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- Perspective on the Indian lubricant market
- How new hardware are driving the autonomous trucks market
- Empowering the next generation utility
- Safety tips at construction sites
- Interview: P Sudhahar, Director (Lubes), BPCL
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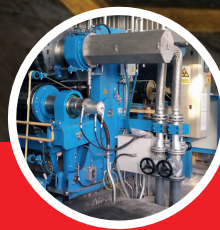
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Budgeting for growth?

The interim budget 2024-25, announced by Union Finance Minister Nirmala Sitharaman on February 1, 2024, has allocated Rs 11.11 trillion as capital expenditure (capex) for the next financial year – which is 3.4 per cent of the GDP and 11.1 per cent more than the planned capex of Rs 10 trillion for FY24. Infrastructure sectors (roads & railways) - with a combined share of more than 45 per cent in total capex - continue to be the focus of the government to drive economic growth. This augers well for the manufacturing sector because of the cascading positive effect of the developing infrastructure – both in terms of business generation as well as improving efficiency (due to better logistics facilities).

The budget proposal to strengthen EV ecosystem through support of manufacturing and charging infrastructure will push EV sales up - potentially benefitting companies in the EV space which will encourage higher spending on R&D and innovation.

The proposal to convert 40,000 normal rail bogies to the Vande Bharat standards for enhancing safety, convenience and comfort of passengers, which propel demand for engineering goods. For India's tech savvy youth, interim budget proposes to establish a corpus of Rs one trillion with 50-year interest free loan. The government also plans to launch a new scheme for strengthening deep-tech technologies for defence purposes and expediting 'atmanirbharta'. All these measures are expected to encourage the private sector to scale up research and innovation significantly in sunrise domains.

In the recent years, the government has taken several steps - including Made in India (in 2014) and the Production Linked Incentive (PLI) scheme in March 2020 - to propel manufacturing in the country. The basic idea of PLI scheme (rolled out for 14 sectors, with a total outlay of nearly \$ 24 billion) was to pick sectoral winners and provide them with incentives. There are clear signs that the PLI scheme is working on the ground in a few sectors such as electronics (especially smartphone assembly), bulk drugs, food processing, etc resulting in a substantive increase in investments and exports. As of November 2023, the PLI schemes have attracted more than Rs 1 trillion investment, recorded sales of Rs 8.61 trillion, and directly and indirectly created over 6.78 lakh jobs, according to the government. If other sectors (like textiles, solar photovoltaic modules, advanced chemistry cell batteries, etc), which have seen disappointing results so far, start to delivery, then one can witness a more profound effect of the PLI scheme.

Indian economy made a strong start to 2024, with services activity climbing to a six-month high and manufacturing picking up pace (as per HSBC Holdings' new flash survey). The purchasing managers index (PMI) for services rose to 61.2 in January 2024 from 59 in December, while the manufacturing PMI increased to a four-month high of 56.9. A reading above 50 indicates expansion compared with the previous month. Heartening news is: new orders rose at a faster pace than a month ago, with international orders showing a good jump.

Despite global headwinds (due to geopolitical tensions, inflationary pressures, and slower growth in Western economies), India is expected to be the world's fastest-growing major economies in 2023-24, with estimated GDP growth of 7-7.3 per cent. Through the interim budget, the government has shown its intent to strengthen manufacturing in sunrise industries such as renewable energy, electric vehicles, semiconductors, material sciences, aerospace & defence, etc to stimulate the economy. But, we need labour reform and more incentive for skilling or else we will not be ready for scaling up.

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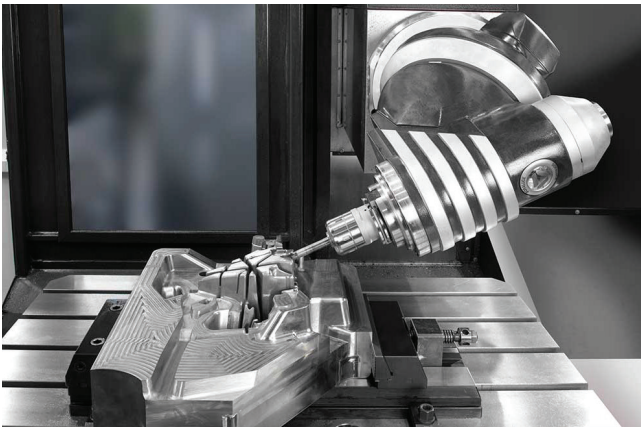
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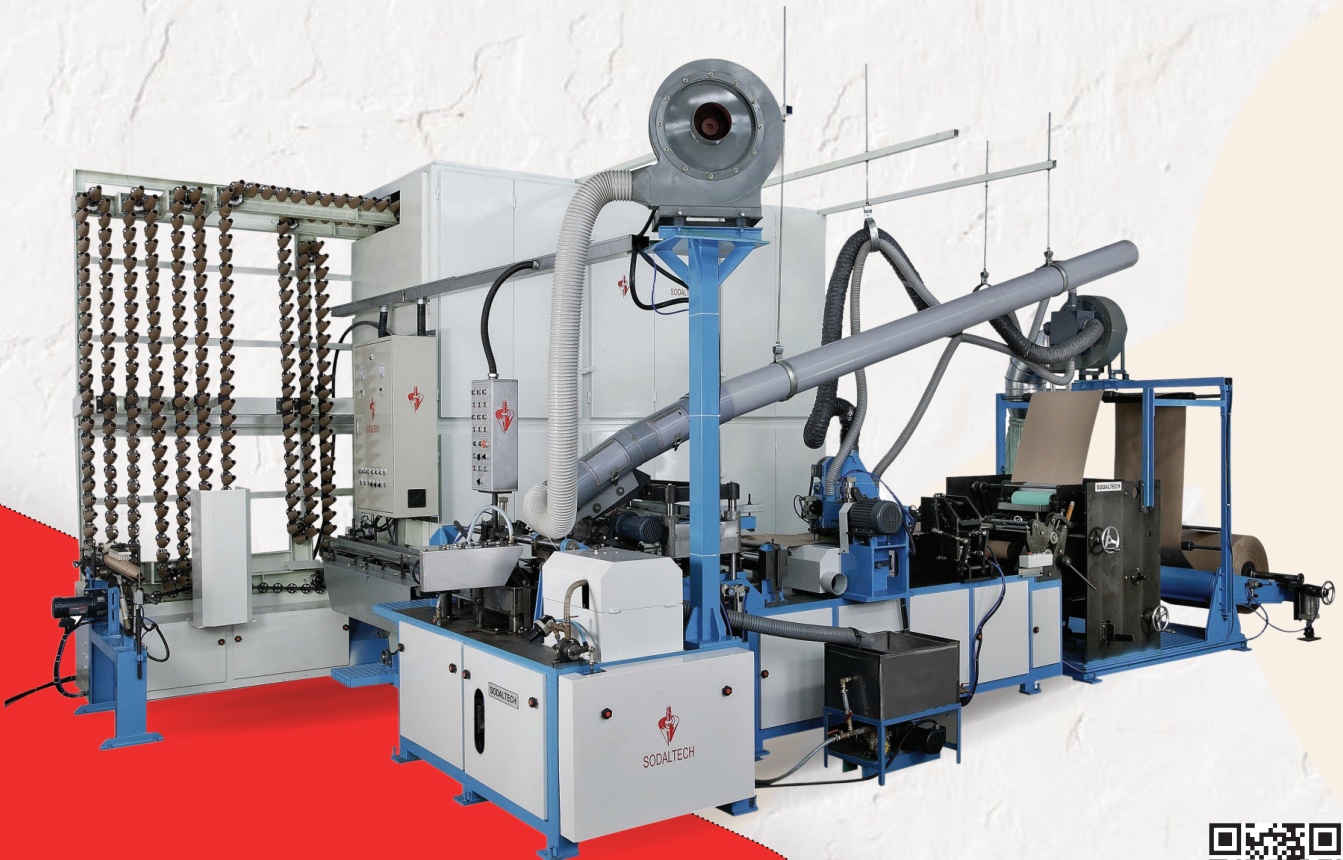
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- These pumps stand out as a top-notch fluid transfer solution due to their exceptional performance, reliability, and ease of use.

