging from 30,000 to 75,000 MT), medium (capacity over 12,500 up to 30,000 MT), small (ranging from 5,000 to 12,500 MT) and very small (up to 5,000 MT capacity). However, the domestic forging industry has transcended from being a labour-intensive industry to capital-intensive manufacturing sector. The Indian forging sector has so far invested Rs 28,910 crore in plant and machinery.

India has an annual output of about three million MT and the forging industry has around 400 forging units, of which 83 per cent can broadly be categorised as tiny and

VS



Forging

small enterprises and nine per cent are medium-sized, the remaining being large scale. The domestic SMEs usually contribute 30 per cent of the forging production while medium and large-scale units contribute the remaining 70 per cent. The total forging production of the country is worth Rs 45000-50000 crore and the forging industry provides direct employment to more than 300,000 people along with an additional 60,000 contractual labourers.

The domestic forging companies are concentrated around the end user locations. For logistic purposes all major forging clusters are generally found in the states of Maharashtra, Punjab, Gujarat, Tamil Nadu, Haryana, Delhi, Karnataka, Jharkhand, West Bengal and Andhra Pradesh. India is the world's third-largest casting producer. This development should open up better opportunities for the casting and forging industries for domestic consumption as well as exports.

Gradually, the market is opening up for exports. That's because of a paradigm shift in focus from China to India. The recent focus of the government on the manufacturing sector with initiatives like 'Make in India' and 'Skill India' has created a positive economic sentiment. The Indian Automotive industry commands 22 per cent of India manufacturing GDP and 7 per cent of India's overall GDP. Zion, a market research company recently published a report stating that the global steel forging market for automotive applications would reach \$56 billion by the year 2022 from \$41.77 billion in the year 2016 growing at a Compound Annual Growth Rate (CAGR) of 5.1 per cent between 2017 and 2022. ■

Arijit Nag is a freelance journalist who writes on the economy and current affairs.

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DNR TECHNO SERVICES : Benchmarking the quality standards

DNR TECHNO SERVICES (New Delhi) is leading solution provider of foundry machines, machine tools & laser marking machines. In foundry machine we have TBC, Taiwan make Cold & Hot chamber die casting machines, Vertical squeeze casting machines, Core shooters, Forging machine, Brass gravity casting machines,...

TECHNOLOGY BASE CORPORATION (TBC) was established in 1987, located in Kaohsiung, south of Taiwan. TBC is a professional die cast machinery manufacturer with more than 30 years' rich experience. They are the first die casting machine manufacturer in Taiwan with ISO9001 accreditation marketplace. TBC is continuously looking for new and better ways forward in research and innovation in die casting industry field with automation integration. TBC & DNR is actively extending their growth further into INDIA with complete maintenance base to provide the most instant services. We would like to thank customers in INDIA for purchasing TBC die casting machines.

We are constantly challenging us to make more from less without compromising on quality. We dare to push the envelope, to constantly improve ourselves. ■



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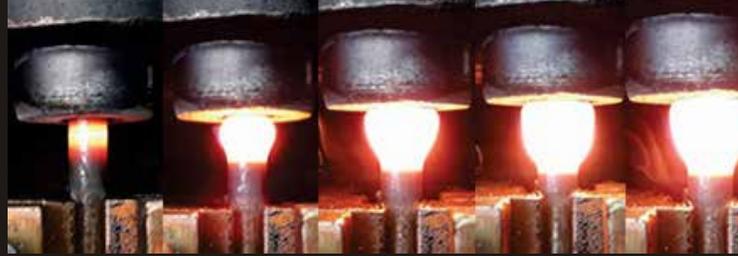
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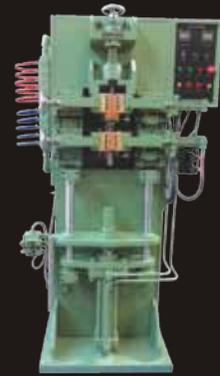
Welding and heating being the fields of our specialization and expertise, we not only design, engineer and manufacture a spectrum of products but also integrate them into our clients process sequence through our technical support services.



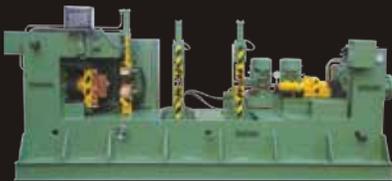
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METAL GATHERING MACHINE 75 KVA FOR CENTER MACHINE



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METAL GATHERING MACHINE 100 KVA HORIZONTAL TYPE FOR TORSION BARS & STABILIZER BARS



METAL GATHERING MACHINE 250 KVA HORIZONTAL TYPE FOR SHAFTS

ADVANTAGES

- Simultaneously heating and forming in the same machine.
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 - Minimal scaling improved die life in subsequent forging operations.
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- Free upsets can be finished forged without re-heating and so save time and energy.
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 - Improved part strength.
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Yeskolube India - Driving the wheels of change

Lubricants are the lifeblood of machines. If there weren't any lubricants, life would grind to a halt, literally! Yeskolube India Pvt. Ltd. is the youngest, fastest-growing brand today in the world of forging and casting lubricants, becoming one of the leading manufacturers within a very short span.

Beginnings and Growth

Founded by Mr. Sandeep Gaikwad, who has been working in this sector for over 14 years, Yeskolube has emerged as one of the rising stars of the lubrication industry, providing high-quality, best-in-class products at cost-effective prices. We have a strong base established in Pan-India, with manufacturing facilities in Maharashtra and [state].

With the Atma Nirbhar movement in mind, Yeskolube started with a singular goal - to make indigenous lubricants available to Indian manufacturers and industries that are on par with international standards.

Yeskolube India manufactures and supplies hot forging and oil-based die lubricants to all the corners of India.

Developed with the best raw materials, our products have helped our clients achieve optimum machine efficiency time and again!

Paving the way for sustainable manufacturing

At Yeskolube, we are hyper-aware of environmental impacts like carbon emission and climate change which motivates us to develop sustainable, environment-friendly products that can minimize environmental impact.

With this end in sight, we have developed a new range of non-graphite lubricants that are much more eco-friendly than graphite-based solutions, without compromising on performance or efficiency.



Our signature products include high-performance Die Coat for HPDC, White Lube Hot Forging Die Lubricants, and ultra-efficient spraying equipment that are engineered for precision forging and casting.

Our Motivation and Vision

At Yeskolube, we have a team of highly qualified chemical and technical experts, who work consistently to optimize the lubricants. We always compete with ourselves, pushing us to become one of the leading manufacturers of lubricants in India. We pride ourselves on going the extra mile to help out our clients, giving 100% client satisfaction, excellent product performance, timely delivery, and the best-in-class post-sales service which helped us become a reliable partner for forging and casting companies in India and overseas.

Even the pandemic has not dampened our spirit for growth; we have set up our two manufacturing units during the ongoing pandemic, ensuring an uninterrupted supply of lubrication solutions to engineering companies.

The Way Forward

The manufacturing industry is witnessing a dynamic shift towards sustainability and self-dependence. We are thriving in an atmosphere of innovation.

Yeskolube is proud to be a part of this indigenous brand of companies that are coming up with ingenious solutions, bringing local manufacturers into the spotlight while staying true to the international quality demands, at a fraction of the cost.

Today, as the world embraces technology like never before, Yeskolube is keeping up with the dynamic demands of the industry by changing the face of the manufacturing world, one drop at a time! ■

For more information

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PRECISION RECESS GRINDING MACHINE



CNC LATHE 'FABIO'



TABLETOP
LATHE MACHINE - TLM01



PRODUCTION CNC LATHE



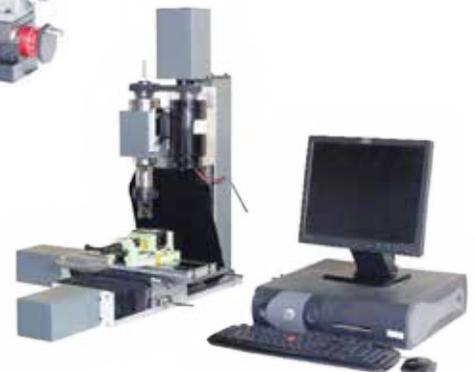
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Probing System and CNC Machining

In Casting & Forging, as in other applications, Probing Systems provide the foundation needed to embed analytics, intelligent decision making and play a significant role in enabling preventive or predictive maintenance.

In CNC machining, a probing system is a highly accurate measuring device which helps in taking part offset, measure dimensions after finishing operations and monitor surface conditions. Probing systems are increasingly becoming a must have, rather than good to have, with the keen focus towards Industry 4.0. Casting & Forging will be no exception to this. The data coming from Probing systems provides the foundation needed to embed analytics, intelligent decision making and play a role in enabling preventive or predictive maintenance. While many companies recognise the importance of having a scientific method for taking offsets in India, be it work or tool offsets, we see a very low adoption rate when we look at probing systems available. What might be those obstacles that force people to use conventional methods over technology? As part of this article, let us explore some of those in some detail. This will surely not be an exhaustive analysis. However it will give a bird's eye view of the topic.

High Investment Cost

This is one of the biggest road blocks in adopting probing technology for most organisations. Whilst large organisations may still be able to afford this, when it comes to SMBs or

MSMEs, the high cost of initial investment in a probing system, makes them to choose conventional methods. If we look at companies which are paying 25 to 50 lakhs on CNC Machines, a probing system that costs 5-10% of this value seems like a good to have accessory that can wait rather than an immediate need that requires investment. Add to this the dimension of imports in case of India. Most of the probing systems that are available are import options and this means, a probe that costs \$4,000 in the country of origin will end up costing \$6,000-\$8,000 when it needs to be imported to India. If customers have the option of low cost and affordable Probes, it can propel companies to be able to enable each machine with a probe, instead of investing on Probes only for machines that are involved in critical operations. This will ensure quality is maintained across several stages of machining from rough operations till finishing.

Serviceability

Current situation is that if there is a damage to the probe, the downtime involved is nearly 2-3 months, as the probes need to be returned to the country of origin for inspection and repair. Also, on an average 1 in every 20 Probes stands a chance of



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being serviced or repaired and others are suggested to be replaced. Eighty per cent (80%) or more times, owners have two equally bad options with them. One is to go for a replacement of damaged probe or two is avoid repeat capital investment, by going back to conventional and crude methods of paper, pin, dial, blue dot, blue ink to name a few. Then, you have real cheap import options that can last 6 hours/6 days/6 weeks or 6 months or more. There are no guarantees in their case. Adopting Probes will be easier, when their maintenance, upkeep is fast, easy and less expensive. Service assurance helps probes to have extended useful life, in some cases, this could even surpass the useful life of CNC Machines. A combination of low initial investment and easy maintenance will make our Probes a preferred choice.

Change Management

While using probes, chances of accidents are always there. For example, when stylus breaks, most of the times, operator gets penalised and this in turn makes them fearful of ever going back to Probes. They will prefer to use paper method or dial even if they take longer, are more inaccurate leading to higher rework. Similarly, owners would rather live with side effects of conventional method versus expensive upkeep of Probes. In cases where probes are mandated by the company from whom they get their orders, they have little choice but to invest in them. However, to what extent they are really being used in machining operations is another matter. The combination of expensive upkeep or even worse, 100% replacement, instils low confidence to make probes part of the process. If companies have options of Probes that are rugged, durable and built for local manufacturing conditions, along with being serviceable, owners and operators can overcome the existing fear around probes.

Fear of Getting an ROI

A combination of all the above factors mentioned, make



owners wonder if they will ever get a good return on their investment on Probes. When you compare a combination of high initial investment, low serviceability and fear of usage with lower productivity and high rework, the latter seem lesser evils to manage. However, when companies have the option of lower capital investment, service assurance and easier acceptance

by operators (owners as well), a good return on investment is bound to happen. Return on investment is faster in case of affordable probes as they will eliminate the repeated buying of dials (on an average every 3-6 months dials are broken), get higher accuracy (20-50 microns inaccuracies are a given in conventional methods) and get higher machining time (what takes minutes in conventional methods takes seconds using Probes). When you multiple just your time saved in taking offsets with your machining hourly rate, an affordable probe leads to payback of investment in 1-2 months. Apart from this, when you consider lower rejection/rework, higher productivity, better working conditions for operators leading to higher job satisfaction/morale, higher employee retention, companies will have no hesitation in large scale adoption of probes in their operations.

CONCLUSION:

Recognizing the benefits of intermediate inspections that is before and after machining is important to identify the castings and forgings that present potential issues. Premachining inspections can be used to measure dimensions and validate if the material quantity is sufficient on specific surfaces. Post-machining inspections are equally important to provide an overall view of the entire casting and forging, as well as inspecting the complete surface. The ultimate objective, is to produce parts that meet the required tolerances. Absence of this might result in delivering of non-compliant parts to clients, which can have severe consequences and lead to financial and legal issues. To protect themselves, clients demand quality inspection reports on each part. This is where probing systems can come into the picture and with the above points, hope to see companies embrace this easily. MANLEO is a Make in India company that provides best-in-class probes with highest durability. We enable great precision at affordable investment. ■

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Ladders Are Unsafe.

ADVANTAGES

- Eliminates need of scaffolding & ladders.
- Highly maneuverable & fits in tight places.
- Saves time, man-power & money on overhead maintenance.
- Quick & safe method to lift men & materials.
- Adjustable to any working height with the touch of a button.
- Self propelled equipment - driven by Joystick.

APPLICATIONS

- Overhead Pneumatic, Fluid & Steam Pipeline Installation & Maintenance.
- Air Condition Duct Installation.
- Ceiling Fixing & Roof Repair Work.
- Aircraft Maintenance & Assembly Work.
- Overhead Welding, Painting & Repairs.
- Assembly Of Machineries & Maintenance.
- Ship Maintenance Like Welding & Painting.
- Overhead Electrical Light & Fan Maintenance.
- EOT Crane Maintenance.



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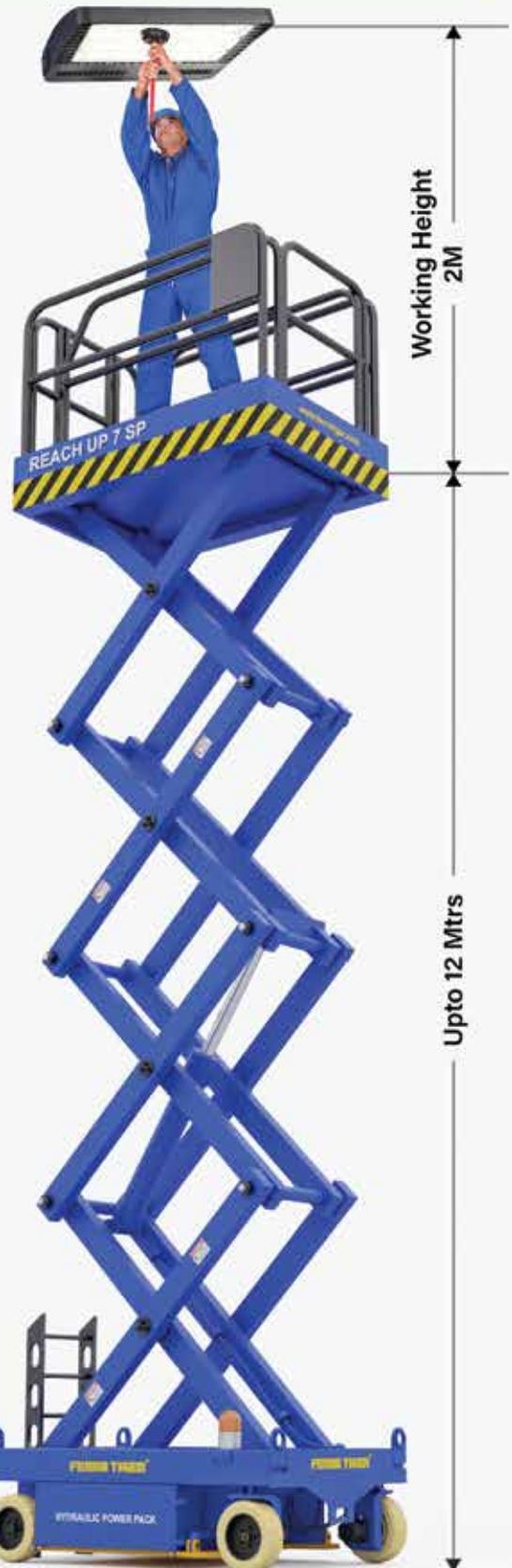
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“It is the aim of tec.nicum to support the market & customers with the necessary man-machine safety knowledge and skills”

tec.nicum is the independent service division of the Schmersal Group. It provides competent, manufacturer-neutral consultancy services for all questions about machine safety and occupational safety. In addition, the experts at tec.nicum plan and implement complex safety solutions in close cooperation with our customers. I have twelve years of excellent experience in the field of safety technology that adds value to any industry. It's for all industry segments a success factor to operate machines in a safe mode.