About the company: The Industry's Premier one-stop solution for Electrical and Mechanical Products and Services. With over four decades of experience, we have established ourselves as one of the largest channel partners for polycab cables, wires & other FMEG products across India. pump applications. Their extensive product basket also includes cable trays and valves.

Contact:

Tegh Cables (India) Pvt Ltd, Mumbai
Tel: 022-40627000
Email: enquiry@teghindia.com



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FLASH TANKS

Tecor Boilers Pvt Ltd offers a wide range of flash tanks.

Features:

- Offered products are used to transfer steam from very high temperature condensate prior to introducing into a low pressure lines and to pass condensate prior to returning to the boiler or condensate tank.
- These products are designed using premium quality raw material and sophisticated technology under the supervision of skilled professionals.

About the company: Established in the year 1991, at Delhi, India, we, "TECOR", are known as the most reputed manufacturer and supplier of premium quality range of Industrial Boilers, Steam Distribution Headers, Pressure Reducing & Super Heating Stations, Pressure Vessels, Deaerators, Industrial Tanks, Moisture Separators, Pollution Control Equipment, Soot Blowers, etc.

Contact:

Tecor Boilers Pvt Ltd, New Delhi
Mobile: 09810083254, 09810494163
Email: sales@tecorindia.com
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NON-ASBESTOS MILLBOARD

PGE Industries Pvt Ltd offers a wide range of non-asbestos millboard.

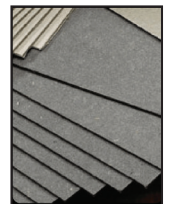
Features:

- Offered non-asbestos, non-ceramic millboard sheets for high-temperature applications. The millboards are available in both sheet and cut gasket form.
- These millboards are used for heat shields in molten metal casting, General gaskets in domestic appliances, Sacrificial linings in aluminium melting pots, High-temperature gaskets and seals, ovens, and Furnaces applications.

About the company: Established in 1981, PGE India (PILOT Gaskets) is the prominent manufacturer of sealing and insulating products.

Contact:

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Mobile: 08080890022
Email: info@pilotgaskets.com



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moves to and fro between scrap yard and the furnace.

Contact:

Elektromag-Joest Vibration Pvt Ltd,
Mumbai
Tel: 022-66624444
Email: vibration@elektromag.com

CABLE DRAG CHAINS

Elektromag offers a wide range of metallic/plastic cable drag chains. This Elektromag drag chains enable the conveyance of flexible cables/hoses, etc to movable units with maximum



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Contact:

Elektromag Methods, Mumbai
Mobile: 09820192772
Email: cablereels@elektromag.com

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machining.

Contact:

Schunk Intec India Pvt Ltd, Bangalore
Tel: 080-40538999
Email: rakhi.singh@in.schunk.com,
info@in.schunk.com

KUSAM-MECO IR THERMAL IMAGING CAMERA - MODEL KM 308 / KM 309

Kusam Electrical Industries Ltd offers a wide range of Kusam-Meco IR thermal imaging camera - Model KM 308 / KM 309. Kusam-Meco has



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introduced 2 New Models of Thermal Imagers Model KM-308 & KM-309..

Contact:

Kusam Electrical Industries Ltd, Mumbai
Tel: 022-27754546, 27750662
Email: sales@kusam-meco.co.in

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Universal Machine Tools Corporation offers surface grinding machine (manual). The grinding wheel spindle is hardened and round and runs in precision contact angular bearing and driven by flange,



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Contact:

Universal Machine Tools Corporation,
Bangalore
Mobile: 09845006959, 09844199559
Email: universalblr@gmail.com

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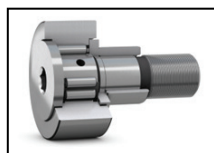


Contact:

Meiban Engineering Technologies Pvt Ltd,
Bangalore
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Email: office@meibanengg.com

TRACK ROLLERS - CAM FOLLOWERS

Mac Marketing Corporation offers a wide range of track rollers - cam followers. Since its outer ring rotates while keeping direct contact with the



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mating surface, this product is thick-walled and designed to bear an impact load.

Contact:

Mac Marketing Corporation, Bengaluru
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Email: info@macmktg.com

PRECISION AMPLIFIERS AND CALIBRATION UNITS

HBK India (Brüel & Kjær) offers a wide range of precision amplifiers and calibration units. The DMP41 serves as the standard for mV/V measurements around the world enabling the highest-precision comparative measurements of mechanical quantities.



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Debtronics is offering a wide range of solar photovoltaic street lights. These come with compact fluorescent lamp of 11w, provides illumination equivalent to 75w incandescent lamp and automatically



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Contact:

Debtronics, Kolkata

Tel: 033-24290314

Mobile: 09674720655

Email: enquiry@debtronics.co.in

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Contact:

Placka Instruments India Pvt Ltd, Chennai
Tel: 044-22231559
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Enerpac India Private Limited, Bangalore
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Contact:

Rotodyne Fluid Technic, Bangalore
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VACUUM CIRCUIT BREAKER

Excel Power Switchgear Pvt Ltd offers a wide range of vacuum circuit breaker. The vacuum circuit breaker is the heart of the Switchgear which consists of the Vacuum Interrupter, spring charged motor, closing solenoid, opening solenoid, anti pumping device, etc.



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Contact:

Excel Power Switchgear Pvt Ltd, Chennai
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Email: sales@excelpower.co.in

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Contact:

Vijay Air Control, Bengaluru
Tel: 080-23148871, 23141136
Mobile: 08951101436, 09880652082
Email: saivacblr@vacpneumatic.co.in

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Contact:

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Mobile: 09840832296
Email: sales@promedindia.com

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Contact:

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Mobile: 09075004435
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Contact:

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Mobile: 09845208854, 09449648171
Email: brvices@rediffmail.com

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Contact:

IBK Engineers Pvt Ltd, Bengaluru
Mobile: 09880566644
Email: rajju.kn@ibizkart.com

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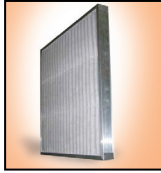


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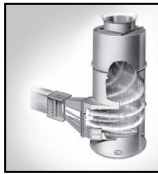


Contact:

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Chennai
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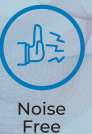
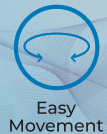
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Contact:

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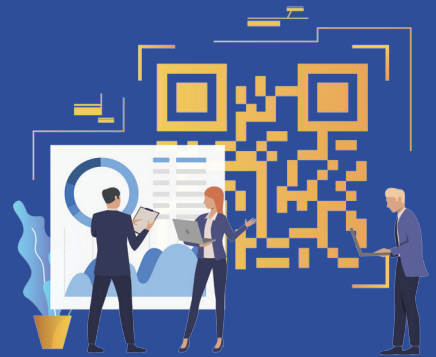


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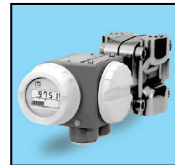
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“As EV, RE systems advance, lubricants demand will increase”

BPCL is India's 'best performing' Maharatna Public Sector Undertaking in the oil and gas industry operating under Ministry of Petroleum and Natural Gas, government of India.