Q. Share your roles & job profile at “SCHMERSAL”.

My Current Role within Schmersal India is a Business Head for the tec.nicum division which includes overseeing the operation of this entire tec.nicum division.

Establish tec.nicum brand in the market as an independent machine safety consultant to support Industries with various safety services like Academic courses, safety Engineering service which includes design, implementation & Validation to make a safe working place for the operator. We design their machines and workplaces to be compliant with the set of safety standards. I am able to manage with my 12 years of working experience & expertise in the field of man and machine safety, out of total 14 years of working experience in my professional career as well as a long association with Schmersal for 10 years.

Q. Tell us more about tec.nicum division?

The tec.nicum division of Schmersal Group is devoted to man-machine and plant safety. We have extremely skilled employees who are practiced in the field of safety technology. Their experience comes from having been a part of several successful projects with machine constructors & machine users. Our team designs and implements safety solutions in various phases of machine development, manufacturing, sales, operation, modernization (retrofitting) and decommissioning of machines and systems; throughout the world. Functional machine safety consultants at tec.nicum are certified by TÜV to form a supportive global network of proficient advisers. tec.nicum is responsible for implementation in accordance with global safety standards, Indian standards prepared by BIS and customers in house safety standards. There are four major verticals in tec.nicum– academy, consulting, engineering and implementation.

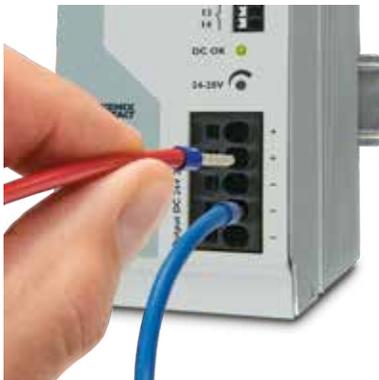


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Business Head - tec.nicum
Schmersal India



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Perfect for machine building

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Q. What kind of training does tec.nicum academy provide?

tec.nicum offers different levels of standard training in line with ISO / Indian Safety standards like Basic, Intermediate and advanced training. As Machine safety training & awareness is a very important part for all Industry segments to operate machines in safe mode, we arrange different types of training for different levels of the team in each industry like Operator level, middle level and top-level management as well as customize training for some specific customers as per their specific requirements. We arrange different webinars, seminars & safety workshops to enhance the machine safety knowledge of all users in each industry. This kind of activity is being done together with different agencies & associations like DISH, BIS, VDMA and other Industrial associations.

Some of tec.nicum training modules have been indicated below to impart knowledge on:

- Basics of machinery safety,
- New regulations in India, which are in implementation phase by Bureau of Indian standard and in cooperation with Ministry of Heavy Industry,
- Design of safety Guard as per ISO standard
- Process to carry a risk assessment in line with EN ISO 12100 or IS16819:2018
- Design of a safety circuit as per required performance level inline with EN ISO 13849-1 or IS 16810:2018
- SISTEMA Software (To determine achieved safety level with the help of a special software)

Q. Tell us more about your engineering and consulting services and how effective is it in providing safety to man and machine?

Safety engineering and safety consultation services play a significant role in man and machine safety. It is important to be aware of and document the severity of hazards and risks posed by a machine when it is under operation. Risk assessment helps in identifying the hazards and the severity of the risks associated with the machine. This is performed by our TUV Certified Safety Consultant in accordance with relevant safety standards. A team of application engineers from the engineering department works in close collaboration with the safety consultant to mitigate the risks identified during the assessment to ensure the highest level of safety. Engineering and consulting services warrant the prevention of direct and indirect losses to the employees and the company. We offer services to prepare a customer-specific safety manual that can work as guidelines for a company & their machine suppliers.

Q. What are the challenges that tec.nicum faced during**the pandemic?**

To conduct audits for the effective implementation of safety control measures and to minimize the associated risks, to impart training and for similar such requirements, tec.nicum requires visiting the customer site. The pandemic restricted tec.nicum from making these important physical visits to our customer sites. However, we utilized this opportunity to share our knowledge with our valuable customers. We conducted more than 300 online training and connected with over 1800 participants from various customers across India.

We conducted virtual risk assessments for machine manufacturers with the assistance of their design team and document drawings. We are also working with food pharmaceuticals and hygiene product manufacturing companies, ensuring their machines never break down or cause accidents because of lack of safety measures. Whenever we had the chance, we made certain that our consultants and application engineers visited our customer sites to check whether the safety services were being implemented in the right way.

We understand the threats posed by the pandemic and did not ask the employees to visit our customer sites. However, our teams are highly dedicated to their jobs and understand the significance of overseeing the customer sites, the pandemic did not sway them from doing their jobs.

Q. What are your goals for 2021?

It is the aim of our safety services division tec.nicum to support the market and our customer with the necessary knowledge and skills to operate machines in a safe mode to impart services such as academic activities under awareness program, Various safety consulting services like Risk Assessments, CE conformity, Safety Logic, engineering services, validation, preparation of safety document/ safety manual and offering Safety Solutions including integration in a turnkey project. Our current focus is to strengthen our "tec.nicum" division in the market with the effective brand image as an independent machine safety consultant, with acceptance to the market and customers to recognize like trustworthy partner for enhancing their level of safety.

Q. Does the tec.nicum team wish to convey a special message to their readers?

The pandemic has led us in realising the significance of documentation. Just like the doctors check and document our health parameters before providing a custom treatment plan, checking and documenting the safety parameters of machines is also significant for their safe operation. This helps in minimizing risk for both man and machine. Team tec.nicum is at your disposal to provide you with our knowledge and support on improving the safety of machines. ■

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Driving the world

DRT 25C: The one for everything. Reliable detection without readjustment when changing objects



The dynamic reference diffuse sensor with innovative CAT technology reliably detects any objects independent of shape or surface: flat, with openings, glossy or transparent.

Advantages for you at a glance

- Reliable detection of any object (flat, with openings, glossy, transparent) prevents downtime and increases machine throughput
- No readjustment necessary when changing format or object. Increases the production volume
- Easy and fast teaching of the sensor using the teach button, whereby the belt is used as a reference
- Reliable operation even with vibrations or contamination of the conveyor belt
- Additional functions such as warning output or disabling of the teach button via IO-Link

Operating range (distance to belt)	50 to 200 mm
Switching frequency	750 Hz
Minimum object size	5 mm (at 2 m/s)
Setting	Teach button, remote, IO-Link
IO-Link operating modes	Dual channel or SIO
Housing dimensions	15 x 42.7 x 30 mm
Certificates	IP 67, IP 69K, ECOLAB

Detects objects of any shape

To control the buffer section and the weld bar, the front edges of the products on the conveyor belt must be reliably detected. The sensor must also reliably detect products with challenging dimensions from very flat to very tall, in order to prevent machine stoppages due to incorrect detection. The sensor must be easy to set up for all products.

The DRT 25C dynamic reference diffuse sensor reliably detects anything, from small and flat to tall and spherical products, even if the shapes and contours are irregular. This means that machines can be fitted with a single sensor regardless of the application. The single button teach function also makes the DRT 25C easy to set up.



Reliably detects every type of packaging

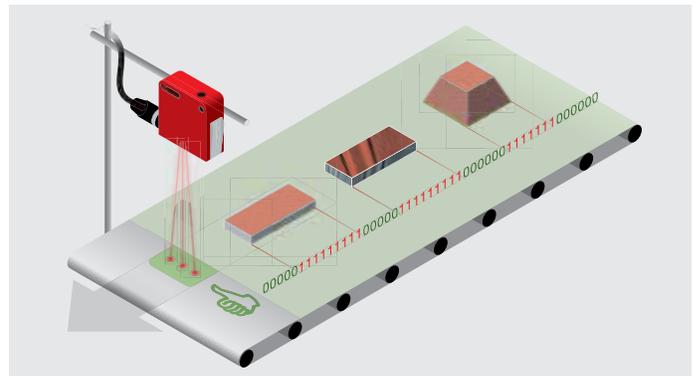
For trouble-free control of the buffer section, packaging made of various materials and with a wide variety of surfaces must be reliably detected from the front edge. Changing products or packaging films should not require any additional setup and alignment work on the sensor.

The unique technology of the DRT 25C uses the conveyor belt surface as the point of reference. The detection is independent of the surface characteristics of the materials used, such as the color, gloss, and transparency. This means no setup work on the sensor is required when changing products.



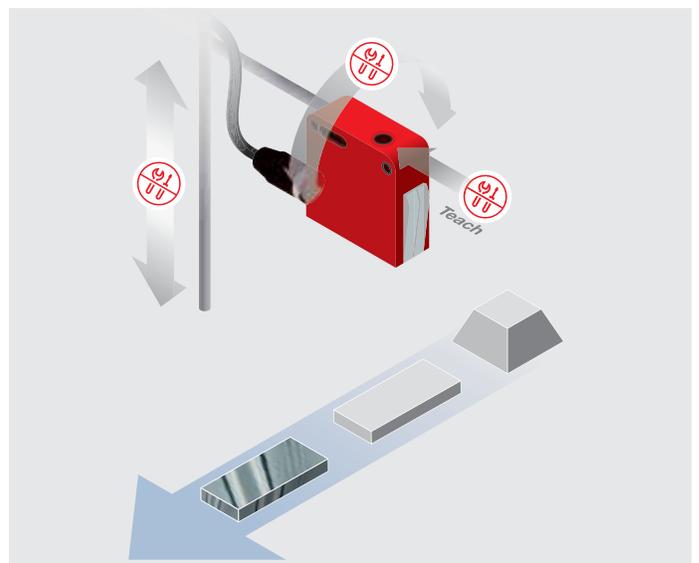
One-of-a-kind CAT technology

The DRT 25C works with the conveyor belt surface as a dynamic reference for the detection of objects. With this method, the surface characteristics of the conveyor belt are taught in via the teach button. The sensor will then detect all objects that do not correspond to the conveyor belt surface. Even contamination on the conveyor belt can be considered with the Contrast Adaptive Teach technology.



Quickly set up – and once is all it takes

When performing the initial setup, the conveyor belt surface is taught in as a point of reference with the teach button. After a product changeover, it is not necessary to adjust this setting, as the point of reference remains the same. In addition, the mounting position and the alignment of the sensor itself can be continuously used for the widest variety of objects. This means that no setup effort is required for the sensor when changing products.



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Shreeji Aqua : Complete stop shop for Innovative environmental solutions

Shreeji Aqua is well known as a multidimensional organization with a client-centric approach providing customized Water treatment plants, Effluent treatment plants, Sewage treatment plants, RO, Softener, Water and Wastewater treatment chemicals, Food testing services, Environmental



testing, Monitoring and Analytical services, and the list continues. We have been leading manufacturers, traders, stockiest and suppliers of Innovative Environmental solutions since 1990. We have also contributed to Environmental monitoring for several of our distinguished clientele and have connected with the major industries in Pune, Gujarat and various other regions in India, and abroad. We have set up more than eighty skilled staff looking after the Product development and Quality assurance of our products.

To ensure safe and wholesome food for our fellow citizens, we have expanded our horizons by starting a Food Testing Laboratory with an extensive scope covered under the NABL {National Accreditation Board of Laboratories} guidelines. Our pillars of strength in this venture are our skilled professionals and the sophisticated, state of the art instrumentation that we have deployed. We operate using the standard methods prescribed in the AOAC (Association of Official Analytical Chemists) and IS references. The plans are then validated, implemented, and verified per the legal guidelines, making us your best choice for an analytical partner and Laboratory support.

The Laboratory consists of trained chemists who are adept in giving purity assays for chemicals produced in-house and chemical samples submitted by our clients. An extensive business counterpart for soil and sludge testing is our sincere effort to help the local farmers and nurseries to grow nutritious, safe and healthy produce for our end consumers. With our Gas Chromatography Unit, we have tested 1000 samples per month

as a part of the MPCB (Maharashtra Pollution Control Board) scheme to check the soil fertility levels and provide optimum solutions for improving soil quality.

With a wide range of services, we also offer opportunities for education by providing Internship programs for budding Chemists, Food technologists, Biotechnologists, Environmentalists, HR, Finance, Marketing, Branding and Sales, etc. This exposure gives students and freshers a platform to learn and thrive in the industrial environment and hone their skills.

Our Services: We have currently strengthened our team with a vision to provide our services faster and smoother. Therefore, a portfolio of our services is given as follows:

1. Air Quality Testing

- Ambient Air Testing
- Stack Emission Testing
- Workplace Monitoring/ Indoor Air Quality Monitoring
- Illumination Studies
- Ventilation Studies
- DG Noise Insertion Loss Monitoring

2. Water Quality Testing

- Drinking-Water Testing as per IS10500 Standards
- Swimming Pool Water Testing as per IS3328 Standards
- Ground Water Testing
- Surface Water Testing
- Construction Water Testing as per IS 456 Standard

3. Waste Water Analysis:

- ETP- Effluent Water Testing
- STP Sewage Water Testing
- Treatability Studies
- Jar Test

4. Soil Quality Testing: pH, Moisture, Organic Carbon, Organic Matter Monitoring, Available Nitrogen Content, Available Potassium content, Available Phosphorus Content, Carbon to Nitrogen Ratio and many more.

5. Sludge Testing: pH, Moisture, Organic Carbon, Organic Matter Monitoring, Available Nitrogen Content, Available Potassium content, Available Phosphorus Content, Carbon to Nitrogen Ratio, Heavy Metals and many more.

6. Chemical Testing:
Purity Assays

7. Food Testing (As per limits given in the FSSAI Standards)

- Cereal and Cereal Products Testing
- Ready –To-Eat products Testing
- Ready-To- Cook products Testing
- Ready-To- Serve products Testing
- Spices and Condiments products Testing
- Other Food Commodities Testing
- Snacks and Convenient products Testing
- Beverages Testing
- Dairy and Dairy products Testing
- Bakery Products Testing
- Shelf-life Studies Testing
- Accelerated Shelf-life Studies Testing
- Regular Quality control samples Testing
- Nutritional Labeling
- Food Adulteration Detection Testing
- Hygiene Monitoring

With various services in different fields, we provide customized solutions to your particular requirements with smooth processing and top quality. We have all the compliant instruments for various testing steps, from functions like sampling to analysing the parameters involved. For instance, the Gas Analyzer, which records the values digitally, and the time consumption is relatively lower than the traditional instruments. The recorded data can be saved within the device. It is very convenient to carry along owing to its lightweight, and the Gas Analyzer is much more accurate than its conventional counterparts. This is because the sensor probe is extremely sensitive and can measure various parameters: Oxygen, CO low, H2=comp, CO-H2-comp, NO, NO low, NO2, SO2, H2S, CO2-(IR), Abs. Pressure, when IR sensor is installed, Flow Velocity, Type K (NiCr-Ni), Type S (pt10Rh-P1.)



The Respirable Dust matter collectors check the particulate dust matter present in the air, the ICP unit for Testing of Heavy metals, the Flame photometer for determining sodium, potassium, lithium and calcium ions in body fluids, and many more.

Adding to this list is a highly profound and accurate Gas Chromatographic unit that has helped us deliver results with utmost precision. With the 16 bit microprocessor of the



instrument, a wide range of analytical parameters can be specified and controlled by the click of a button. It also facilitates storing the analytical data giving trends of results and making them tamper-proof for the end-user. Furthermore, the GC unit lets us configure the instrument per the sample matrices each time a new sample matrix is tested. Shreeji Aqua has deployed four different detector systems with the GC unit to equip ourselves for each sample type available in the industry.

The detectors used are namely:

- Flame ionization detector (FID)
- Electron capture detector (ECD)
- Thermal Conductivity Detector (TCD)
- Thermo Ionization Detector (TID)

All these, coupled with our competent and trained instrumentation team, gives us an extensive range of parameters that can be analysed by the GC unit, which are Pesticides' residues, volatile compounds, Purity Assays of solvents and chemicals, Flavors and aromas detection and many more.

To sum up, we are the ultimate solution provider for all your technical and Testing needs, and we are ready to serve you with dedication round the clock. Our team of professionals under the proper guidance of our visionary leader, Mr Sunil Mehta, have been able to deliver sophisticated projects and technical assistance to our esteemed clients like Tata Motors, Tata Steel, Apollo Tyres, Godrej, JSW, Ceat Tyres, Amul Dairy, Thermax Solutions, ONGC, Ordnance factory, Colgate, Maruti Suzuki, Aeroflex, Inox, etc. With a hand holding team spirit, we are moving towards servicing more and more clients with time. ■

With Shreeji Aqua, you can rest assured that you will get

“INNOVATIVE ENVIRONMENTAL SOLUTIONS ON SINGLE PLATFORM.”

Ami Sanghavi Parekh (Lab Manager)
(Shreeji Aqua Environmental Lab and Food Testing Lab Team)

For more information
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Growth Of Rajkot Foundry Cluster

It is my pleasure to witness an upward trend in the Rajkot Foundry Cluster since 2011. I would like to appreciate all the foundry owners who have taken proactive decisions to adopt the latest technology throughout the last decade.

Rajkot was known for diesel engine castings and motor body castings only. At present, Rajkot foundries are getting export orders for fully machined castings in the following sectors:

- Automobile
- Engineering
- Solar projects
- Pipe fittings
- Pumps
- Home Appliances

This is the right time to invest in Technology and get benefits of:

1. High Productivity
2. Quality Improvement
3. Cost Saving with VE & VA
4. Maximize Profits

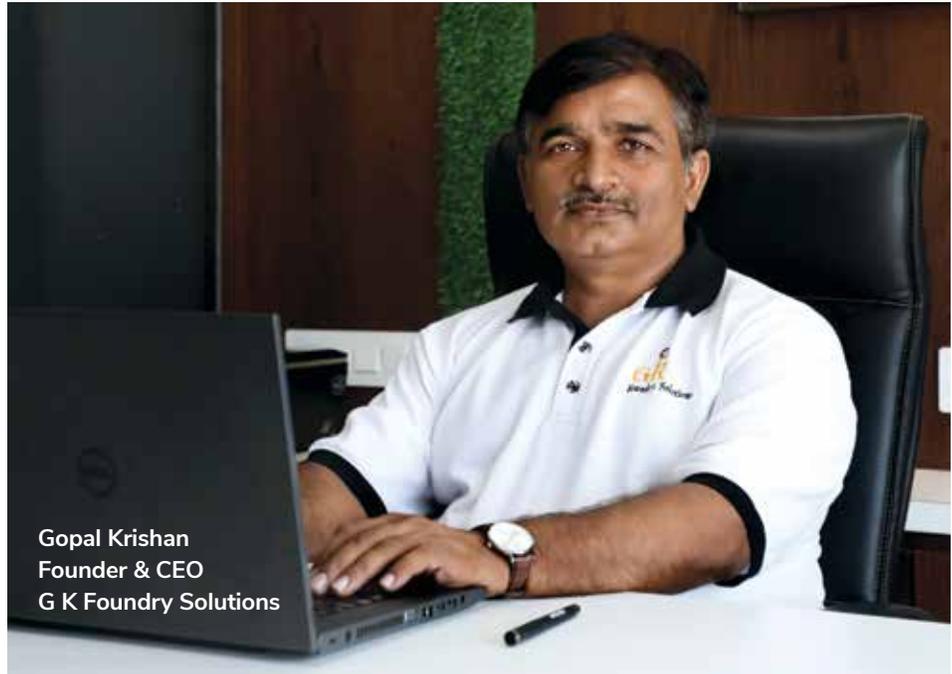
At present in Rajkot, more than 500 small greensand foundries are producing castings between 50-150 MT per month.

They are facing the following issues:

- Skilled Manpower Shortage
- Low Productivity (1.5 - 2.0 MT/person)
- High Rejection
- Fewer orders from OEM
- Less Profitability
- Loss of Payments (advances given to Labor)
- Non-efficient space utilization
- Lack of control on the quality of Sand/Mold/Metal

G K Foundry Solutions has taken an initiative for "Driving Evolution". We will bridge the gap between Rajkot Foundry owners and Machinery Suppliers.

With a rich on-field experience, we understand the requirements of the Foundry Industry and communicated the same to the Equipment suppliers. As it turns out, many



International and Indian brands of automatic equipment suppliers are looking to setup their Sales & Service offices in Rajkot.

Recently, some of the leading MNCs Planned to setup Foundry production plants in Rajkot, and we got an opportunity to serve them as a consultant. This is a big opportunity for Rajkot to boost FDI in the Foundry Industry and get benefit the people of Gujarat for greater job opportunities.

G K Foundry Solutions is ready to provide its services to all such investors who are interested in setting up their greenfield Foundry plant in Gujarat.

Let's join our hands and work towards technology up gradation.

We are pleased to announce that we have started our new office in the heart of "Rangeelo Rajkot". We will provide our services to every foundry owner those are interested to be a part of this Evolution. We as experienced Foundry men are on the driving seat and will not let you down when you will select our services. ■



For more information

E-mail: gkfoundrysolutions@gmail.com

PACKAGING & MATERIAL HANDLING SECTION

Read More ▶▶▶▶





Cosmo Films : Partnering growth with innovative solutions

Q. Please brief us about company's Indian & global reach?

Cosmo Films Limited was established in 1981 by Mr. Ashok Jaipuria. The company today is a global leader in specialty films for packaging, lamination, labeling and synthetic paper. With engineering of innovative products and sustainability solutions, Cosmo Films over the years has been partnering with worlds' leading F&B and personal care brands and packaging & printing converters to enhance the end consumer experience. Its customer base is spread in more than 100 countries with sales & manufacturing units in India and Korea and additionally sales & distribution base in Japan, USA, Canada and Europe.

The Company is strategically expanding beyond Films into Specialty Chemicals & Polymers as well as Pet care business.

The company has a state of the art research facility, with research scientists who have Ph.D.'s and post doctorates from several universities of Korea, Japan and the USA, while also having degrees from IIT's, NIT's and UDCT's.

Q. Please also highlight the latest initiatives in your industry domain?

As a company, Cosmo Films is an innovation led, customer centric, research driven and an employee friendly organization. We identify the needs of our customers, and engineer products which best suits them. Be it replacing PET based films with BOPP films to create mono-material truly recyclable structures, or being the first to provide primerless lamination films.

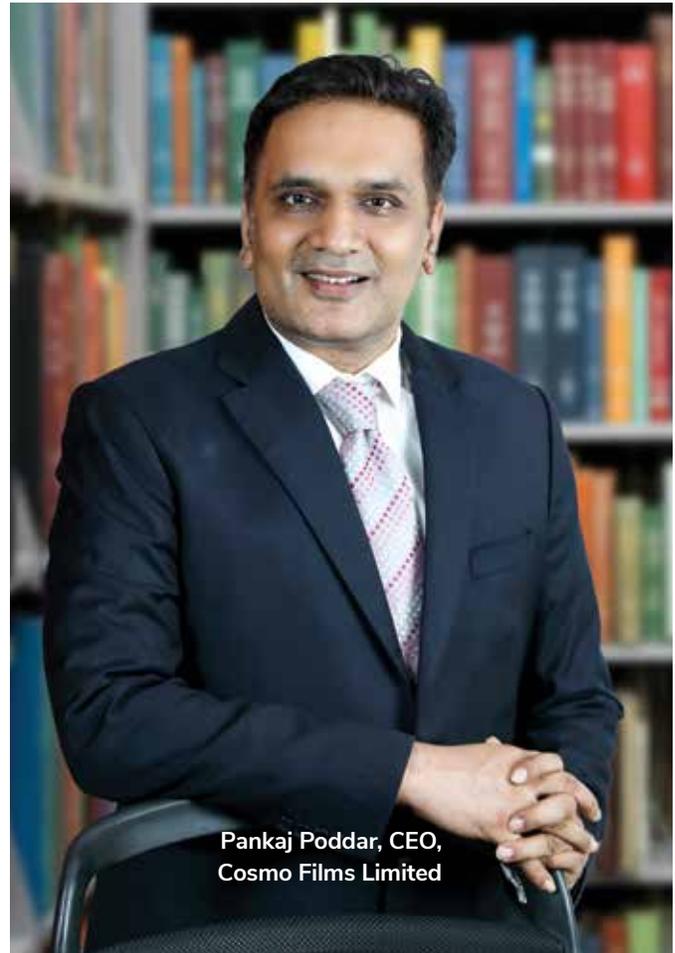
Some of the films we have recently developed under different categories are-

Packaging Films

- Ultra high Barrier Films as a lower cost and recyclable alternative to aluminium foils
- New range of CPP films including high barrier CPP film and high metal bond CPP film with excellent barrier properties for small packets
- New range of lidding films including retort lidding film for flavored milk, juices etc.
- Heat Resistant BOPP film to work as printing layer for mono material structures promoting recyclability

Lamination Films

- Metalized Velvet Films to provide a brilliant metallic look with



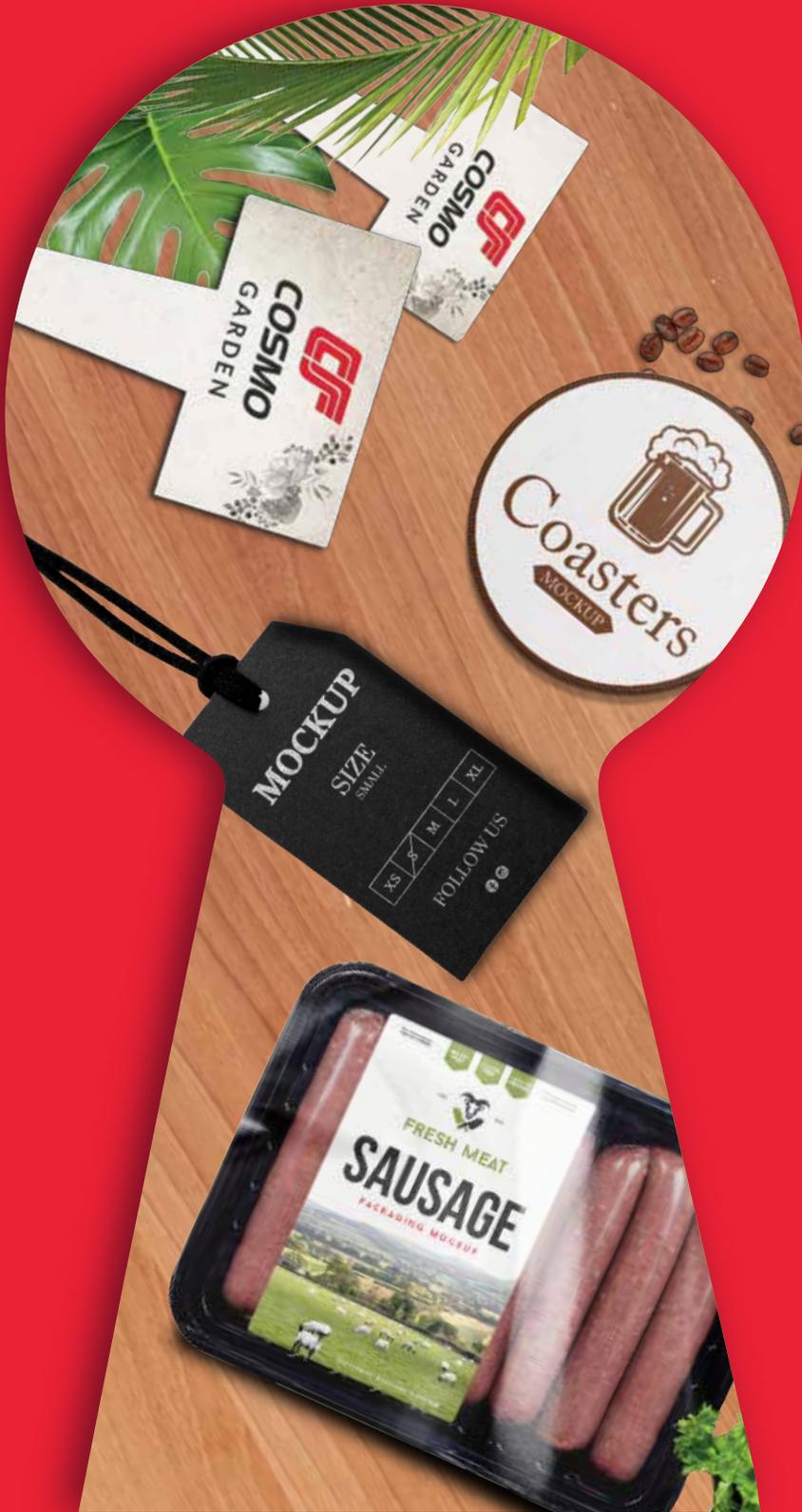
**Pankaj Poddar, CEO,
Cosmo Films Limited**

velvet touch

- Special application films for building insulation
- Silky matte films to provide a tint of silkiness with matte properties

Label Films

- Digital Printable Label Films designed for digital printing on HP Indigo machine
- Solid White PSA Label Facestock Films for superior ink and adhesive anchorage
- Matte Coated PSA Label Facestock Films which provide excellent printability with various printing technologies
- Direct Thermal Printable Films for thermal transfer printing applications



Cosmo Synthetic Paper

opens the door to a sustainable world

- Tree & Tear Free
- Extremely Durable
- Oil & Water Resistant



Industrial Films

- Universal Printable Cosmo Synthetic Paper, which is a replacement of paper in applications where durability and longevity is desired.

Apart from the films business, we have recently diversified into the textile chemicals and masterbatches segment under our subsidiary Cosmo Speciality Chemicals, with 22 new products for the textile dyeing, pre-treatment and finishing applications.

Some of the unique products developed by the company are as below-

Ecoclays

- An eco-friendly multifunctional clay base product for pre-treatment of cotton yarn knits and terry towel.
- Allows almost 35% reduction in the BOD & COD levels in the wash effluent.
- Non-foaming & extremely effective in removing processing oils & excess auxiliaries & other impurities from the substrates.

Cosmotex AVB

- An Anti-bacterial & Anti-Viral finishing agent and effective against Human corona virus.
- Gives an invisible & durable anti-microbial and anti-viral effect.
- Provides anti-static property to the surface.
- Non leaching behavior in waste water stream.

Wetofast LD

- A wetting agent and a detergent for all types of substrates.
- Gives a uniform re-wetting and whiteness.
- Low Foaming so it can be used in continuous machines with high liquor turbulence.
- APEO and NPEO Free.
- Good dirt suspension.
- Suitable for cotton and its blends.

Superwash POL

- Unique soaping agent for after dyeing process.
- Improves wet fastness properties like wash & rubbing of dyed / printed goods on whaling off.
- Effective in hard water and suitable for a wide range of pH.

We have also entered the B2C FMCG category with a unique laundry sanitizer, Fabritizer, which kills 99.9% germs from clothes and provides a protective layer on clothes which lasts for up to 7 days, even after ironing.

Q. What are the market opportunities for your company's products in India?

The market potential for our films business is huge in India and

overseas. Our synthetic paper, which is a unique replacement of conventional paper for durable applications has seen its application in government ration cards, birth and death certificates, restaurant menu cards & coasters, billboards and several tag applications.

For our textile chemicals business, there are a very few organized players in India. We have unique products which are not only effective, but also eco-friendly and backed by extensive research. We see a lot of potential there, and enquiries are flowing in for our products from all across the globe.

Q. What is future prospect for your industry?

In the near future, we are planning to increase the sales of our specialty products and diversify into the specialty polyester business for the films vertical. In terms of our other businesses, we plan on establishing Cosmo Speciality Chemicals, further strengthen the portfolio for Fabritizer and launch our Pet care business with the brand name 'Zigly'.

Q. Is there any plans for expansion & new investment in terms of product development or new technology adoption to cater the demand of the industry?

We have already announced the commissioning of our new BOPET line in 2022, and that will be a significant expansion as we will enter the BOPET films market as well.

Under Cosmo Speciality Chemicals, we are planning on launching several new products in the coming months for the textile auxiliary market, and also look at industrial grade adhesives for packaging and labeling as a potential business opportunity in the coming years.

Q. What is the top line product range & is there any plans to launch new products?

As mentioned earlier, we have plans of launching several new products under Cosmo Speciality Chemicals for the textile market. In the films business, we are constantly innovating and creating products in accordance to the need of the market and our customers.

In terms of our top line products, we plan on increasing sales of our specialty films which include barrier films, heat resistant films, PSA facestock films, DTP films and Synthetic Paper in India and across the world. ■

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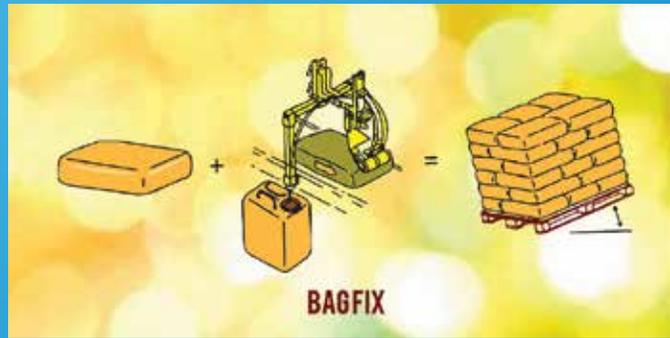


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BAG FIX™

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Reduce the Risk of Product Damages

Logistics and storage is an important part of every business, big and small. When you spend time and money to create high value, delicate or critical products, it is important that they reach the customer in perfect condition. DSM offers integral solutions that will help you reduce the damages and protect your goods during transport and storage. DSM has introduced Pallet stability - Anti Skid Products such as Grip Sheets, Grip Fix with Bag fix. Packaging an item requires utmost care but stacking these packages and transporting them can cause damages due to slipping, bumping and generally being knocked around on bad roads and during Ocean / Air transport.