Lubricant manufacturers that demonstrate agility in addressing the unique requirements of each industry, encompassing environmental considerations and regulatory standards, are well-positioned to capitalise on the lucrative opportunities unfolding in the dynamic lubricants market, says **P Sudhahar**, Executive Director (Lubes), Bharat Petroleum Corporation (BPCL) in this interview.

As a supplier of lubricants, how is BPCL supporting the growth of user-industries? Would you like to highlight some of your new offerings?

In response to the evolving landscape of net zero initiatives, ethanol blending, and advancing technologies, it is imperative for lubricant manufacturers to forge close partnerships with industrial stakeholders. Through collaborative efforts with our OEM partners and industrial customers, we are committed to delivering lubricants and specialised products that not only enhance the efficiency of industrial processes but also contribute to environmental sustainability. Our substantial investments in research and development empower us to continually innovate and provide cutting-edge solutions for a more sustainable future.

We have recently unveiled a comprehensive line of lubricants meticulously crafted to enhance both fuel and energy efficiency. Emphasising a customer-centric approach, we specialise in providing bespoke solutions tailored to the unique needs of our customers. Building on our legacy as pioneers in drilling fluids in India, we have successfully developed cutting-edge products specifically designed for deep-sea drilling, aligning with the precise requirements of our customers.



Moreover, our commitment to innovation is exemplified by the introduction of engine oils that comply with E20 standards, demonstrating our dedication to staying ahead of evolving industry regulations. Going beyond traditional lubrication boundaries, we are expanding our portfolio to include innovative coolants designed for servers and other advanced applications. This forward-thinking approach underscores our ongoing efforts to meet the diverse and evolving needs of our customers while contributing to advancements in sustainability and efficiency across various industrial sectors.

Which industries like automotive, railways, defence,

renewable energy, etc are driving the demand for lubricants? What kinds of new opportunities are opening in the end-user industries?

The escalating trends of urbanisation and surging industrial demand are poised to drive a Compound Annual Growth Rate (CAGR) of 6-8 per cent in electricity demand. To meet this growing need, there is a concerted emphasis on integrating renewable energy sources, implementing smart grid technologies, and embracing demand-side management strategies within the power sector.

This focus on renewable energy integration, coupled with the adoption of smart grid technologies and demand-side management practices, is set to revolutionise the energy landscape. As the renewable energy industry expands, it presents lucrative opportunities for lubricant manufacturers to innovate and tailor products specifically designed to meet the unique demands of essential infrastructure, including wind turbines, solar tracking systems, and other components within this dynamic sector. This strategic alignment with the evolving energy landscape underscores the pivotal role that lubricant manufacturers play in supporting sustainable and technologically advanced solutions for the future.

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experiencing a decline with the major trend of electrification, there remains a crucial role for other specialised lubricants. Despite the shift towards electrification, high-speed trains and heavy freight trains still rely on a variety of specialised lubricants to ensure optimal performance, especially in challenging operating conditions.

The burgeoning opportunities within these industries lie in the development of high-performance lubricants distinguished by exceptional durability, efficiency, and environmental sustainability. As electric vehicles and renewable energy systems continue to advance, there is a growing demand for lubricants meticulously tailored to meet the evolving technological applications of these sectors. Lubricant manufacturers that demonstrate agility in addressing the unique requirements of each industry, encompassing environmental considerations and regulatory standards, are well-positioned to capitalise on the lucrative opportunities unfolding in the dynamic lubricants market.

What are key trends to watch out for in the lubricants industry in the coming years?

The lubricants industry is poised for significant advancements in the foreseeable future, characterised by notable trends. There is a growing focus on synthetic lubricants, which are gaining prominence owing to their superior performance and extended longevity. They are increasingly preferred in applications with extreme conditions or prolonged service intervals.

Currently, the industry is oriented towards the cost of lubricants, but in the upcoming years, there will be a paradigm shift towards the total cost of ownership. Key drivers of this transformation will be lubricants that enhance efficiency and facilitate longer drain periods. This shift is anticipated to foster increased collaboration and partnerships for tailored solutions in the realm of industrial applications. The integration of digital technologies

and the Internet of Things (IoT) into industrial operations is reshaping the landscape of lubricant usage. Companies are increasingly embracing predictive maintenance strategies, leveraging data analytics to optimise lubrication schedules and minimise downtime.

In the forthcoming years, environmental sustainability and regulations are anticipated to become more stringent. Producers have already initiated a focus on the recycling economy for packaging and re-refined base oil. Lubricant manufacturers are gearing towards providing end-to-end solutions across the value chain to meet these evolving environmental responsibilities and regulatory demands.

What are key challenges before the lubricant industry at present?

The Lubricant Industry perceives challenges as opportunities. Presently, around 45 per cent of base oil is imported, but in the coming years, the indigenous production of base oil is expected to rise, significantly reducing our dependence on imports. The increasing awareness is poised to deal a significant blow to spurious (counterfeit) products. MAK Lubricants has proactively addressed this by developing a QR solution, ensuring 100 per cent product authenticity for customers.

The challenges posed by the COVID-19 pandemic and the conflict in Ukraine have strengthened our supply chain resilience, enabling us to navigate fluctuating base oil prices and other raw material uncertainties. Anticipated regulatory directions for re-refined base oils are set to create new business opportunities for both customers and manufacturers. We are entering an era where the Lubricant Industry is poised for transformative changes.

With sustainability gaining traction in all industries, what kind of opportunities does it present to your company?

As industries embrace a multitude of sustainability measures, BPCL is well-positioned to seize the

opportunity and develop world-class lubricants. The increasing adoption of wind energy systems by customers presents a promising prospect for the development of fully synthetic wind turbine gear oils, offering extended drain intervals.

The adoption of alternate fuels by Original Equipment Manufacturers (OEMs) opens up an opportunity for the formulation of specialised engine and transmission lubricants designed to cater to the specific requirements of automotive applications.

Continuous advancements in the electric vehicle (EV) sector create opportunities for developing specialised EV fluids, encompassing transmission fluids, coolants, greases, and more. In response to the rising customer demand for a lower total cost of ownership, there exists an opportunity to develop energy-efficient lubricants.

What are your growth plans for BPCL in India in the next 2-3 years?

Over the past three years, we have undergone a transformative journey, realigning our business priorities towards enhancing the bottom line and fostering top-line growth through value addition for our customers. This strategic shift has not only brought us closer to our customers but has also provided invaluable insights guiding our actions.

We have established a sector-specific approach to cater to our customers, offering tailored solutions to meet their unique needs. Our strategic plans involve sustained growth, surpassing industry benchmarks, with a focus on key sectors such as auto, power, steel, food, and pharma. The drivers for our growth will revolve around providing customised solutions and reducing the overall cost of ownership for our customers.