To be placed every layer to secure the pallets either



Grip Sheet: If you are stacking boxes you can add Grip Sheets between each stack to ensure proper grip and avoid toppling of boxes due to slippage from the pallets that carry them. The sheets increase the friction coefficient thus allowing for better safety. These sheets can be used to line pallets, storage racks in warehouses and the floors of transportation vehicles

Grip Fix

Boxes / Bags are the safest and easiest way to transport your goods but what do you do when you have to transport bags of grains, fertilizers, powders, Polymer Granules etc? Packing sacks or bags are the most unstable cargo to transport. This can be remedied with a simple application of water soluble adhesive Grip Fix that can be applied using the Bag Fix or Manual application system to ensure that your bags are stable on pallets and in transports vehicles.

Even the smartest logistics planners can use a little help at times. ■

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- Intuitive Linde Load Control
- Outstanding maneuverability
- Extensive selection of mast heights



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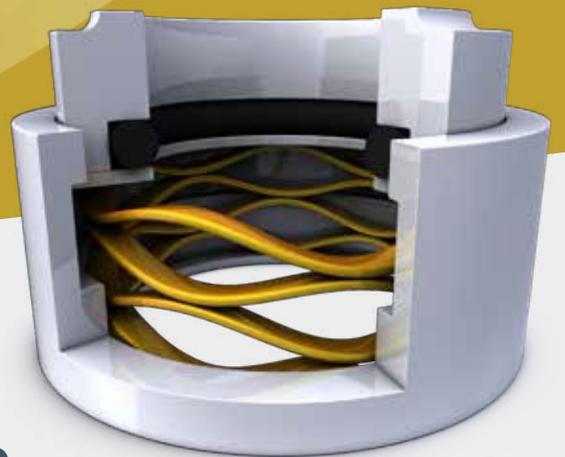


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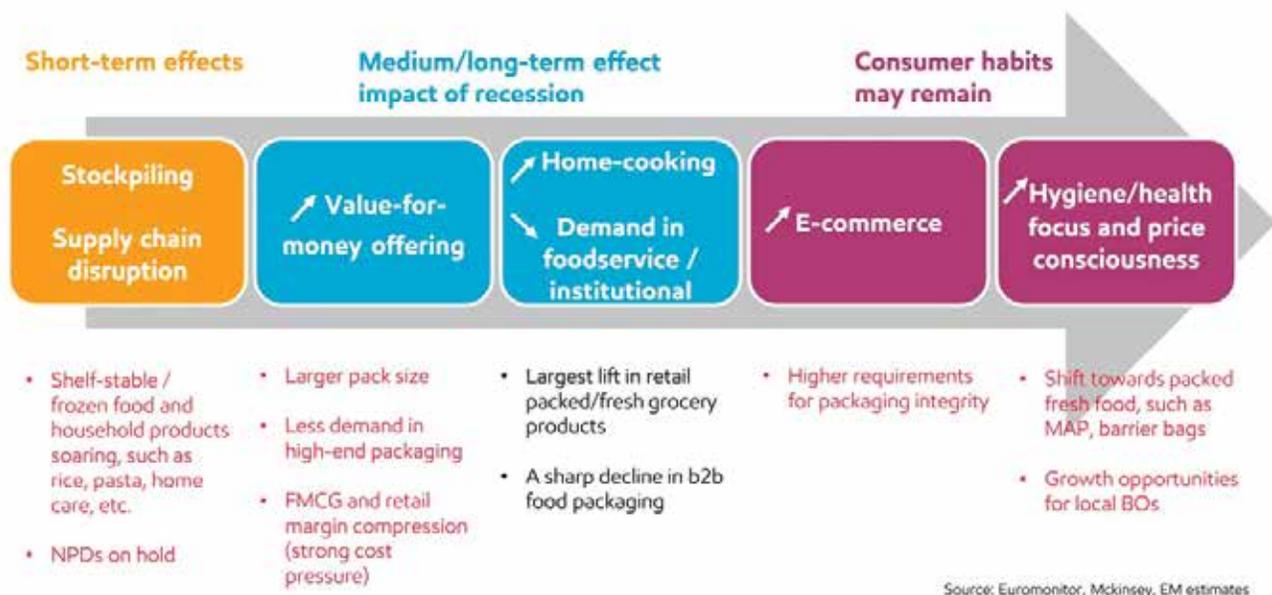


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One of the rare industries which benefitted from the Coronavirus pandemic is the packaging industry. Of late, the packaging industry has been adopting smart and sustainable solutions to make product packaging more acceptable to the consumer, as well as making it brand- and environmentally-friendly. The packaging sector trends that primarily enable smart packaging are the internet of packaging, active packaging, and the use of nanotechnology. However, since the COVID-19 pandemic has kept people confined within their homes, packaging from online shopping creates the serious challenge of waste production. This problem has led to start-ups and scaleups to speed up their innovations around biodegradable, recyclable, and edible packaging. Simultaneously, the introduction of 3D printing and robotic packaging simplifies packaging processes and reduces costs for brands and consumer product companies.

Packaging in light of COVID-19



Amidst the depressing economic scenario, the Indian packaging industry is expected to register a CAGR of approximately 26.7 per cent during the five-year period of 2021-2026. Once the COVID-19 pandemic was brought under control to a certain extent, most developed countries are either burning wastepaper or using it for landfill to avoid the spread of Coronavirus. This has resulted in a massive shortage of raw material for Indian paper mills. Those manufacturing Indian corrugated cardboard boxes are working hard to keep transport packaging flowing to makers of essential products, including packaging for food and other consumer products, medical and pharmaceutical products, tissue, and various hygiene products.

Moreover, the demand for packaging is increasing due to

the rising population, higher income levels, changing lifestyles, increased media penetration through the internet, television, and the growing economy. As I have already mentioned earlier, it is one of the strongest growing sectors in the country. Recently published data from Care Ratings, a prominent credit rating company in India, say that more than 49 per cent of the paper produced in the country is used for packaging purposes.

The exponential growth of the market is basically driven by the pharmaceuticals and foods and beverages industries. Massive investments in the food processing, personal care, and pharmaceuticals end-user industries are making way for major opportunities for expansion of the packaging market. According to recently released data by the Associated Chambers of Commerce and Industry of India, the market

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size of organised packaged food reached Rs 780 million, in 2020, from Rs 530 million, in 2016.

The exponential rise in the status of the Indian middle class, the rapid penetration of organised retail, remarkable growth of exports, and India's rising e-commerce sector is further facilitating growth. According to the Indian Institute of Packaging (IIP), the packaging consumption in India has increased by 200 per cent in the past decade, rising from 4.3 kg per person per annum (pppa) to 8.6 kg pppa.

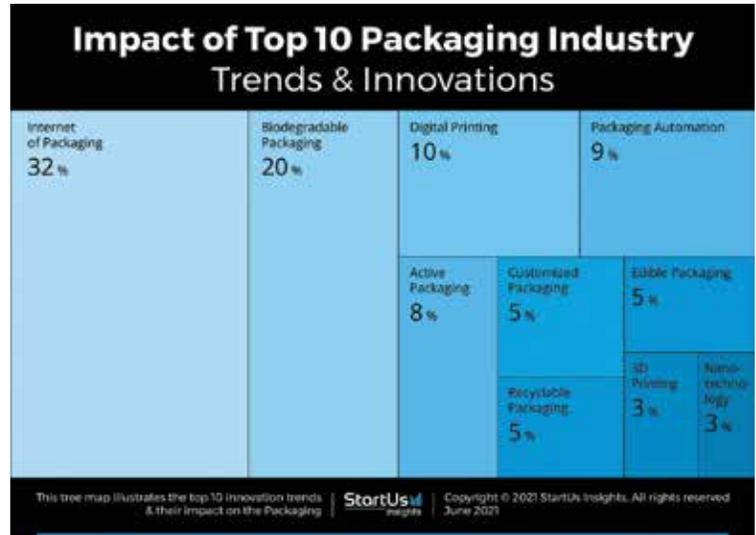
In order to further maximise the potential of the packaging sector in India, the government has been continuously consulting the industry experts. In this regard, the government has asked PIAI (Packaging Industry Association of India) to formulate policies and guidelines that is expected to augment India's export potential in the international market.

The ever-growing domestic packaging industry is primarily powered by various logistic applications, technological advancements, and similar developments across the country of the packaging sector. A recent market analysis of the Indian packaging market looked into the market segmentations based on different materials, like paper, plastic, glass, and metal. The study covered end-user producers such as food, beverage, healthcare, cosmetics, personal care, household care and other industrial segments.

The domestic food packaging industry witnessed major innovations both in terms of branding and packaging. In this context it is worth mentioning that the Bangalore-based iD Fresh has launched Smart Sip Tender Coconut and iD Grated Coconut, in imaginative eco-friendly packaging. Several established brands like Amul, Mother Dairy, Patanjali, and others, in their packaging use UV-protected films, colour-changing films, and holographic films to prevent the chance of adulterating their products.

Overall, the packaging industry is growing at a rapid pace. But packaged food in particular is the fastest-growing segment in the Indian packaging industry. It is expected to fuel the demand for plastic packaging, as it ensures food quality, safety, and long shelf life. According to the Federation of Indian Chambers of Commerce and Industry (FICCI), the expenditure on packaged foods is increasing (at inflection point), due to an increase in per capita income, urbanisation, and an increase in the number of working women. According to Agriculture and Agri-food Canada, the sales of packaged food in India amounted to \$76,284.2 million in 2018, and it is expected to register a CAGR of 18 per cent during the forecast period.

Unlike western countries, the grocery market is a traditional



retail industry in India. Therefore, the penetration of online retail is on the lower side. The expenditure on food and grocery accounts for 60 per cent of the total expenditure on retail in India. However, the food delivery and services market is leading to further growth in the country, with players, like Bigbasket, Grofers, Zomato, Swiggy, Scootsy, registering an exponential growth in sales. According to Ministry of Corporate Affairs study, in FY 2018 the revenue generated by Swiggy and Zomato in India was Rs 4.42 billion and Rs 4.66 billion, respectively.

Plastic bottles and jars are mostly used in the food and beverage, cosmetics and personal care, and pharmaceutical industries in India. Polyethylene terephthalate (PET) and HDPE are extensively used for manufacturing bottles and jars in India.

In an encouraging development, companies such as Bizongo, are manufacturing the first biodegradable spill-proof meal tray to promote sustainability in the packaging ecosystem. However, plastic bags are among the most used plastic packaging solutions in the country. The steadily expanding supermarket chains and Kirana stores are some major factors driving the growth of plastic bags in the country.

The top four trends in packaging are:

- Connected packaging. With more mobile devices and technologies linking packaging to the online world, connected packaging is on the up...
- Closing the loop. Recycling is far from new but consumers want more transparency and simplicity...
- Reinventing the box...
- Plastic-free. ■

Arijit Nag is a freelance journalist writing on the economy and current affairs.



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“Wave Springs the ultimate solution for functionality in small space environment from Lee Spring”

REDUX™ Wave Springs from Lee Spring offer high functionality in space critical applications where they are designed to replace conventional round wire compression springs and to provide tight load deflection in a very small area - which enhances efficiency, reduces operational cost and permits smaller assemblies.

Wave spring applications typically include connectors, pumps, clutches, seals, medical equipment and valves where uniform force distribution and/or uniform rotational pressure is required over 360° in restricted spaces.

When requiring optimum performance in space limited environments the Lee Spring REDUX™ Wave Spring series flat wire compression springs can replace conventional round wire compression springs in applications across many industries from aerospace to electrical, fluid control, hand tools, valves and seals. Wave springs can reduce the size and weight of the assembly by as much as 50%.

Items such as connectors, mounting dampers and pumps can be made dramatically smaller than otherwise. Generally wave springs occupy 30-50% of the compressed height space of comparable round wire springs offering more deflection with the same load specifications. This not only provides for space savings, but also smaller assemblies that use less materials, hence lower production costs.

REDUX™ Wave Springs are designed to be used over a rod/mandrel or in a hole/tube for support, thus preventing distortion





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HARTING offers connectivity solutions for device integration up to the flexible and modular world of automation technology. Connectors facilitate development, assembly, transport, production and maintenance processes. The product portfolio ranges from connectors for electrical signal and power transmission, interfaces for optical fibers and pneumatic lines as well as comprehensive solutions for Industrial Ethernet. HARTING products are designed to meet all required protection classes of industrial environments. Find out more by calling +914443560415 or writing to in@HARTING.com



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and so ensuring longevity in service. They are manufactured with either Plain ends (wavy) or Squared-flat ends (shim ends) from a single filament of Type 17-7 Stainless Steel flat wire formed in continuous precise coils with uniform diameters and waves. Careful selection of alternative materials is required for operating environments such as high temperatures and corrosive media.

Lee Spring REDUX™ Wave Springs offer a way of performing a spring function where often no other spring could work effectively. This unique design not only helps to save space in the applications but also reduces the production costs, as fewer materials are required and often enable devices that would not otherwise be feasible. Wave springs come in a wave top to wave top format manufactured from a single filament of Type 17-7 Stainless Steel flat wire formed in continuous precise coils with uniform diameters and waves. REDUX wave springs are offered in diameters from .236" (6.00mm) to 1.772" (45.00mm) to meet load requirements from 2lbs (0.9kg) to 90lbs (40.8kg).

Stock specifications are suitable for static and slightly dynamic load applications where they provide a degree of anti-vibration operation or maintain constant pressure in a mechanism with limited height constraints. More dynamic applications require special solutions because the additional stress put on the waves is likely to cause abrasion at the point of contact, in this case customers should contact Lee Spring to discuss relevant options. Lee Spring offers a wide selection of stock wave springs, plus support for design and manufacturing of custom wave springs. From short run needs

to long range production runs, Lee Spring is the supplier of choice in India for all your spring needs.

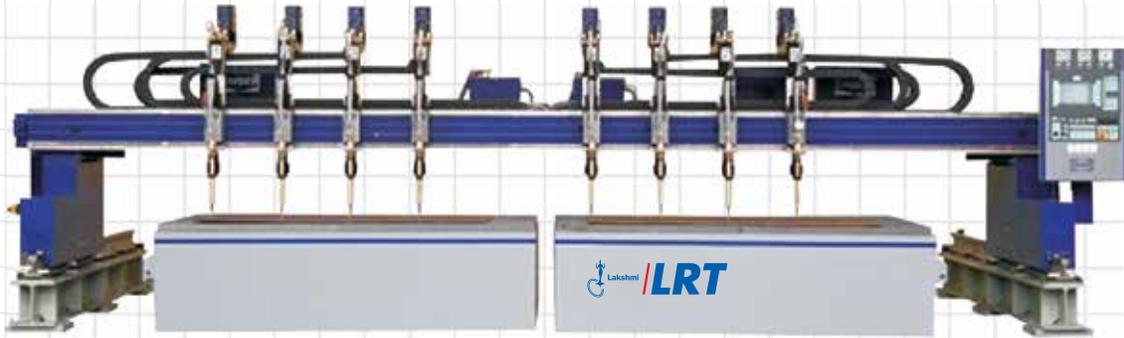
Lee Spring offers more than 25,000 stock spring designs in stock available for immediate delivery, plus custom springs to meet exacting specifications. Work with a Lee Spring engineering to find the right spring, material and finish for your application. ■

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Greater efficiency in production with igus lightweight iglidur polymer linear bearings

New, cost-effective drylin linear bearing ensures fast, lubrication-free movements

igus, a motion plastics specialist, showcases what plastics can do with its first drylin W linear bearing made entirely of tribo-polymers. The linear bearing has been developed specifically for linear movements. At just ten grammes, it is quick to install, vibration-dampening, lubrication-free and ideal for transportable applications. The fact that it is injection moulded makes it very cost-effective. The injection moulding-optimised design also reduces its weight, lowering the necessary linear system drive energy.