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“Emerging technologies in EVs are reshaping lubricant needs”

India is expected to be a bright spot in the global lubricants market with anticipated high growth due to a resilient automotive industry and fast-developing infrastructure sector. Besides, with sustainability taking center stage, industries are demanding eco-friendly products and processes. In this interview, **Ravi Chawla**, Managing Director and CEO, Gulf Oil Lubricants India Ltd, highlights how his company is navigating these trends by developing innovative, biodegradable products to meet the evolving needs of industrial customers.

How is Gulf Oil Lubricants supporting the growth of end-user industries?

At Gulf Oil Lubricants, we are strategically spearheading the growth of user industries in multiple ways. Our commitment to innovation and customer-centricity is evident through our relentless focus on research and development, resulting in the successful launch of 31 new products. In the B2C retail markets, we have proactively addressed challenges, introducing cost-effective products like Gulf Zipp Smart and Gulf Zipp Plus to stimulate consumption amid rising prices. Our initiatives extend beyond traditional segments, exemplified by the introduction of an industry-leading tractor engine oil with a 1,000-hour drain interval, demonstrating our commitment to providing value-added solutions for farmers.

Furthermore, our robust presence in the B2B segment is underscored by strategic partnerships and high double-digit growth in the OEM segment, solidifying our position with prominent entities like Bajaj Auto and Mahindra. The success of Formula SUV, our advanced synthetic engine oil tailored for SUVs, highlights our focus on delivering technologically advanced products that guarantee peak performance. As a leading supplier of AdBlue, we are actively contributing to reducing hazardous NOx emissions from vehicles, aligning with BS-IV and BS-VI standards, and promoting a cleaner,



greener future. Embracing the shift towards electric vehicles (EVs), we are leveraging our brand, robust relationships, and expansive distribution channels to tap into this emerging market, aligning with India's gradual transition and global trends. Our dedication to technological advancement, superior products, and environmental responsibility positions us as industry leaders, fostering not just our growth but also supporting the prosperity and sustainability of the user industries we serve.

What kinds of opportunities are opening up in the end-user industries like automotive, electronics, railways, defense, renewable energy, etc?

In the dynamic landscape of the lubricants industry, we are witnessing

a surge in demand driven by a multitude of industries, particularly automotive, construction, steel and cement, wind energy, agriculture, mining, oil drilling, marine, and aerospace. Our specialised lubricants tailored for sectors such as mining, manufacturing, power generation, and infrastructure industries are experiencing heightened demands. Our commercial vehicle segment, growing at an impressive rate of 34 per cent in FY 2022-23, is fueled by robust activities in infrastructure and construction. The industrial sector's increasing reliance on lubricants is notable, bolstered by government initiatives like Atmanirbhar Bharat and Make in India, as well as the global strategy of China Plus One.

The ongoing solid infrastructure development in India, encompassing roads, bridges, railways, and buildings, is a pivotal factor, further accentuated by a 33 per cent increase in capital expenditure on infrastructure investment for 2023-24, amounting to Rs 10 lakh crore. Notably, Gulf Oil India is strategically positioned to capitalise on these opportunities, offering a range of technologically advanced products and lubricants for both on-highway vehicles and off-highway construction equipment. Gulf has been actively involved in landmark projects like Atal Setu, Mumbai High-Speed Rail Project (Bullet Train), Yashobhoomi and the Centra Vista project.

Could you please highlight some of the emerging developments

in the lubricants industry?

There are quite a few key trends that are poised to shape the future of the lubricants industry. Increasing domestic production and sales are set to uplift the demand for industrial lubricants, particularly with a surge in specialized lubricants tailored to meet complex industrial needs. The higher adoption of automation and advanced technologies presents new opportunities for lubricant manufacturers, aligning with the Industry 4.0 paradigm that is fundamentally changing how lubricants are selected, consumed, and evaluated. The growing usage of heavy construction machinery further fuels industrial lubricant sales.

Sustainability efforts are taking center stage, driven by stringent European legislation and the rise of alternative fuels like hydrogen, natural gas, and biofuels, each posing unique challenges to lubricant formulations. Additionally, emerging technologies in EV and the electrification of the automotive industry are reshaping lubricant requirements, with a focus on specially developed fluids such as EV fluids or e-fluids. India, being a bright spot in the global lubricants market, anticipates significant growth, driven by a resilient automotive industry and ongoing infrastructure development.

As one of India's leading lubricant provider, Gulf Oil is poised to navigate these trends, emphasising the development of ester-based lubricants, biodegradable products, and innovative solutions catering to the evolving needs of industrial customers. Our commitment to performance, sustainability, and technological advancements positions us to lead in a dynamic and transformative lubricants industry landscape.

What are key challenges before the lubricant industry at present?

In the current landscape of the lubricant industry, we acknowledge some pivotal challenges that demand strategic foresight and adept management. Furthermore, the

macroeconomic challenge of fluctuating crude oil prices and inflation impacting the cost dynamics of lubricant manufacturing. There is a need for vigilant monitoring of oil price volatility, considering its potential to influence operational costs, maintenance practices, and overall market demand. The commitment to adaptability and proactive management stands as Gulf Oil India's response to these challenges, ensuring resilience and sustained growth in the face of industry complexities.

How is Gulf Oil gearing up to tap the opportunities as sustainability gains traction across the end-user industries?

In the push for a greener future, Gulf Oil India is set to contribute towards the opportunities that sustainability brings to our company. We understand the importance of eco-friendly practices and have taken steps for a greener future. We have taken big steps by creating advanced fluids for electric vehicles in partnership with top companies like Piaggio and Switch Mobility. Our collaborations with Omega Seiki Mobility, Altigreen, and Virya Mobility highlight our commitment to lead in the EV fluids market. We are also working closely with Indra Renewable Technologies and ElectreeFi to drive innovation in sustainability.

Gulf Oil is not just about cutting-edge products; we are at the forefront of eco-friendly practices, offering green lubricants and advanced engine oils. At this year's Excon, we also introduced a new product for heavy machinery called the "Gulf Harmony Bio-Synth Super 68" which is biodegradable and has low toxicity. It is aimed at hydraulic systems located in environmentally sensitive areas and unattended outdoor equipment. Our commitment goes beyond products, including initiatives like rainwater harvesting, solar power, and waste reduction. As one of the leaders in the lubricants industry, we actively seek partnerships, making a significant impact on both our market position and the global sustainability effort.

What are your future growth plans for Gulf Oil Lubricants in India?

In the next 2-3 years, Gulf Oil Lubricants aims for robust growth in India by capitalising on the immense potential within the industry. With a projected industry volume growth of at least 2-3 per cent, and higher value growth, we see significant opportunities to increase our market share. We are strategically positioned to explore emerging segments such as core lubricants, EV fluids, AdBlue, and e-Mobility. Leveraging our strong brand, expansive distribution network, and a resilient business model, we are confident in venturing into new frontiers. Our commitment to digital transformation is evident through the introduction of cutting-edge EV fluids and the acquisition of ElectreeFi. Additionally, our recent investments in AdBlue manufacturing and specialised metalworking fluids facilities showcase our commitment to driving transformative growth.

In the dynamic and competitive business environment, we are keen on understanding and adapting to market trends, regulatory frameworks, and technological advancements, enabling us to seize opportunities and ensure sustainable growth.

Our acquisition of Tirex, the EV charger maker is expected to bolster the company's presence in the electric vehicle segment. Furthermore, the surge in agricultural activities and tractor sales in the rural economy presents a promising avenue, and we are geared to meet the increasing demand for tractor lubricants. Our growth plans encompass a comprehensive approach, from core lubricants to innovative segments and we are targeting 2-3x of industry growth, ensuring Gulf Oil Lubricants continues to be a leading player in the industry.