Durable, lightweight and low-cost: the new drylin W linear bearing from igus. It is made entirely of iglidur polymer, so it can be manufactured quickly, simply and cost-effectively with injection moulding. The liner and linear housing are combined in a single component that simplifies handling, from storage to installation. The iglidur polymer bearing weighs up to 84% less than classic linear bearings with their metallic housings. There is thus less mass to move, so force, motor output and energy consumption falls. The slim bearing, just ten grammes at Installation Size 10, has several advantages for those new to linear technology who need a simple linear guide for applications, such as adjusting tabletop devices, cameras, sensors or monitors.

The bearing is made of iglidur JB, a tribologically optimised high-performance polymer, so it needs no lubrication or maintenance and is durable and resistant to dust and dirt. The black material is remarkable for its very low coefficient of friction in dry running and very low stick-slip tendency. The polymer bearing can handle loads of up to 25 newtons with ease, as tests performed in our 3,800 square metre in-house laboratory in Cologne show. It is also impact-resistant and robust while remaining elastic and damping so that it can absorb and dissipate vibrations.

Cost-effective econ system with an elegant design

The new bearing can be installed very easily on any drylin W single rails or double rails. If the user is looking for a cost-effective linear guide, igus's clear anodised drylin W WS-CA aluminium rails are a good choice. Combining the two materials – silver aluminium and black bearing material – gives the user a complete solution with a simple, elegant design.

ABOUT IGUS: igus GmbH develops and produces motion



Picture PM3221-1

The lightweight drylin W polymer bearing (just ten grammes at Installation Size 10) reduces costs, weight and the necessary linear system drive energy. (Source: igus GmbH)

plastics. These lubrication-free, high-performance polymers improve technology and reduce costs wherever things move. In energy supplies, highly flexible cables, plain and linear bearings as well as lead screw technology made of tribo-polymers, igus is the worldwide market leader. The family-run company based in Cologne, Germany, is represented in 35 countries and employs 4,150 people across the globe. In 2020, igus generated a turnover of €727 million. Research in the industry's largest test laboratories constantly yields innovations and more security for users. 234,000 articles are available from stock and the service life can be calculated online. In recent years, the company has expanded by creating internal startups, e.g. for ball bearings, robot drives, 3D printing, the RBTX platform for Lean Robotics and intelligent "smart plastics" for Industry 4.0. Among the most important environmental investments are the "chainge" programme – recycling of used e-chains – and the participation in an enterprise that produces oil from plastic waste. (Plastic2Oil). ■



*For more information
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Ketan Vavaiya-
Managing Director
Plasma Induction (India) Pvt. Ltd.

We are very happy to write here that, we all are come out of Covid pandemic situations and bounce back foundry & forging industries to grow up rapidly. As per current situation we have good opportunity to grab it and do right things at right time i.e Expand our business at globally, develop right practices, develop best team, and chose best technology and efficient machinery with latest technology and digitalisation to match industries 4.0.

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We are thankful to all of you to give us an opportunity to

serve you best product & service to contribute to grow of forging and foundry industries as well as our economy. We are always committed and dedicate to do our best for our industries. ■

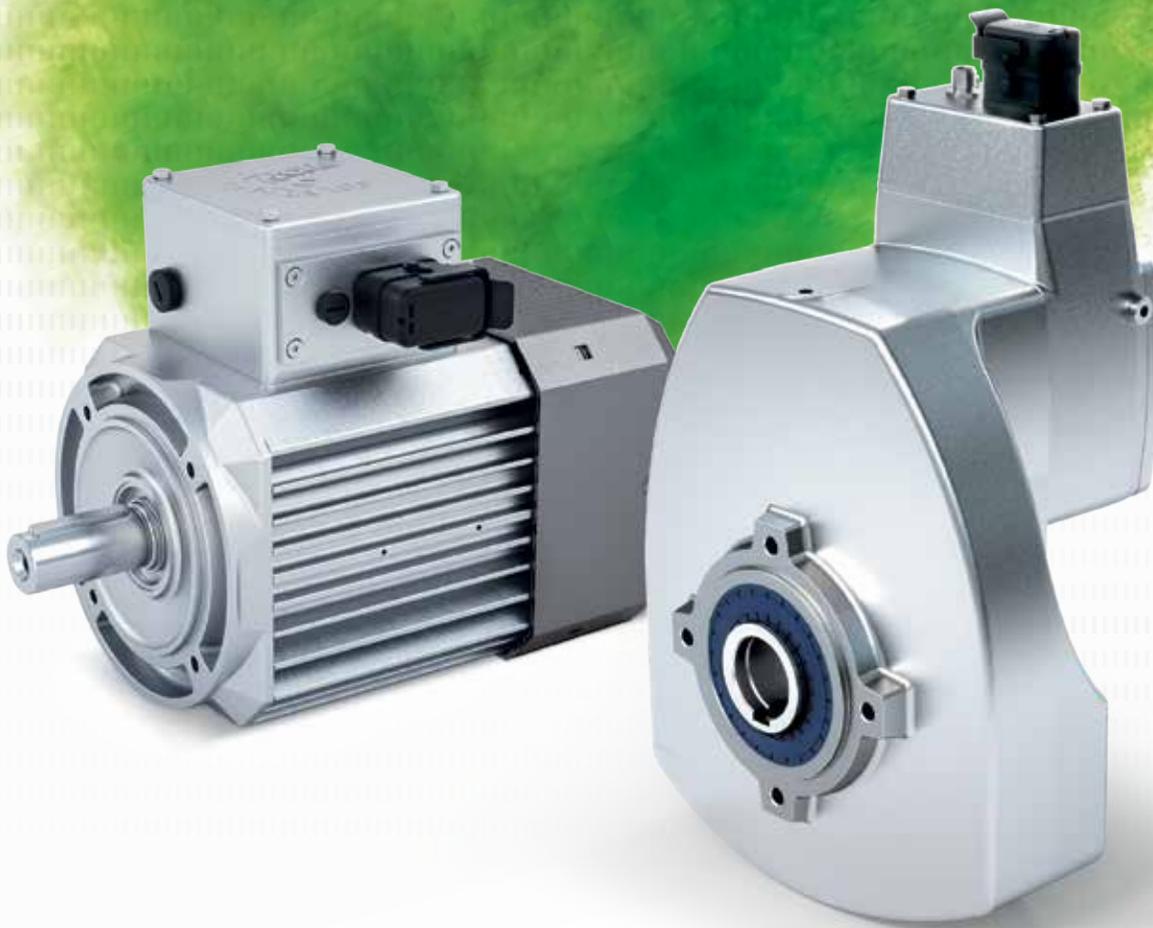


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Discovering Long-Term Rust Prevention for Automotive and Heavy Equipment Parts



In the far-flung world of automotive and heavy-equipment parts suppliers, both short-term and long-term rust prevention is critical to prevent serious loss from rust claims. Equally critical is finding a rust preventative that will be effective and easy enough to use. Cortec's VpCI®-369 is one excellent option with widespread popularity. It has been found to be a convenient, superior alternative to many common long-term rust preventatives on the market.

VpCI®-369 is an oil-based temporary coating that provides extreme corrosion protection in aggressive environments and is one of Cortec's most-popular wet film corrosion inhibitors. It is an excellent option for protecting auto service parts and heavy

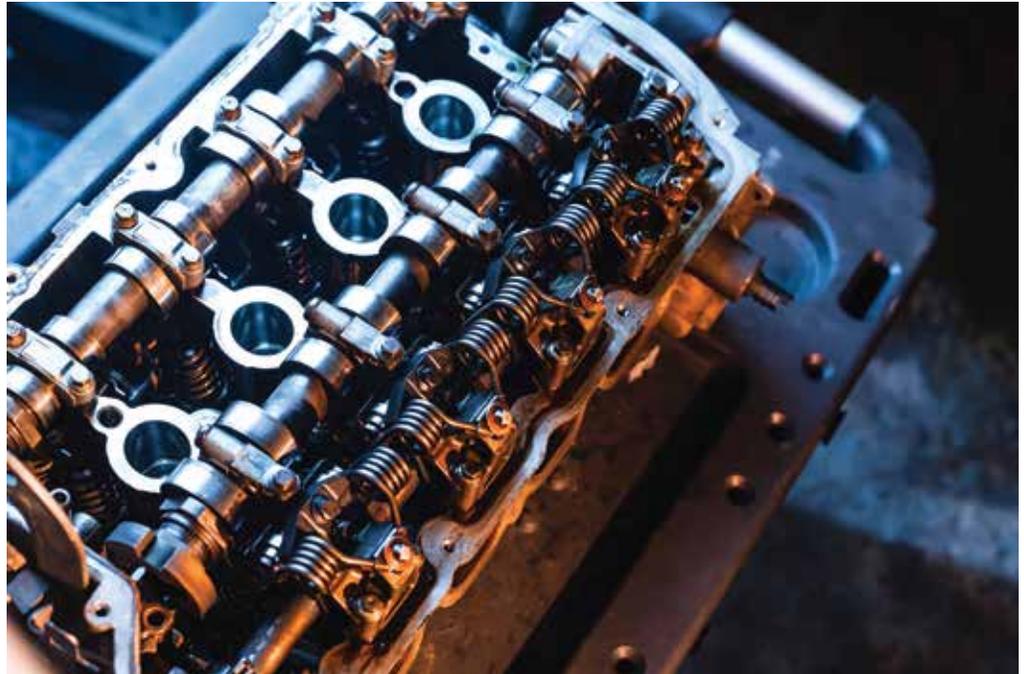
equipment components before assembly. Since VpCI®-369 is thixotropic, it can be mixed so that the product changes consistency to enhance sprayability for application with an airless sprayer. Once applied, it thickens so that it does not run off the metal. VpCI®-369 can be tinted to blue, green, or other custom colors if desired to help workers detect sufficient product coverage. Those working with military agencies can use VpCI®-369M as a MIL-spec version that conforms to MIL-PRF-16173E (Grade 2).

VpCI®-369 is a great option for protecting bare, unpainted metal equipment parts that suppliers need to ship to the assembly plant. As a long-term rust preventative, it is also excellent for service parts or spares that will



be laid aside for five or 10 years before they might be needed again (e.g., marine engine crankshafts). Because VpCI®-369 does not dry, it can be used as a dual lubricant and rust preventative for moving parts. It is much easier to remove than other coatings that dry to a waxlike texture. Hence, there are countless industrial components that can benefit from a light coating of VpCI®-369 for either short- or long-term rust prevention:

- Crankshafts
- Camshafts
- Engine heads
- Engine assemblies
- Wheel assemblies
- Axles
- And more!



Those interested in branching off into greater environmental responsibility while still achieving excellent corrosion protection may be interested in trying Cortec's biobased version of VpCI®-369 rust preventative: EcoLine® 3690. EcoLine® 3690 has been approved for 10-year long-term storage protection of service parts for a major automaker. Based on canola oil, EcoLine® 3690 contains 72% USDA certified biobased content. It is ready to use and designed for protection in severe marine and high humidity conditions. Very similar to VpCI®-369, EcoLine® 3690 leaves behind an oily



protective film that does not dry.

Whether a supplier or assembly plant chooses VpCI®-369 or Cortec's biobased version, EcoLine® 3690, users can rest assured knowing they are getting an outstanding long-term rust preventative alternative to other options on the market, with a history of prominent industry users. ■



For more information
<https://www.cortecvci.com/contact-us/>



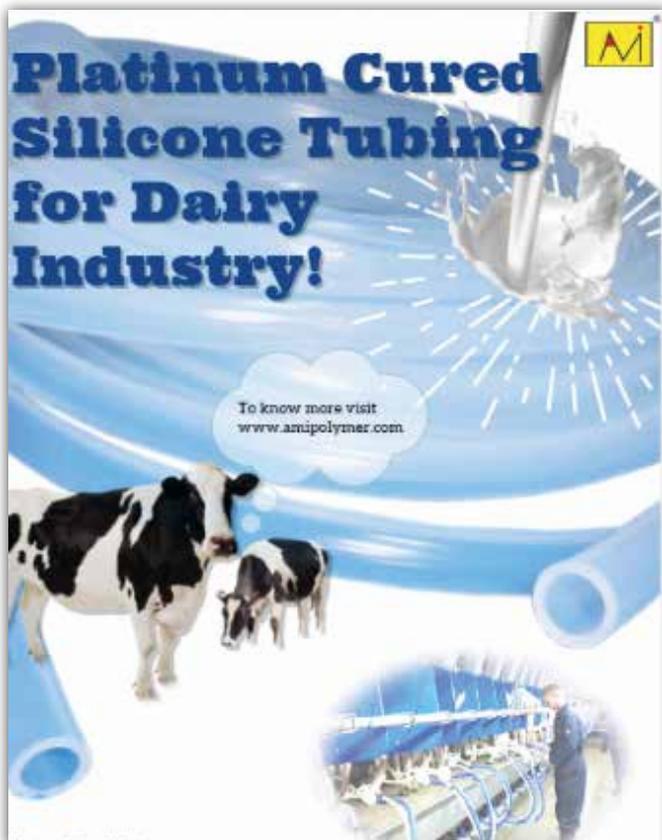
Silicone Tubing Especially Designed For Dairy Industry!

Milk contributes more than 60 per cent of the total livestock production and accounts for nearly 67.69 per cent of the value of the output of the livestock sector's contribution to the national GDP. To alleviate the labour involved in milking, much of the milking process has been automated but still they face many challenges during milk processing in dairy Industry which leads to loss of money, loss of time, loss of quality and much more.

First and foremost, kink resistance is very important - In Dairy Industry kink resistance properties plays a vital role as kinking can happen when a cow sticks in tubing or it moved around during Installation which can cause leaking and loss of milk

- A huge messsss!!!

Secondly, Tubing must be weather resistance so that it doesn't become stiff especially during winter season as stiffness can lead to delay in production since it takes much time and becomes very difficult during installation.



Also Tubing should be flexible but still retains its elasticity of feeding retention and not become too easily stretched out. Additionally, tubing must have tear resistance ability as it can be torn on / off feedings, dropped on floor or a cow steps on it that's why tubing with tear resistance ability very crucial to avoid constant repair.

It also must have resistance to milk fat absorption which can attract dirt and negatively infect hygiene as milk fat build-up softens the tubing and reduces its strength or even cause discoloration.

After examining all this challenges and to overcome it, we at Ami Polymer Pvt Ltd come-up with one stop solution and here we are Introducing Platinum Cured Silicone Tubing which ensures milk processing or transfer of milk must be safe, hygienic and high performance. Platinum cured silicone Tubing is designed for the application in Automatic milking system / rotary milking parlour/ robotic milking / Peristaltic Pumps. Our Platinum Cured transparent silicone Tubing known for its ultra-smooth bore to prevent any particle entrapment, reduces the chances of butterfat occurrence and it can also help to eliminate the probability of Microbial growth within the milk transfer line and ensures smooth transfer of milk.

Physical Properties.

Sr.no.	Technical Data	Test method	Unit	Specification
1.	Hardness	ASTM D 2240	Shore A ⁰	60-65
2.	Tensile Strength (Min)	ASTM D 412	kg/cm ²	95
3.	Elongation at Break (Min)	ASTM D 412	%	300
4.	Compression Set (175°C, 20 hr.)	ASTM D 395	%	15-25

Features and Benefits

- Superior Flexibility, Kink Resistance properties.
- Clear Transparency allows easy visual Inspection of Milk during process.
- Smooth bore to ensure less contamination and resists butterfat build-up.
- Water repellent properties allow easy cleaning and complete soakaway.
- Excellent Weather resistance properties.
- Non-toxic, non-haemolytic.
- Free of plasticizers like phthalate/Bisphenol-A
- Higher Shelf life
- Free of any heavy metals and hazardous substances.
- Sterilisable by using different techniques like autoclaving, Ethylene oxide, Gamma radiation.
- Dimension range 1mm ID – 3000mm ID dimensionally accurate & excellent workmanship and finish
- Customized Colour, dimension and hardness available on demand.
- Good flex fatigue resistance enhances Milking peristaltic pump life & Milking Dosing Pump Life.

Major Applications

9. For Raw milk transfer.
10. For Bulk milk transfer.
11. For Rotary Milking Parlour line.
12. For Milking Dosing Pumps.

13. For Milking Peristaltic Pumps.

Compliances

- Manufactured and packaged in clean room of class 10000 facility audited by TUV Nord.
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Keesake Automation: Establishing leadership in robotics automation solutions



Mr. Manan Bateriwala
Founder & Partner
KEEPSAKE AUTOMATION LLP

Keepsake Automation is a leader in Industrial Robotics Solutions with strategic partnerships with leading European companies.

Keepsake has been working since last decade now in fields of Robotic Welding, Robotic Handling, Robotic Machining, Robotic surface finishing cells and turnkey robotic cells. Keepsake has long standing partnerships with European leaders in Automation industry such as KUKA Robot GmbH for industrial Robots from Germany, Beckhoff Automation GmbH & Co. KG from Germany.