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“The need for speciality lubricants is growing in many industries”

Trends like growing electric vehicles market, introduction of high-speed rail corridors, adoption of intricate machinery, etc are propelling the need to have lubricants with special properties. To harness the full potential of these technology upgrades, there is a hidden but vital role that speciality lubricants need to play, says **Hitendra Bhargava**, CEO & Regional Management Board Member Asia Pacific, Klüber Lubrication India Pvt Ltd, who has 23 years of experience in the lubricant industry. In this interview with Rakesh Rao, Hitendra Bhargava elaborates on the changes taking place in the end-user industries and how Klüber Lubrication is gearing up to tap these trends.

As a supplier of speciality lubricants, how is Klüber Lubrication supporting the growth of user industries? Would you like to highlight some of your new offerings?

Klüber Lubrication, a key supplier of speciality lubricants, actively fosters the growth of user industries through innovative products. Our lubricants form a protective film, reducing friction and wear, leading to less frequent repairs and enhanced operational efficiency. In vital and varied industries like automotive, baking, transportation, and offshore operations, our lubricants play a crucial role. Despite constant energy challenges, our speciality lubricants offer sustainable solutions by preventing damage to equipment and reducing energy consumption. Proven through rigorous and thorough tests, these lubricants boost component efficiency by up to 10 per cent, providing substantial energy savings. Committed to progress, we continually introduce cutting-edge lubrication solutions, aligning with global emission reduction regulations.

Which end-user industries are driving the demand for lubricants? What kinds of new opportunities are opening up in the end-user industries?

The need for speciality lubricants is growing in many industries, more than the general demand for



lubricants. This surge is fuelled by the imperative to enhance operational efficiency, curtail energy losses, and prolong equipment life. The automotive sector is fundamentally changing from IC engines to new mobility solutions. The rail industry in India is also seeing a modernisation drive with the launch of high-speed rail corridors for freight and passenger transport. To harness the full potential of these technology upgrades, there is a hidden but vital role that speciality lubricants need to play. We are excited to be the partners in progress for these and many more industries in their quest for newer, more efficient operations.

What kinds of trends do you foresee in lubricants industry?

In the coming years, the lubricants industry will witness key trends driven by increased adoption of intricate machinery. Manufacturers, focused on enhancing output efficiency and minimising downtime, are key players in sustaining revenue. Stringent regulations are propelling a shift to bio-based lubricants, offering environmental benefits and enhanced performance. Sustainability measures, like reuse and recycling, gain traction with manufacturers providing recycling services.

What are the key challenges before the end-user industries today? How is your company helping them overcome some of these challenges?

Our company recognises the prevailing challenges faced by end-user industries today and is dedicated to addressing them through our long-term strategy. One notable challenge is the consistent rise in costs, inherent in our commitment to delivering sustainable products and solutions. Despite this challenge, our strategic approach focuses on creating customisable solutions. By doing so, we aim to assist end-user industries in overcoming obstacles, providing tailored products that align with their specific needs.

Our dedication to sustainability remains unwavering, and we actively work towards balancing the inherent challenges, ensuring our solutions

contribute positively to the resilience and success of end-user industries. We strive to ensure that our solutions are cost-effective and environmentally conscious and that our customers get the maximum value for their investment. We are committed to creating solutions that are both sustainable and profitable.

With sustainability becoming important for all industries, what kind of opportunities does it present to your company?

As sustainability gains prominence across industries, it presents significant opportunities for our company. The increasing importance of sustainability in business operations is not only beneficial for the environment but also positively impacts our bottom line.

Sustainability, defined as the delivery of goods and services in a profitable and responsible manner

One notable challenge is the consistent rise in costs, inherent in our commitment to delivering sustainable products and solutions. Despite this challenge, our strategic approach focuses on creating customisable solutions.

toward natural and social environments, aligns with our commitment to creating long-term value. Klüber Lubrication India's manufacturing plant in Mysore derives more than 55 per cent of its energy from renewable sources. The proof: solar panels on the plant's roof. With 300 sunny days in Mysore, our photovoltaic system reduces smog-causing NOx emissions by 3.5 tonnes, SOx emissions, which could result in acid rains, by 3.2 tonnes and also

decreases asthma-causing particulates by 0.2 tonnes. In addition, the project will reduce CO₂ emissions by roughly 1,110 tonnes, equivalent to more than 88,000 trees.

EcoVadis is the world's largest and most trusted provider of business sustainability ratings, creating a global network of more than 100,000+ rated companies, awarding a gold medal to only the top 4 per cent. Klüber Lubrication won the gold medal first in 2022, and now we are proud to retain this with an even better score in 2023.

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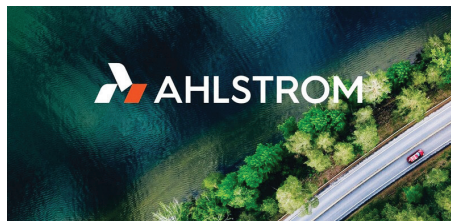
Ahlstrom to build production line for molecular filtration media

Ahlstrom - one of the leading players in the global filtration industry - is investing in a new production line for molecular filtration media in Turin, Italy, to expand further its offering for indoor air quality and electric vehicles (EV).

Air quality in closed environments such as buildings and vehicles is a major concern in many areas of the world. In this context, particulate filter media play an important role in removing solid particles and aerosols from the air. Molecular filter media are used in complement, removing gaseous pollutants, including volatile organic compounds, inorganic gases (such as sulfur dioxide, nitrogen oxides, ammonia), and odours, and delivering the cleanest air to people and processes.

The new line is being designed to produce the highest-performance adsorbent materials for premium filtration applications, including next-generation cabin air and fuel cell air intake, as well as a complete range for HVAC and cleanrooms. It will enable Ahlstrom to offer superior solutions for customers and support their industrial filtration application development as well as the transition to EV.

The investment is made in synergy with Ahlstrom's Fine



Fiber platform in Turin, which will be upgraded to produce HEPA filtration layers. Fine Fiber media can be combined with molecular filtration materials also to deliver the best protection against the finest particles.

"This new capability to produce molecular filtration solutions comes on

top of recent investments in Europe, which reinforce our ability to better serve our customers by combining materials and technologies in multi-layer concepts," states Giuseppe Costa, VP Filtration EMEA and Asia.

"These steps further extend our commitment to be the preferred supplier to our global customer base and to introduce the next generation innovations, which align with our purpose to purify and protect with every fibre for a sustainable world," he states.

Ahlstrom is a global leader in combining fibres into sustainable specialty materials. The company serves five growing and distinctive end markets, which form the basis for our five divisions - Filtration, Food & Consumer Packaging, Healthcare, Building Materials, and Technical Materials. Ahlstrom net sales in 2022 for continuing operations amounted to Euro 3.3 billion.

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- Expert Opinions and Perspectives
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Lubrication excellence: Enhancing performance in mining

Lubricants specifically engineered for the mining industry play an important role in minimising friction, reducing wear and tear on essential components, and ultimately extending the lifespan of the equipment.

India's mining sector stands as a pivotal cornerstone in the nation's economic growth, boasting a rich variety of mineral resources that span across diverse geological terrains. As the third-largest consumer of energy globally, India consistently experiences an increased need for power and electricity, leading to a growth in the demand for coal.