With esteemed clientele in its list such as L&T heavy Engineering, Lucy Electric, Trio Elevators to name a few, Keepsake is growing every year in terms of making products basket bigger. With more than 110 Robotic cells installed so far, Keepsake has a good, experienced team of professionals who are trained for the engineering domain.

Keepsake has supplied dedicated handling cells for CNC machines to high payloads in process industries. Several peripheral operations like QC via

vision system, Burr removal, job stacking and many more can be coupled with a robotic system. Such setups help in providing considerable cycle time saving increasing productivity and decreasing job change over time.

Some standard applications are:

- Injection moulding machine (IMM) handling system
- Gate cutting and trimming station
- Sheet metal handling
- High payload billet handling in harsh environment
- CNC machine tending
- Glass panel handling
- Gluing applications ■

For more information

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Why bearing fail?

12 reason



No matter what you do, there is always a chance that products will fail. The same holds true for bearings, but that doesn't mean that you can't prevent many of the issues that result in costly downtime.

Statistics show us that 36% of bearing fail because of poor lubrication, 34% fatigue, 16% improper handling, 14% contamination.



1. **Lubrication.** Lubrication problems: insufficient lubrication, use of improper lubricants or excessive temperatures that degrade the lubricant, or lack of lubricant on half of the bearing.

2. **Contamination.** Contamination is caused by foreign substances getting into bearing lubricants or cleaning solutions. These include dirt, abrasive grit, dust, steel chips from contaminated work areas and dirty hands or tools.



3. **Improper mounting.** Generally, bearings are mounted with pressed fit on rotating ring. Direct blows with hammer, transmitting force through rolling elements, loose fit, out-of-round housing can cause dents, crack of rings and finally premature bearing failure.

4. **Misalignment.** Axial overloading, out-of-square shaft shoulders and improper installation can cause misalignment.

5. **False brinelling.** Rapid movement of the balls/rollers in a raceway while equipment is idle wears away at the lubrication. Try to eliminate external vibrations.



6. **Corrosion.** Moisture, acid, low-quality or broken-down grease, poor wrappings and condensation from excessive temperature reversals can cause corrosion.

7. **Electrical Damage (Fluting).** Constant passage of alternating or direct current,



even with low currents, can lead to electrical damage.



8. **Fatigue (Spalling).**

Fatigue is a phenomenon that appears due to repeated load cycles. It shows that bearing reached his calculated life.

9. **Overheating.** Overheating is generally the result of excessive operating temperatures and improper lubrication. High temperatures reduces lubricant's efficiency, leading to lubricant loss and bearing seize.

10. **Excessive load.**

11. **Improper storage and handling.** Dust and contamination with dirt.

12. **Fit.** Loose fit can cause micro-motion between fitted parts. ■



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WHY BEARING FAIL? 12 REASONS



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EOS ATEX – Explosion Proof safety light curtain

EOS4 ATEX, safety light curtains for access protection in environments with potentially explosive atmosphere



EOS ATEX is a cylindrical explosion proof enclosure for EOS Safety Light Curtains

Light curtains are protective electro sensitive devices (ESPE) using one or more light beams, emitted by an Emitter and received by a Receiver, to create an intangible controlled area.

Light curtains can automatically interrupt the operation of potentially dangerous devices or machinery if a human operator is present by hand detection or access control options.

Unintentional start-up of the machine shall not be possible when anyone crosses the sensitive area and stays undetected in the dangerous area.

Available in four different lengths, the enclosures can accommodate a number of light curtains allowing protective field heights of 610mm, 910mm, 1210mm and 1510mm. With a resolution of 30 mm

a scanning range of up to 17m can be achieved.

The cylindrical enclosure EOS ATEX allows to house the Reer safety barriers of the series: EOS2/EOS4.

The safety light curtain is supplied in its ATEX protective housing with a pre-wired 10m cable and fixing brackets.

The EOS EX series safety light curtains are opto-electronic devices having mechanical and electrical characteristics which allow their installation inside areas classified as per the European Directive 2014/34/UE – according to the classification listed here below:

- ZONE 2 - EOS EX can be installed in those areas classified as ZONE 2 - areas in which an explosive atmosphere is not present during normal operation, but in which it could be present for short periods



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or due to malfunctions or leakages.

- ZONE 22 - EOS EX can be installed in those areas classified as ZONE 22 - areas in which a flammable dust is not present during normal operation, but in which it could be present for short periods or due to malfunctions or leakages

Technical Features:

- Integrated anti-condensation system through the GORETM vent.
- Degree of protection: IP 65
- ATEX degree of protection (2014/34/EU):
Gasses: II 3G Ex nA IIC T6 Gc
Dust: II 3D Ex tc IIIC T 60°C D
- Transparent PC tube (Ø 50mm)
- Protective aluminium tube
- Stainless steel closing caps (AISI 316L, Ø 56 mm)
- Silicon O-rings
- Stainless steel mounting brackets (AISI 316L)
- Protection grade: IP65
- Operating temperature: -10° to 55°C

Applications:

Due to its robustness, this safety barrier is suitable for many applications including Painting systems, Farinaceous processing and packaging industries, Chemical industries, Oil and derivatives processing industries; In general for the protection of all workstations in environments with potentially explosive atmosphere.

The continuous regulatory changes relating to the machine safety, the diversification of the product types and



the customer requests make it necessary to have a close collaboration between the machine manufacturer and the supplier of safety devices. Reer, one of the main players in the standardization process development as it takes part in the most important national and international Organising Committees on machinery safety requirements, with its product range (Safety light curtains, Configurable safety controller, photocells, laser scanner and interfaces) is the ideal partner for any safety needs.

An example of this collaboration is the safety system built on an anthropomorphic robot. In this application for industrial painting operation, ATEX Safety Light Curtains are used to protect the hazardous area against operator intrusion.

Pieces are loaded manually or automatically in a safe area, once loaded, the part moves into the hazardous area and the anthropomorphic robots perform the painting operation.

Barriers outside ensure that, if an operator accidentally enters the unsafe area, all machines stop their process and the area becomes non-dangerous while waiting for the operator to leave the area. ■

For more information, visit: <https://go.marketing.reersafety.com//895801/2021-05-04/33ym14>

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Fluke 393 FC CAT III 1500 V True-rms Clamp Meter with iFlex delivers safe, fast measurements in 1500 V dc environments

The new meter's thin jaw, CAT III 1500 V safety rating, and IP54 rating for dust and water make it ideal for installation and troubleshooting in solar environments.

Fluke Corporation introduces the Fluke® 393 FC CAT III 1500 V True-rms Clamp Meter with iFlex, the world's only 1500 V CAT III, IP54 rated, thin jaw clamp meter. With its CAT III 1500 V / CAT IV 6000 V safety rating, the 393 FC provides exceptional safety for work in dc environments up to 1500 volts, like solar arrays, wind power, electric railways, and datacenter battery banks for uninterruptible power supplies. The thin jaw allows it to be used in combiner boxes, inverters, and tight spaces making it ideal for solar energy applications.

The meter measures up to 1500 V dc, 1000 V ac, and up to 999.9 A dc or ac through the clamp jaw. The included iFlex flexible current probe extends ac current measurements up to 2500 amps. When measuring ac current, the iFlex probe can be twisted through extremely small spaces giving technicians access to cables that would otherwise be difficult or impossible to clamp a probe around.

"The Fluke 393 FC delivers unparalleled safety and performance in 1500V dc environments, like solar energy," said Susan Isaac, Product Manager for the Fluke 393. "It was designed specifically to address the unique challenges solar technicians deal with every day, and help them get their jobs done faster and safer."

The Fluke 393 FC features:

- IP54 rating for dust and water making it ideal for work outdoors on solar arrays and wind power systems.
- DC power measurement, showing readings in kVA.
- Audio and Visual Polarity to ensure photovoltaic panels are properly installed with the help of an audio beep and a light to indicate correct polarity.
- Visual Continuity that provides a bright green indicator light

- in the display for working in dark and noisy environments.
- Logging, sharing and reporting of test results via Fluke Connect software.



Dedicated tools for solar design, installation, and troubleshooting

The 393 FC is the latest addition to the Fluke portfolio of test tools designed for the solar energy industry. Fluke tools operate reliably in the extreme environments — dusty, wet, cold and hot — that solar professionals work in, and are tested to survive drops that can occur in field work. Fluke tools are designed to keep workers

safe in potentially dangerous electrical environments, meeting or exceeding all recommended safety standards.

For more information on the Fluke 393 FC CAT III 1500 V True-rms Clamp Meter with iFlex, visit: <https://www.fluke.com/en-in/product/electrical-testing/clamp-meters/393-fc>

About Fluke

Founded in 1948, Fluke Corporation is the world leader in compact, professional electronic test tools and software for measuring and condition monitoring. Fluke customers are technicians, engineers, electricians, maintenance managers, and metrologists who install, troubleshoot, and maintain industrial, electrical, and electronic equipment and calibration processes. ■

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Pintura Industrial Reus S.A. relies on ELGi to reduce energy consumption and CO2 emissions

ELGi Compressors Europe, a subsidiary of ELGi Equipments Limited, one of the world's leading air compressor manufacturers, completed a compressed air system upgrade at the Pintura Industrial Reus S.A. (PIRSA) plant in Callús, Spain. With the upgrade, PIRSA, a Spanish producer of paints, pavements, coatings, and waterproofing for the food and pharmaceutical industry, improved the site's productivity and energy efficiency levels, resulting in approximate savings of 1,500 EUR a month.

ELGi and Klug, ELGi's Channel Partner in Spain, replaced the customer's aging and inefficient system with a turnkey compressed air solution that supports the transportation of paint through a network of pipes for canning and shot blasting. The new system features the ELGi EG75 VFD (variable-frequency drive) unit. The combination of the low rotational speed and a variable-frequency drive ensures the compressor adapts to changes in demand while optimizing the airflow, resulting in higher reliability, lower energy consumption, and reduced noise.

"Working together with ELGi proved to be a game-changer for us," said **Miguel Ángel Martín, the owner and General Manager of PIRSA**. "The new unit delivered immediate results, comprising a 40% reduction in energy consumption and lower maintenance costs. This translated into lower electricity bills and lower operating costs. The results? We lowered our production site's carbon footprint and met our quality standards while continuing to deliver only the best products for our customers".

"As air compressor manufacturers, we believe in right-sizing compressors for our customer's requirements. We



study customer applications and recommend the right size of compressors, ensuring our energy-efficient products provide customers with significant savings in energy costs translating to a reduction in carbon footprint while reducing environmental impact. The ELGi EG Series with a built-in variable-frequency drive translates to reduced power consumption, better energy savings, and, most importantly, a satisfied customer. Just one of the many ways

by which we demonstrate why we're #Alwaysbetter," said Victor Escolano Marco, Regional Manager at ELGi Iberia.

The robust design of the EG-Series compressor range enables operations at extreme temperatures, from cold to hot, and from dry to extremely humid conditions, leading overall to higher reliability of the compressed air system across Europe.

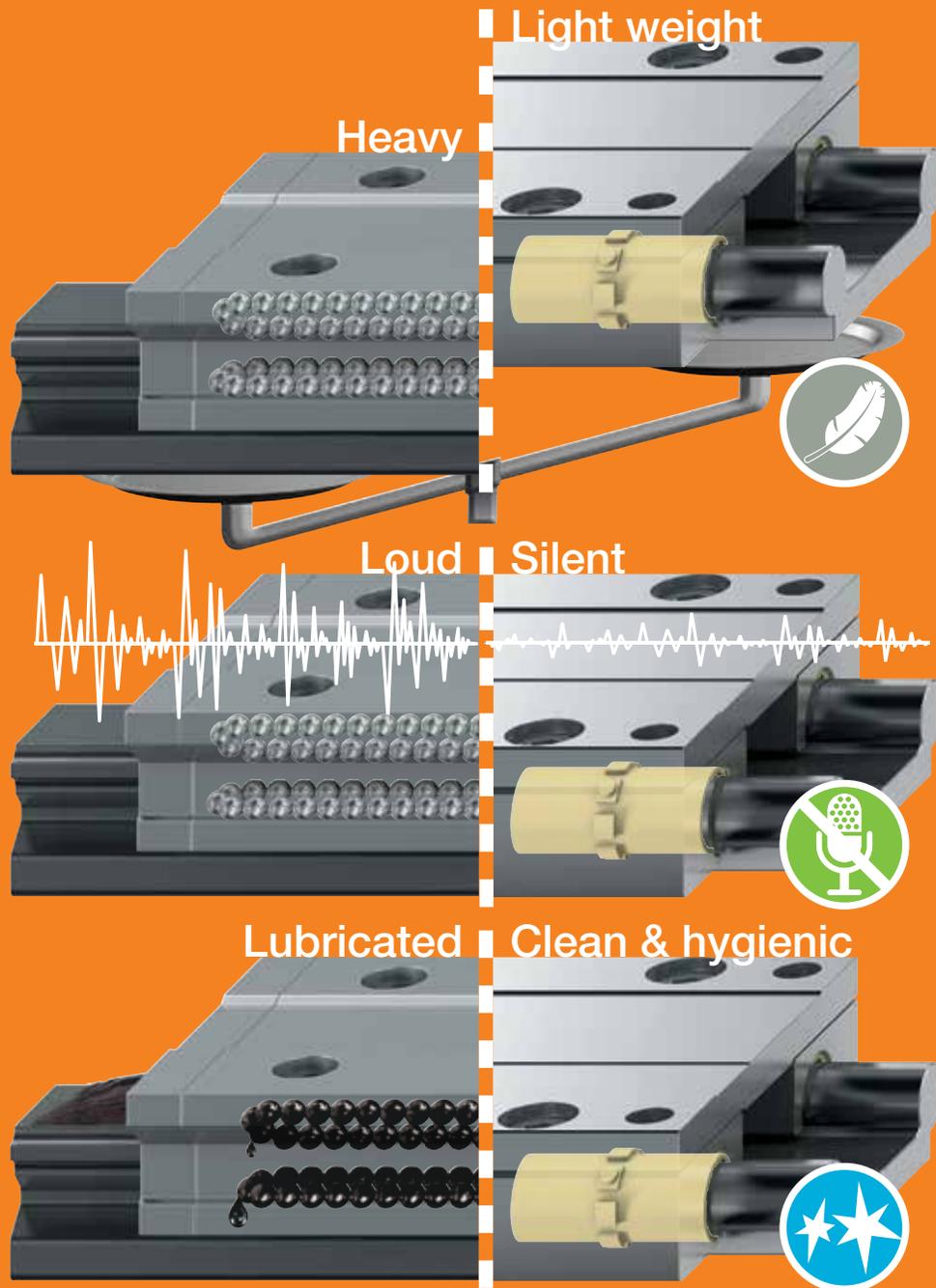
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Rollway bearings are not strangers to India either. Indian Oil and Gas Industry, Power Generation, Mining and Construction industries and Electric Motor Manufacturers are regular users of this brand of bearings.

Founded in 1905, McGill patented

the CAMROL(R) Cam-follower bearing, which today is offered in more than 1400 different combinations and configurations. McGill Products also include Aerospace Bearings, Needle and Spherical Roller Bearings.

SealMaster was founded in 1935, and today, it is considered as the most preferred brand of premium quality Mounted Ball and Spherical Roller Bearings.

All these brands belong to Regal Power Transmission Solutions – a Division of Regal Beloit USA. Regal Power Transmission Solutions is a family of respected product brands that supply a variety of power transmission components designed to increase both uptime and productivity of a

Manufacturing Plant. Besides Rollway, McGill and SealMaster, the other offerings from Regal Power Transmission are Browning Speed Reducers and V Belt drives, Jaure and Kop-Flex Couplings, Morse Roller-chain Drives and System Plast Plastic Conveying Chains and Belts.

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Beloit, as the Authorized Exclusive Distributor of Rollway Products and an Authorized Distributor of “McGill” and “Sealmaster” range of products for the territory of Republic of India. Primeroll’s founder-Directors have been involved in the bearing distribution business in India since 1975 and are the top bearing distributors in India. This unique association between Regal and Primeroll brings to Indian customers field expertise, market knowledge and quality products and technical services that are used by industries all over the world.

Primeroll International Private Limited has its Head Office and Central Warehouse in Kolkata, branches in Kolkata, Gurgaon, Mumbai and Chennai and a network of Dealers strategically situated all over India. ■



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The core concept of maintenance of a rotary machine, therefore, should be focused on the maintenance of bearings. Today, several generalized maintenance philosophies are practiced in the engineering industry. However, the machine maintenance philosophy that is found to be the most effective is “Bearing Centred Maintenance” (BCM).