The anticipated rise in infrastructure development, including increased construction of roads, railways, airports, and other projects, is expected to drive a ~10 per cent growth in steel demand. With ambitious targets in sight, India aims to achieve a total crude steel capacity of 300 million tonnes per annum (MTPA) and a total crude steel demand/production of 255 MTPA by the fiscal year 2030-31.

Ensuring efficiency with proper lubrication

In the mining sector, where heavy machinery operates in demanding conditions, the role of lubrication emerges as a critical factor in ensuring efficient and reliable operations. Mining equipment faces extreme loads, high temperatures, and exposure to harsh environmental elements.

Lubricants specifically engineered for the mining industry play an important role in minimising friction, reducing wear and tear on essential components, and ultimately extending the lifespan of the equipment. These specialized lubricants not only enhance the operational efficiency of the equipment but also contribute to increased energy efficiency. Moreover, in challenging mining environments, where factors like



Mobil DTE 10 Excel™ 46

dust, moisture, and varying temperatures are prevalent, effective lubrication becomes a protective barrier against corrosion, ensuring the durability and longevity of the machinery.

Mobil™'s contribution to creating quality lubricants

Mobil Delvac Modern™ 15W-40 Advanced Fleet is an extra high-performance diesel engine oil that helps extend engine life in severe on and off-highway applications while delivering outstanding performance in modern, high-output, low-emission engines including those with Exhaust Gas Recirculation (EGR) and Aftertreatment Systems with Diesel Particulate Filters (DPFs) and Diesel Oxidation Catalysts (DOCs). Fully backward compatible, the Mobil Delvac Modern 15W-40 Advanced Fleet will also deliver the same exceptional performance in older conventional engines. As a result, it meets or exceeds the requirements of the API CK-4, CJ-4, CI-4 PLUS,



Mobilgrease XHP™ 462

and CH-4 service categories.

Mobilgrease XHP™ 460 greases are extended-service lithium complex greases intended for a wide variety of heavy-duty applications and operating conditions. These greases were designed to outperform conventional products by applying high-performance proprietary lithium complex manufacturing technology. They are formulated to provide excellent high-temperature performance with excellent adhesion, structural stability, and resistance to water contamination. These greases have a high level of chemical stability and offer excellent protection against rust and corrosion. These greases feature high dropping points and a maximum recommended operating temperature of 140°C (284°F).

Also, the Mobil DTE 10 Excel™ Series is constructed from selected base oils and a proprietary additive package to provide well-balanced performance in a range of applications. The products

demonstrate outstanding oxidation and thermal stability allowing for long oil life and minimized deposit formation in severe hydraulic systems using high-pressure, high output pumps. The innovative ultra-keep-clean performance protects critical hydraulic system components from malfunction, such as tight tolerance servo and proportional valves found in many modern hydraulic systems.

The zinc-free anti-wear system provides a high degree of protection in gear, vane, and piston pumps while also minimizing deposit formation. In addition, Mobil DTE 10 Excel is not acutely or chronically toxic to the aquatic environment.

Seamless operation

As the industry grows, so does the need for quality, heavy-duty equipment that can withstand the rigors of the industry. To achieve the best performance and exceptional efficiency, Mobil™ aims to create the



Mobil Delvac Modern™ 15W-40
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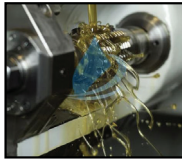


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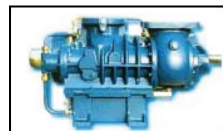


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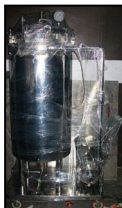


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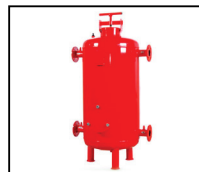


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Moulding the future of manufacturing

Despite the global turmoil, the Indian tooling industry performed exceptionally well in 2023. With emerging segments (like electric vehicles, railways, aerospace, etc) opening up new avenues of growth, Indian tool makers are expecting an even more successful 2024, says **Rakesh Rao**.

In the last few years, the Indian government has been pushing for electric vehicles (EVs) adoption in the country to reduce pollution and crude oil imports. Results are promising. For example, according to the data released by the Ministry of Road Transport and Highways, EV sales in India reached a record 1.53 million units in 2023, a jump of over 50 per cent year-over-year (YoY) against the million units sold in 2022. EVs accounted for 6.4 per cent of overall automobile sales in 2023.

An increase in sales of electric vehicles is expected to have an impact on the demand for auto components. With the auto industry quickly shifting gears toward the adoption of EVs in India, the development of new engines, battery boxes, and highly precise sheet metal parts is gaining momentum; thereby creating opportunities for tool makers. Tooling includes production of moulds and dies (presses), forging, gauging, jigs & fixtures, and cutting tools for the manufacturing of different components.

Auto makers are the key customers of tools, consuming over 60 per cent of the tool production in the country. In addition to the



automotive industry, other sectors such as railways, aerospace, defense, white goods, consumer durables, medical equipment, etc are also having a positive effect on the tooling business. "The automotive sector has consistently been the predominant consumer of tools globally, contributing over 60 per cent to our business. Nevertheless, we are witnessing a notable surge in various industries such as aerospace, defense, packaging, toy

manufacturing, electronics, and home appliances. Anticipating substantial growth, we foresee these diversified sectors playing a significant role in our expansion in the forthcoming years," states **Devaraya Manjunath Sheregar**, President, Tool & Gauge Manufacturers Association of India (TAGMA India).

Back to basics

Dies and moulds - both tools used for shaping - play crucial role in mass production processes. While dies are used to shape sheet metal and other metal forms (for example, for making automobile body parts), moulds are used in injection moulding (such as with melted resin or casting molten metal). **Vivek Nanivadekar**, Executive Director, FIBRO India Precision Products Pvt Ltd, explains, "The die & mould



“While it is true that companies focusing on traditional engine and powertrain components may experience an impact, the shift to EVs also brings forth a plethora of opportunities for toolmakers.”

Devaraya Manjunath Sheregar, President, TAGMA India



“ The die & mould industry is the heart of the manufacturing sector. The designing and manufacturing of dies & moulds is highly specialised field requiring high skills and knowhow. ”

Vivek Nanivadekar, Executive Director, FIBRO India Precision Products Pvt Ltd

industry is the heart of the manufacturing sector. Automobiles, white goods, defence equipment, etc consist of a lot of interchangeable plastic as well as metal components of various shapes and contours, and they are required in large quantities. These components, which are of high precision and consistent surface finish, are produced from dies & moulds. The designing and manufacturing of dies & moulds is highly specialised field requiring high skills and knowhow. For the safety of the passengers, the use of hot forming components in vehicle is increasing. Indian tooling industry is in a phase of acquiring these skills and technique."

Dies and moulds, which are often produced using CNC machining methods, are made from different materials such as steels with carbon or chromium content die, or high-speed steel and cemented carbide. Using modern techniques one can create micron-order precision dies and moulds, and help in the mass production of products with the similar shape and quality in a wide range of application areas. These tools can be game changer for industries like packaging, plastics, auto components, electronics, electricals, machine tools, etc.

Sheregar explains, "The quality of the tool is directly proportional to the quality of the end product; hence, it is extremely important to have good quality dies and moulds for ensuring accuracy, precision, durability, and efficiency of the products. They can also reduce the cost and time of production. Therefore, dies and moulds are the key factors that determine the competitiveness and profitability of the manufacturing industry."