A Rolling bearing is designed to withstand fatigue caused by continuous application of a periodic load over a long period of time. Keeping in mind the arduous and demanding operating conditions that it has to withstand during operation, the bearing will be handled and stored properly, used with components having commensurate quality, fitted without damaging it, lubricated correctly and maintained carefully, so as to eliminate possibilities of other modes of premature failures such as Wear, Plastic Deformation, Corrosion or Fracture.

Pre – Installation Checks: Rolling Bearings are precision products and must be fitted to correctly dimensioned components for good performance and service life. New bearing need not be washed prior to installation, unless compatibility with the Lubricant to be used is an issue.

Bearing installation and handling: Take care when removing old or damaged bearings from their shafts so as not to damage the shaft surface where the new bearings will be installed. Do not use Hammers, chisels or Gas Torch for removal of bearings, as this may lead to irreparable damage to the shaft. Use scientific dismounting tools such as Mechanical / Hydraulic Pullers, Oil Injection Pumps etc., wherever possible.

Clean all housings, shafts, sleeves, keyways, etc., before attempting to install a new bearing. Do not use emery paper on shaft where the bearing will be seated. Inspect the shafts and housing bore for damage / taper / ovality / out-of-roundness/ inaccurate tolerance. Abutments on the shaft / housing should be square to the axis.

Install new bearings in as clean and dry an environment as possible. Do not use cotton waste for any cleaning job

in the bearing maintenance room. Use of lint-free cloth for wiping metallic surfaces is recommended. Ingress of any kind of contamination into the bearing at this stage will result in a shorter bearing life cycle.

Properly align bearings with shafts. Never push or pound on bearing surfaces. Use scientific mounting tools such as Fitting Tools, Induction Heaters, etc, as the case may need, in order to ensure safe installation of the bearings.

Initial lubrication procedures

Never assume the manufacturer has properly lubricated the bearing. The new bearings are usually shipped with a coating of a rust preventive oil only. It is only Lubricated-for-life bearings (indicated by a suffix ZZ or 2RS etc) that are supplied along with a suitable quality and quantity of grease. Follow the recommendation of the bearing manufacturer regarding grade, quantity and method of lubrication.

Re-lubrication of a bearing: You must preferably use the same lubricant as what is in use. Do not mix different lubricants without ascertaining their compatibility.

How lubricant waiting for future use is treated and stored will be a key factor in the life expectancy of equipment. Lubricants should be stored in moisture- and temperature-controlled environments, free of dust and chemical exposure.

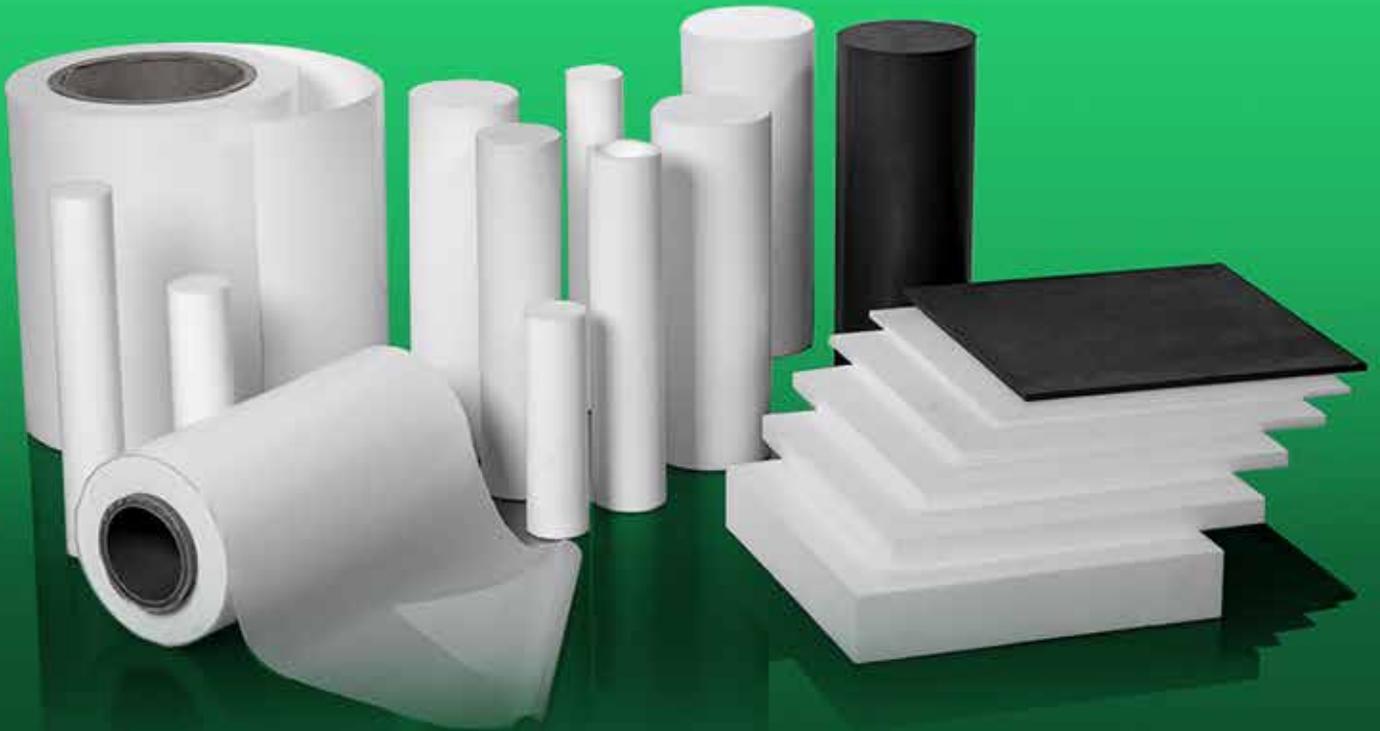
Contamination of a lubricant is likely to happen during transfer from one point to another. Failure to exercise care in this process will nullify the attention given previously. There are a number of ways to properly refill grease guns. Using a scoop or paddle from a container is the oldest technique. It involves spooning grease from a storage container and tamping it into the grease gun to remove air bubbles. This method is most likely to introduce contaminants into the grease, especially when performed in the field. It is not a recommended method except in the most dire of circumstances.

Using tube refills is the most common method of refilling a grease gun. It involves removing the empty tube and installing a new, compatible tube of grease into the grease gun. Take care to clean dirt and old grease from the canister and handle assembly before installing a clean, new tube of grease. Perform this task in as clean and dry an environment as possible.

When refilling from a storage container using mechanical or hydraulic pumps, grease is pumped mechanically from



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the storage container directly into the portable grease gun. When care is taken to clean off the port on the grease gun and delivery hook up from the pump, this is the fastest and safest method of grease transfer.

Assuring that the correct grease is introduced into bearings may involve coding systems. Labels, numbers, tags, or colour-coding on bearing housings that indicate what type of grease is being used can be very helpful to the lubrication technician. Ensure that grease guns are matched up with the coding system on equipment. New employees should be trained on the matching system before any lubrication task is performed. This is an easy system to implement and minimizes the chances of introducing non-compatible greases into the bearing.

Amount of lubricant that a bearing needs is much smaller than what is popularly believed. It is the fear of ingress of contamination that results in use of a quantum much higher than what important to calibrate each grease gun and note the volume of grease each gun delivers with one full pump.

Contamination control

Never allow dirt, dust, water or other contamination to enter the bearing.

Bearings must be protected by suitable seals fitted in the bearing housing. Do not allow the seal to get dry at the point where it in contact with the shaft. This leads to wear of the seal / shaft and subsequent ingress of contamination through the gap. A seal once removed, must be very carefully examined before being reused.

A seal is also a wearable part and needs maintenance. Follow the recommendation of the bearing manufacturers in this regard.

A Bearing is the heart of a rotary machine. It needs the same kind of respect and care as we accord to our own heart – or perhaps even better than that.■

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A simulation approach for autonomous heavy equipment safety

- By Gaetan Bouzard, Industry Solutions Manager, Heavy Equipment at Siemens Digital Industries Software

The heavy equipment customer's main objective is to increase their machine efficiency in the field by producing more with less while keeping a strict eye on operator safety. But with machines that become more and more specific, more and more complex, guaranteeing people safety and machine integrity also depends a lot on the operator's skills.

Partly or fully automated machine operation is a solution that most of the industry stakeholders are already investigating to increase safety and improve operability. Consequently, they can lead the digital revolution we face today.

With an increasing number of Advanced Driver Assistance Systems (ADAS) features to improve operator safety, such as remote-control driving/actuation or fully autonomous driving, the interactions between the operator and the vehicle are being reshaped. Nevertheless, working on heavy equipment autonomous operations means partially or fully replacing a skilled operator. These operators bring four main elements to their position: his/her senses, his/her brain, his/her experience, and the environment they interact with.

The role of simulation and of the digital twin

Model-based systems engineering (MBSE) is an approach that fits perfectly with the development of autonomous vehicles – many companies have been using it for years. Today, we've entered a period of intense innovation, and manufacturers are under tremendous pressure to reduce program costs. We see more system autonomy to deliver new mission capabilities leading to more interactions between the thousands of systems, interfaces, and components on a single heavy machine.

When it comes to product design and performance engineering, the MBSE approach brings the so-called 'Digital Twin' of the product/vehicle as well as its environment. It allows engineers to virtually explore the autonomous vehicle designs, as well as accelerate advanced control verification and validation, which can be tough for vehicle durability and expensive if pursued using a classical physical testing approach. Even if you work with the state-of-the-art data acquisition solution dedicated to ADAS.

Autonomous heavy equipment natural environment simulation

When it comes to the natural environment modeling, the simulation solution should be open and flexible enough to allow the import of any type of:

- off-road vehicle geometric models,
- geometric terrain with a relevant drop, slopes, and obstacles like rocks, trees, pedestrians, other vehicles,
- harsh conditions implied by the natural environment seasonality (rain, fog, dirt, day & night, sunset or sunrise, etc.)

This allows to perfectly match with conditions regularly encountered by heavy-equipment vehicles.

To create a good virtual digital twin of the field environment, Simcenter Prescan, the solution developed by Siemens Digital Industries Software (DISW), ensures objects have a good enough geometric description and material property description by considering what is important for each sensor modality: camera, LiDAR, radar.

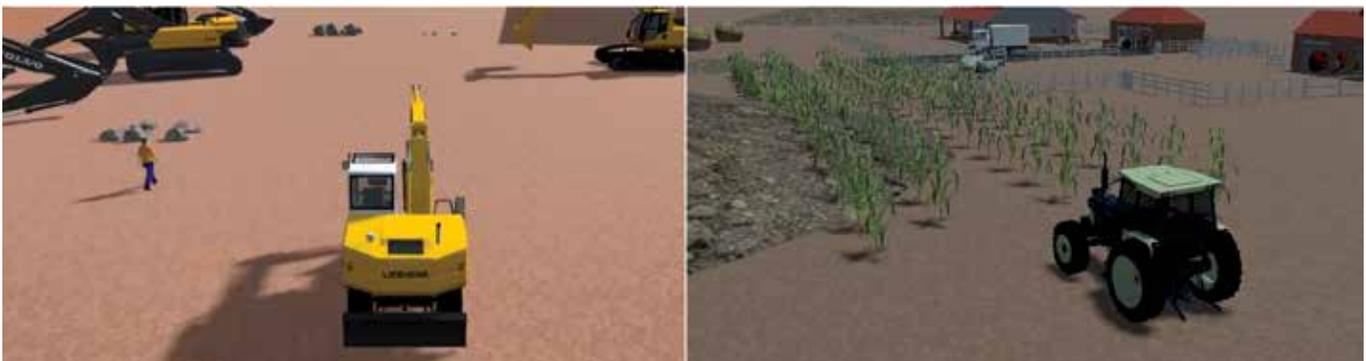


Figure: Examples of agricultural and construction environments, both including natural obstacles, crossing pedestrians, and moving machines.



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Additionally, Siemens DISW teams have been working in the past years on the coupling between its environment and its system simulation software, as well as investing in improved ground modeling technology. The Simcenter Amesim Track generator feature is an example. This feature allows the implementation of bumpy soil, with a certain penetration coefficient to consider the impact of the soil on autonomy sensor performance at vehicle low or high speed. The interactions between vehicle dynamics, traction on soft soil, and the powertrain are crucial.

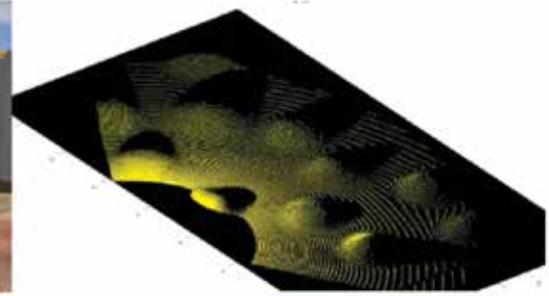


Figure: Excavator model evolving in a bumpy environment used for sensor perception algorithm verification and validation.

Any relevant obstacles associated with the scenarios of interest can be implemented as part of the environment. The objective is to analyze the sensor's detection and object recognition algorithm performances. Rocks, trees, buildings, crops, pedestrians, wildlife, infrastructures, etc. are elements that are relevant for our autonomous heavy equipment simulation environment, adding object motion when necessary.

Physical sensor modeling

When it comes to the replacement of the operator senses, one question summarizes the engineering challenges of implementing sensors like cameras, radars, LiDARs: How can you predict what the machine will or will not sense?

Consider that a physical sensor modeling solution is mandatory

for a simulation platform dedicated to autonomous operations development. Indeed, optimization of the sensor design and their configuration can be done virtually to a large extent.

From basic ground truth sensors (that identify all objects that appear in the sensor range), through probabilistic sensor models (that allow for fault insertion and filtering), up to physics-based sensor models (for raw data simulation), we can support engineers with balancing accuracy and computational time of sensors simulations based on mission/scenario requirements, for an improved engineering workflow efficiency. To have a robust sensor simulation, it is important to take into consideration three key components

- The physical sensor device,
- The world,
- The simulation engine.

The simulation engine is what brings together the physical device and the world. It allows us to handle important effects based on

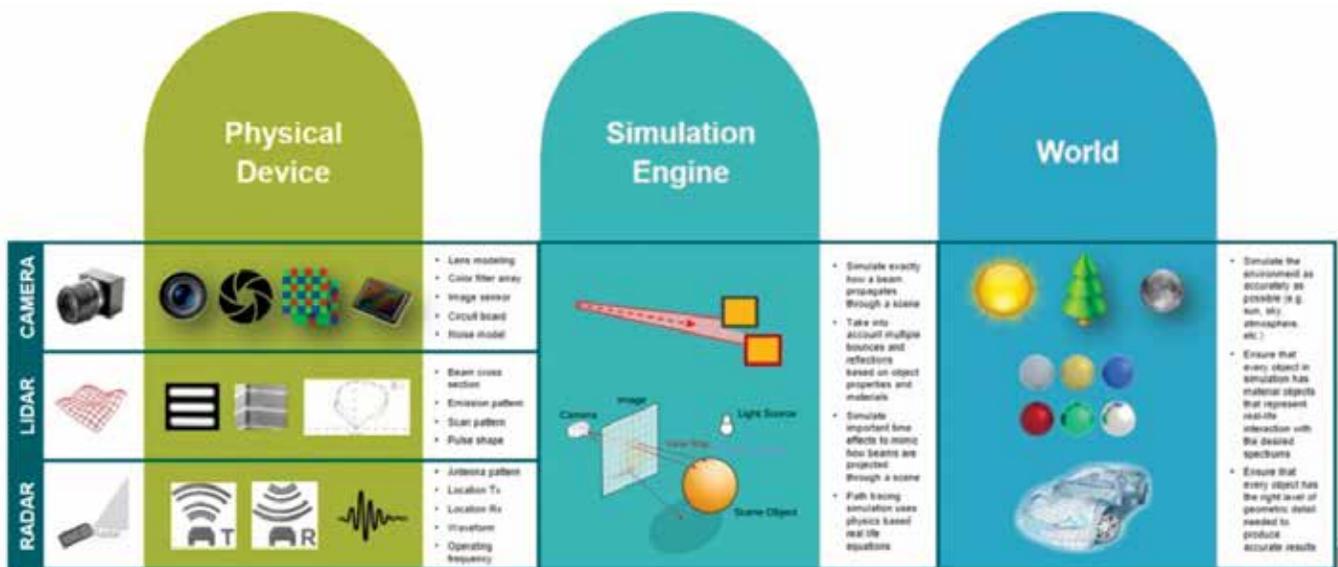


Figure: Summary of sensor modeling capabilities and principles

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real-life physical equations. For example, for the radar and the LiDAR simulation, an in-house ray-tracing framework accurately captures how light or a beam is propagated through a scene got developed in Simcenter Prescan. We believe that having a high accuracy simulation engine is important to ensure that developers, testers, integrators, and authorities can trust Siemens as a key partner.