Market dynamics

Factors such as automation in the die casting process, aluminum metal injection moulding, high demand from construction activities, 3D printing, casting, and forging techniques are driving the market forward. The global die and mould market is expected to reach \$ 95 billion by 2027. The Indian dies and moulds market - estimated at \$ 2,535 million in 2017 - is anticipated to increase by \$ 1,959 million between 2022 & 2027, growing at a 9.65 per cent CAGR during the period, according to Technavio - a market research firm.

Through initiatives, such as the Make in India, program, the government is encouraging indigenous tooling technologies by providing incentives to domestic tool makers in the form of lower taxes and easier access to finance.

Industry experts believe that 2023 was a remarkable year with the Indian tooling industry witnessing good growth. As per the latest Indian Tooling Report of TAGMA India, the estimated market size of Indian tooling industry is approximately Rs 23,600 crore. "There's room for improvement, especially when considering that around 34 per cent of the tooling demand is currently met through imports. Approximately 80 per cent of these imports are from China, South Korea, Japan, and Taiwan. We all need to target these areas collectively and reduce the imports," states Sheregar.

Electrifying growth

Growing EV market is likely to result in an increase in sales and profits for the dies and moulds industry, thereby boosting their overall competitiveness. "The shift

toward electric vehicles presents both challenges and opportunities for the forging industry. While the overall demand for traditional forged components in internal combustion engine (ICE) vehicles may decrease, there is a growing need for forged parts in electric vehicles. For example, components like high-strength chassis parts, electric motor components, and lightweight forged components are essential in EV manufacturing," opines **Vikas Bajaj**, President, Association of Indian Forging Industry (AIFI) and MD & CEO, Bajaj Motors.

Increased demand can also open up opportunities for innovation, as tool makers will have to create new products and services to meet the emerging needs of the EV industry. "The emergence of EVs is a significant and welcome development for toolmakers. While it is true that companies focusing on traditional engine and powertrain components may experience an impact, the shift to EVs also brings forth a plethora of opportunities for toolmakers, specifically in the realm of engineering plastics," states Sheregar.

Nanivadekar explains, "EVs will not reduce the tooling requirement; rather the batteries will increase the need of tooling. As the development cycle for EV is smaller than ICE vehicles, more number of new EV models will be introduced with additional features, which would increase the tooling demand. Also, the world has started realising that the India is poised to become the global manufacturing base so the demand for tooling is bound to grow."

Tools and dies required for EV production varies from those used for ICE-driven vehicles as there are differences in the manufacturing processes used for production of components for these two types of vehicles. Sheregar elaborates, "As EVs become more prevalent, there is an increasing demand for components made from advanced engineering plastics. This includes a wide array of parts such as interior components, body panels, and various structural elements. Toolmakers are poised to play a



“ Advanced materials and coatings are expected to play a pivotal role, with a focus on high-performance alloys and innovative coatings to enhance tool durability and performance. ”

Vikas Bajaj, President, Association of Indian Forging Industry

crucial role in providing the necessary tools for manufacturing these intricate and precise plastic components. Furthermore, the battery technology integral to EVs presents another avenue for toolmakers. Tools required for the production of battery-related components and housings are expected to witness a surge in demand. This presents a strategic opportunity for toolmakers to diversify their offerings and cater to the evolving needs of the automotive industry."

3D printing: Adding value

To meet higher functional standards in EVs, companies are opting for 3D printing (additive manufacturing) to develop high-precision dies for components with complex geometry. Many toolmakers perceive 3D printing as a significant value addition to the tooling industry. Particularly tasks like designing conformal cooling systems are optimally executed through 3D printing. "This technology offers a unique capability to intricately design and produce complex shapes that traditional manufacturing methods might find challenging. Moreover, 3D printing stands out when there's a requirement for producing parts in small quantities. The flexibility and cost-effectiveness of 3D printing make it a suitable choice for small-batch production, enabling industries to efficiently meet specific demands without the constraints of mass production. This not only streamlines the manufacturing process but also provides a more sustainable and resource-efficient solution, aligning with contemporary industry demands. As technology continues to advance, the role of 3D printing in tooling is likely to expand, bringing about

further innovation and efficiency improvements in the industry," observes Sheregar.

According to Vikas Bajaj, the adoption of additive manufacturing (AM) can pose a challenge to traditional forging methods, especially for certain low-volume and complex parts. "Currently, additive manufacturing is used to make prototype parts and also make low volume spares for critical application like defence & aerospace, while lots of companies are also exploring manufacturing of tools using 3D printers. AM offers design flexibility, reduced material waste, and the ability to produce intricate geometries. However, traditional forging still holds advantages in terms of strength, durability, and cost-effectiveness for high-volume production of certain components. The coexistence of both technologies may depend on specific applications and industry requirements," he adds.

Continued resilience

The tooling industry is poised for notable shifts in the coming years, marked by several key trends. "Advanced materials and coatings are expected to play a pivotal role, with a focus on high-performance alloys and innovative coatings to enhance tool durability and performance. Digitalization and Industry 4.0 concepts are driving the integration of digital technologies, IoT, and data analytics into tooling solutions. Predictive maintenance, facilitated by sensor data, is becoming a standard practice for optimising tool performance and minimising downtime," observes Vikas Bajaj.

With additive manufacturing gaining prominence, tool makers are continuously exploring new materials

and processes to produce complex and customised tooling components with reduced lead times. Bajaj adds, "The trend towards customisation and personalisation is growing, driven by the demand for tailor-made tooling solutions that cater to specific industry requirements. Design and manufacturing approaches supporting rapid prototyping and customisation are gaining traction. Sustainability initiatives are gaining prominence in tool manufacturing, with a focus on eco-friendly materials, recycling, and energy-efficient processes. There is an emphasis on developing tools with longer lifespans to reduce waste and environmental impact."

The Indian tooling industry performed exceptionally well in 2023, despite the global turmoil. Toolmakers demonstrated their resilience, innovation, and competitiveness by expanding their capacity and on-boarding new customers. The demand for tools came from many new industries such as aerospace, defence, electronics, consumer goods, among others, which opened up new avenues of growth for the industry. As tool makers gear up for the challenges and opportunities in 2024, experts are hopeful for a successful and resilient future for the Indian tooling industry.

Sheregar sums up, "We are optimistic about 2024, as many toolmakers have confirmed good order books and are planning to invest more in the infrastructure. We expect that the latest smart manufacturing solutions, such as Industry 4.0, IoT, AI, etc will find their place in the Indian tool rooms and enhance their productivity, quality, and efficiency. We are confident that the Indian die and mould industry will continue to grow and excel in the global market."

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“Die Mould India 2024 edition is going to be the biggest one”

The 13th edition of Die Mould India (DMI) is going to be organised by Tool & Gauge Manufacturers Association of India (TAGMA India) on February 14 to 17, 2024 at Bombay Exhibition Centre in Mumbai. In this interview, prior to the event **Devaraya Manjunath Sheregar**, President, TAGMA India provides the insights on current status of the Indian die and mould industry. He says that 2024 seems to be optimistic as many toolmakers have confirmed good order books.

Given the global turmoil, how was the performance of the Indian die and mould industry in 2023? What is your expectation for 2024?

The Indian die and mould industry performed exceptionally well in 2023, despite the global turmoil. The toolmakers demonstrated their resilience, innovation, and competitiveness by expanding their capacity and onboarding new customers. The demand for tools came from many new industries such as aerospace, defence, electronics, consumer goods, among others, which opened up new opportunities and challenges for the industry.