On top of the sensor modeling, engineering departments can use simulation to optimize the machine design itself for better sensor performances. For example, to prevent sensor soiling or too much electric/electromagnetic disturbance from a metallic bumper covered by mud or rain, both of which. impact heavy equipment vehicles daily and yet not considered enough in current solution portfolios.

Heavy equipment vehicle modeling

A skilled operator has hours of machine operations background experience. In order to improve the performance of the autonomous operations of the vehicle, it is mandatory to include accurate dynamics within the control virtual training, verification, and validation process. From soil and tire model to the vehicle dynamics, the more physics you implement the more robust your control will be, improving operability and safety. The automation of the machine positively impacts other attributes. Indeed, it enables to better control the energy distribution, or yet powertrain actuation resulting in improved powertrain durability, keeping the machine within the safety zone of loads.

Simcenter simulation platforms, like Simcenter Amesim system simulation software and Simcenter 3D Motion, propose a large heavy equipment vehicle modeling capability: from construction equipment, transportation, agriculture, to military intervention

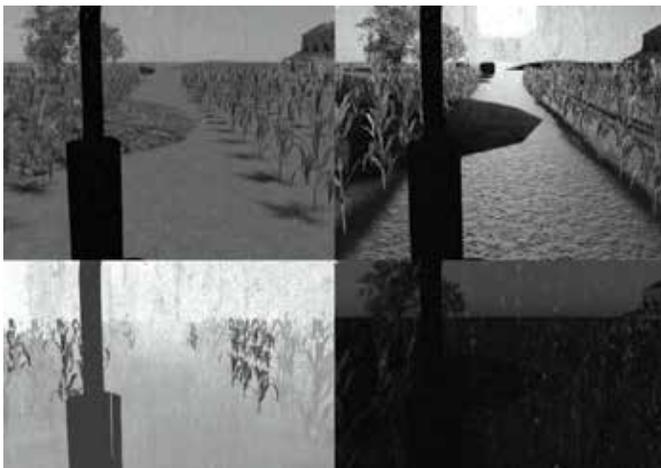


Figure: Camera detection of pedestrian in cornfield, natural conditions sensitivity study. Top left: nominal conditions. Top right: sunset reflection. Bottom left: dirt on camera. Bottom right: night conditions.



Figure: Analysis results on the effect of rain and mud drops on the camera lens and radar antenna gain

autonomous robots, including the relevant vehicle and powertrain dynamics for each application. Simcenter Amesim, for example, can connect to the natural environment model using smart co-simulation FMI/FMU technology as has been shown in the previous video of the autonomous tractor in the cornfield. Engineers can thus consider the realistic vehicle dynamics impact on sensor and algorithm performances along the development workflow.

The machine type does not limit itself to the ground vehicles. Siemens DISW also proposes the integration of autonomous drones, including flight dynamics. That capability is usually used for terrain recognition, crop identification, and supporting to autonomous vehicle decision strategy.

Automate and accelerate the verification workflow

A key element leading to a significant reduction of the cost of autonomous heavy equipment simulation is the automation of the algorithm verification and validation workflow. Indeed, automating the validation of algorithms performance under various weather or lighting conditions, or simply making sure that the workflow covers all possible scenarios, allows an improved coverage of your perception algorithm validation, not talking about development time and cost-saving associated with this automation.

Sensor and vehicle configuration, sensor mounting, and vehicle design exploration can also be automated. In the example above, Simcenter HEED, Siemens DISW design space exploration, and optimization software package allow this performance verification automation.

The objective is the deployment of the virtual verification framework of ADAS and autonomous vehicle systems, allowing easy scenario generation, efficient critical case identification, and systematic virtual verification of requirements. In other words, automate and accelerate the scenario set-up, the interaction between the different simulations, and the post-processing of relevant metrics, for a quick and efficient Key Performance Indicators (KPIs) analysis. ■





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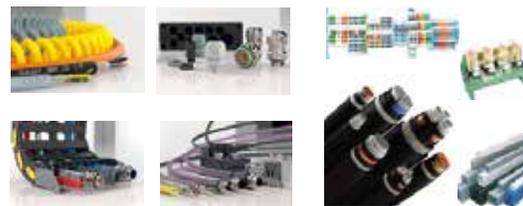
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Could there have been a proactive prevention of fire breakout in COVID-19 Hospitals?



A series of frequent and unfortunate fire incidents in COVID Hospitals has been a cause of concern since the last year. The COVID emergency is not going away soon and all the emergency infrastructure built to fight the pandemic poses serious risks given its weak foundation. Power Systems are particularly vulnerable given the sudden increase in non-linear loads comprising of ventilators and related medical devices

– a crucial defense aid in fighting COVID. With improper electrical systems, further marred by non-compliance to electrical standards and poor workmanship, hospitals are staring at the high risk of weakening the immune systems of their electrical systems and leading to fire!

The pandemic has put stress on the Hospitals like never before. Almost unprepared for the scale and nature of COVID's medical emergency, it is

natural for the Hospital's Management to prioritize the most urgent and important objective – treatment of patients. And often, amongst all the essential tasks, it is the minor ones that generally get the least priority and lead to trouble later. Thus, poor Power Quality (PQ) and electrical safety issues are bound to receive less attention in a situation where patients are increasingly struggling for medication and treatment. But the



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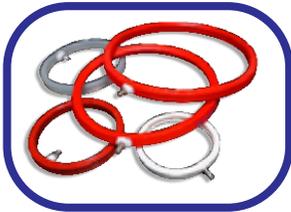


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seemingly minor electrical issues have taken a severe turn and caused a fire in the establishments. Hospitals have been tirelessly operating in the pandemic, constantly stressed for resources including space, medication and care. From sports stadiums to hotels, a variety of facilities are being turned into makeshift healthcare facilities. Given the large scale of the problem and short availability of time and resources, very little can be assured for standards and underlying quality of work for the electrical systems. This only means, the risks to the safety and reliability of power systems are higher than ever before. Hospitals are up against yet another hectic and exhausting challenge – ensuring uptime, safety and proper functioning of all critical devices and systems, mostly driven by electricity, in an extremely challenging situation. Any technical difficulty can become overwhelming for the hospital facility in such a stressed situation.

Power Quality issues

A Hospital’s critical nature demands extremely careful wiring. The presence of power quality issues, such as high harmonics in the electrical system, is often the root cause of overheating of cables and equipment, further leading to system failures, and in extreme cases, short circuits and instances of fire. This is further accentuated by poor workmanship or poor quality of electrical hardware being deployed under time and financial stress. As Hospitals continually equip themselves to serve more patients, reliable electrical supply must be ensured for the seamless and safe functioning of the facility. Power-hungry electrical equipment such as MRI, CT Scans, and X-Ray machines, Ventilators and other medical devices, used in hospitals need uninterrupted power supply. A durable cable network is thus absolutely

essential to carry this power supply without overheating. However, hospital authorities in India ignorantly prefer low-grade wires in order to save costs which results in overheating, and to add to this PVC used in cables creates a lot of smoke in case of a fire incident.

With the addition of Ventilators, air-conditioners, high-capacity machines in the ICUs, testing facilities for COVID, the addition of more rooms, and increased use of flammable alcohol-based



sanitizers or PPE kits, risks of fire are only going higher. Add to it the poorly designed power systems built with even poorer workmanship, it all works like oxygen to start an electrical fire and feed it further. Hospitals are a very important element of the healthcare system. The emergence of new makeshift hospitals in the current pandemic is well justified but are they complying with the Electrical Safety Standards? The safety and reliability of electrical networks in any building is vital. But in the case of hospitals, it is even more critical.

Building a proactive approach to fire safety

Electrical fire in Hospitals is never a sudden phenomenon or an accident. In fact, it’s a result of a long-time alarm that has kept ringing but has gone unnoticed

in the din of other important priorities. But compromised safety of Hospital facilities poses high risks to the reliable conditions for patient care, for COVID, and beyond.

Pay attention to earthing

A common practice in the Indian setup is to use separate earthing connections for all the electronic medical or non-medical equipment, but it is unjustified. If earthing is not done properly, it may damage the equipment or give electrical shocks to a surgeon or patient. All conductive metal in an equipotential area should be connected to a common equipotential earthing point with a special heavy-duty cable. This reduces the possibility of leakage currents that can cause micro-electrocution when the surgeon or patient comes into contact with the equipment.

Ensuring good Power Quality to prevent electrical fire

There are several tools to proactively identify the vulnerabilities in power systems, including power quality issues, much before they lead to extreme events of electrical fire.

Thermal Imaging is highly helpful in understanding the potential overheating in the electrical network.

Periodic measurements and monitoring of harmonic distortion helps in early identification and prevention of heating in the electrical cables.

Isolation Transformers for sensitive imaging devices or diagnostic equipment

Use of 3+1 Core Cables, owing to their larger surface area, help in reducing the hot spots, thereby reducing the risk of electrical fires.

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Conclusion

A proactive approach to fire safety is the only way to ensure foolproof safety of the electrical systems from instances of fire. Hospitals must invest and upgrade their knowledge and experience in

resolving the urgent and growing safety concerns on priority. This calls for addressing every root cause - from following the right Standards in cables to improving Power Quality.

Proactive prevention of the PQ issues in Hospitals requires much groundwork and addressing the root causes. A course correction from the current practices is required at every stage – from design to installation and maintenance when the facility is in operation. Following high standards and not falling for savings in upfront costs must be the norm.

All the hard work, sacrifice and care in saving the lives of COVID patients cannot be at stake of an increased risk of electrical fire from underlying electrical causes that are fully preventable.

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Investment Casting & Automation

The Indian investment casting industry has a remarkably interesting history. The oldest known example of the lost wax technique comes from a 6,000-year-old wheel-shaped copper amulet found at Mehrgarh in the Indus Valley. During this period the lost wax technology was used in many other applications throughout the sub-continent. Most of the applications are now forgotten. Today this technology survives restricted to idol making in remote pockets of the country. The modern Investment casting began in India at a foundry located in Faridabad in the year 1966. From then till the year 2000 India had a total of fewer than 30 foundries in the country, including the Gas Turbine Research Establishment, Ordnance Factory Medak, Hindustan Aeronautics Limited, Shivaji works and others. Post-2000, the industry rapidly grew and now India has over 300 investment casting foundries. Rajkot alone has more than 120.

The lost wax technologies used in India today are mostly imitations of western countries with little understanding of the science behind it. A large number of foundries today function based on obsolete ideas and are heavily dependent on manual labour. This dependency on labour skill, combined with the resistance to adopt newer technologies has greatly reduced the efficiency of the foundry and inflated the cost of production.

As the investment casting industry grows in India, the market is becoming more quality sensitive. Foundries will have to upgrade and streamline their processes to be able to survive in the post pandemic industrial era. India cannot afford to import technology from abroad any more, we need to realise the importance of Indigenous innovation and technical expertise to grow our industries.

Automation and standardisation of the production steps is an important factor for the long-term success of a foundry. The key towards rectifying this issue is by reducing the irrational dependence on worker skill.



Vivek Sangle- Proprietor
Incastt Machines

Incastt has the unique advantage of having in-depth knowledge and know-how in various investment casting technologies and are also expert machine manufacturers. This combination enables Incastt in helping the Indian investment casting industry to move towards meeting the new quality and cost challenges; Incastt has successfully developed solutions using automation and robotics.

The RoSS system, a fully automated Shell room designed and manufactured by Incastt, helps to streamline

the whole shell building activity with minimum effort. Shell building is the most time-consuming process in investment casting; with a completely automated shell building process we have achieved a reduction in lead-time, raw material consumption and labour leading to reduction in the cost of production. The indigenously built system is flexible and can be customised to support and cater to the needs of the foundry.

This is only the first step taken by Incastt to rationalise and automate the investment casting industry in India. Incastt is further developing an automated robotic metal pouring system. The purpose is again to reduce dependence on difficult to get labour.

However, foundries today must get used to the idea of continuous innovation and improvement in technology as the only way to sustain the industry. ■



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Hilscher Gateway enables the integration of the ASCII protocol into the PROFIBUS world



Project at a glance

Company: Z Telemetri Ltd. Şti.
Key Contact: Ali Uğur Çelik
End customer: Kırka Boron Works
Solution: Low-cost gateway NT 50
Country: Turkey



“ With the Hilscher products, we put ourself in a position to fulfill the technical requirements of the customer and to offer individual solutions for the automation market. ”

Ali Uğur Çelik,
Managing Director
Z Telemetri Ltd. Şti.



At the present time, different components are used in plants. This requires – e. g. in the energy sector – a network between the SCADA control systems, fire alarm systems and building automation. However, since these systems do not always speak the same protocol, a protocol converter called gateway is necessary. The gateways developed by the company Hilscher allow connecting similar and different protocols of the automation world such as CANopen, DeviceNet, PROFIBUS, PROFINET, EtherCAT, EtherNet/IP, Modbus TCP, Modbus RTU, POWERLINK, and Sercos. Simple handling and the cost advantage due to the support of serial buses, classic fieldbus systems and Real-Time Ethernet systems speak for themselves. Thus, for many industrial project requests, the gateways offer a solution.



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Z Telemetri uses the Hilscher gateways in many project requests. Following is an example of the field of application for the gateway with the fieldbus protocol PROFIBUS in a mining project. Located in Kirka Town of the county of Seyitgazi/Eskisehir, Kirka Boron Works was established in 1970. The enterprise which started to operate through the organization of the construction site in 1970 acquired the „plant“ status with the groundbreaking of the concentrator and started to operate in „enterprise status“ in 1975 with the commissioning of the concentrator. Due to the requirements and demands of the market, new systems must be integrated.

After a closer look at the plant, the Hilscher gateway netTAP 50-DP-RS is the right solution for the customer. Thereby, the determined protocol conversion from the existing ASCII to Profibus DP is realized. For the configuration, the free configuration tool Sycon.net is provided.

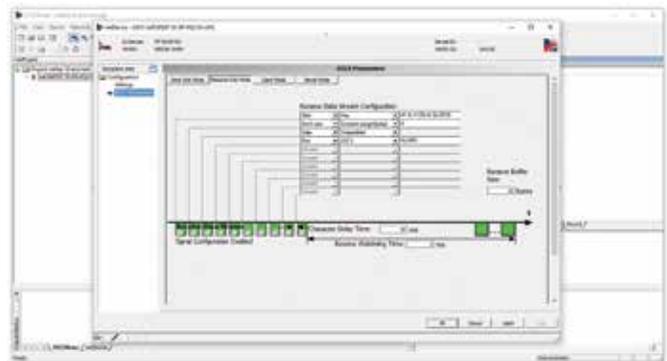
The processes of the ASCII side are detected and processed by the Hilscher gateway netTAP 50-DP-RS. Next, the assignment of the I/O data via the configuration tool Sycon.net is required. You have to be aware that at least 1 Byte output as well as the same number of input data has to be provided for the PROFIBUS integration.

For the ASCII protocol, 1-3 address areas are predefined which can be adjusted via the Sycon.net. On the PROFIBUS side, the first 16 bytes input and 1 byte output of the netTAP 50-DP-RS are used. The allocation of the ASCII protocol (3 bytes input) is made after the PROFIBUS addressing from the 17th byte.

The parameterization and the configuration of the PROFIBUS network have been successfully tested in a test setup using a fire alarm system.

“ In no time we were able to convert an ASCII protocol which was not conform to the standard into the PROFIBUS network. This project shows that the requirements of the customer were completely fulfilled by the performance and the stability of the Hilscher Gateway. ”

Ali Uğur Çelik,
Managing Director
Z Telemetri Ltd. Şti.



You want to get information about our Gateway solution?

netTAP 50 is a protocol converter for simple conversions. It supports conversions from and to one port Real-Time Ethernet, fieldbus and serial automation protocols. The



conversion can be either slave to slave or slave to master. As a master, netTAP 50 provides full master functionality to one slave device only. ■



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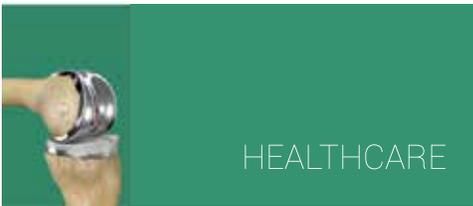
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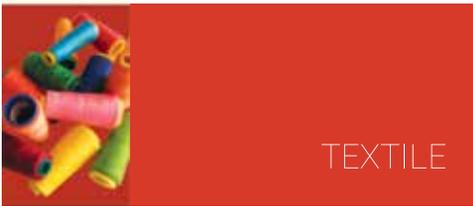
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