We are optimistic about 2024, as many toolmakers have confirmed good order books and are planning to invest more in the infrastructure. We expect that the latest smart manufacturing solutions, such as Industry 4.0, IoT, AI, etc, will find their place in the Indian tool rooms and enhance their productivity, quality, and efficiency. We are confident that the Indian die and mould industry will continue to grow and excel in the global market.

Why are moulds & dies crucial for the success of the manufacturing industry?

Moulds and dies are crucial for the success of the manufacturing industry because they are the tools that shape and form the products that we use every day. Die and mould are often referred to as the mother industry because they help in creating many products, such as automobiles,



appliances, electronics, medical devices, etc. The quality of the tool is directly proportional to the quality of the end product, which is why it is extremely important to have good quality moulds and dies. Good quality moulds and dies ensure accuracy, precision, durability, and efficiency of the products, and also reduce the cost and time of production. Therefore, moulds and dies are the key factors that determine the competitiveness and profitability of the manufacturing industry.

What are key challenges before the die and mould industry?

Indian tool rooms grapple with many challenges. Let's take a look at the ones that the report has highlighted:

- ❑ **Issues related to concurrent engineering:** OEMs outsource

to tool rooms post the designing stage. There is a lack of input/ concurrent engineering from tool rooms on the viability of the part. Due to this, the design for manufacturability shared with tool rooms is not viable, and requires one or more rounds of revision.

- ❑ **Lack of outsourcing ecosystem:** There is a low level of collaboration due to the dispersed presence of tooling suppliers in India, whereas, overseas tool rooms are located close to design and manufacturing facilities, suppliers, etc., which creates an ecosystem enabling large-scale subcontracting.
- ❑ **Lack of industry-ready tool room courses:** In Indian Tool Room Training Centers (TRTC), students are trained in basic machining and assembly of moulds, but lack hands-on experience in advanced machinery and, thus are not industry-ready.
- ❑ **High cost of financing:** Even though Indian tool rooms want to expand their consumer base to new sectors like aerospace and medical equipment manufacturers, the need for high-precision equipment is an issue, as they are expensive to procure. Besides, the lack of low-cost finance hinders Indian tool rooms ability to invest in advanced tooling machinery,

equipment and software for precision tools and moulds.

- ❑ **Lack of capital funding:** While global tool rooms have better access to capital funding, Indian tool rooms still face issues to avail of easy financing and subsidised loans.

Also, will the growing demand for electric vehicles (EV) and technologies like Additive Manufacturing (AM) affect the demand for dies and moulds?

The emergence of electric vehicles (EVs) is a significant and welcome development for toolmakers. While it is true that companies focusing on traditional engine and powertrain components may experience an impact, the shift to EVs also brings forth a plethora of opportunities for toolmakers, specifically in the realm of engineering plastics.

As EVs become more prevalent, there is an increasing demand for components made from advanced engineering plastics. This includes a wide array of parts such as interior components, body panels, and various structural elements. Toolmakers are poised to play a crucial role in providing the necessary tools for manufacturing these intricate and precise plastic components.

Furthermore, the battery technology integral to EVs presents another avenue for toolmakers. Tools required for the production of battery-related components and housings are expected to witness a surge in demand. This presents a strategic opportunity for toolmakers to diversify their offerings and cater to the evolving needs of the automotive industry.

Discussing 3D printing, we perceive this technology as a significant value addition to the tooling industry. Particularly, tasks like designing conformal cooling systems are optimally executed through 3D printing. This technology offers a unique capability to intricately design and produce complex shapes that traditional manufacturing methods might find challenging.

Moreover, 3D printing stands out when there's a requirement for producing parts in small quantities. The flexibility and cost-effectiveness of 3D printing make it a suitable choice for small-batch production, enabling industries to efficiently meet specific demands without the constraints of mass production. This not only streamlines the manufacturing process but also provides a more sustainable and resource-efficient solution, aligning with contemporary industry demands. As technology continues to advance, the role of 3D printing in tooling is likely to expand, bringing about further innovation and efficiency improvements in the industry.

What kinds of new opportunities can the die and mould industry tap in different industrial sectors like automotive, defence, railways, renewable energy, etc?

The automotive sector has consistently been the predominant consumer of tools globally, contributing to over 60 per cent of our business. Nevertheless, we are witnessing a notable surge in various industries such as aerospace, defence, packaging, toy manufacturing, electronics, and home appliances. Anticipating substantial growth, we foresee these diversified sectors playing a significant role in our expansion in the forthcoming years.

How is TAGMA gearing up for Die Mould India 2024 (DMI 2024)?

Die Mould India being the largest exhibition for tool and die makers in India it always attracts huge crowd from all over India and this year is no different. Looking at the kind of registrations we have received till now and excitement about the expo among the industry colleagues, we are confident that this edition is going to be the biggest one.

- ❑ We are organising B2B pavilion to help toolmakers and tool buyers connect with each other and share each

other's expectations

- ❑ There are many delegations planned from OEMs and public sector units
- ❑ We are organising knowledge sharing conference parallel to the event

On the eve of DMI 2024, any message to the industry...

2023 has been nothing short of remarkable for the Indian tooling industry. We've witnessed growth and achievements, and as proud toolmakers, we must carry this excitement into the promising year that lies ahead, 2024.

As per recently released data in the Indian tooling report the estimated market size of Indian tooling industry is approximately Rs 23,600 crore, it's evident that our industry holds great potential. However, there's room for improvement, especially when considering that around 34 per cent of the tooling demand is currently met through imports. Approximately 80 per cent of these imports are from China, South Korea, Japan, and Taiwan. We all need to target these areas collectively and reduce the imports.

One avenue through which we can collectively showcase and leverage our capabilities is the upcoming Die Mould India exhibition. I encourage each one of you, as well as your respective companies, to actively participate and make this event a grand success. It's not just an exhibition; it's a platform where ideas flourish, partnerships are forged, and the future of Indian tooling takes center stage.

So, let's gear up for the challenges and opportunities that 2024 holds. Together, we can shape an even more successful and resilient future for the Indian tooling industry. **IPF**



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“Forging is a crucial element for success in industries”

Forging is considered to be an indispensable process in the manufacturing industry due to its ability to offer precision and versatility, meet the stringent demands of various applications, and enhance material properties. These attributes collectively position forging as a crucial element for success in industries that demand high-performance, reliable components, states **Vikas Bajaj**, President, Association of Indian Forging Industry (AIFI) and MD & CEO, Bajaj Motors. In this interview with Rakesh Rao, Vikas Bajaj highlights the performance of the Indian forging industry and factors creating new growth opportunities for the industry players.

Given the global turmoil, how was the performance of the Indian forging industry in 2023? What is your expectation for 2024?

The overall performance of the Indian forging industry has been neutral in 2023, but we are now back to the pre-Covid levels and we are expecting the upcoming year to be better. Due to relatively high fuel prices, commodity price increase, and regulatory requirements, the cost of vehicles has gone up. These are acting as growth/sentiment dampeners which are suppressing the demand.

Fortunately, globally the interest rates hikes have been paused. We should therefore see relative correction in the interest rates in India as well. Once that starts, it will improve sentiment of the buyers. Simultaneously, because of the global slowdown, the commodity prices will also go down, which should bring down the cost of manufacturing. However, the actual positive effect will depend on how much benefit the vehicle manufacturers will pass to the end customers.

Although, we are back at the pre-Covid levels, the pricing is an important marker which will determine the growth hence forth. Currently, the pricing is on the higher side, but we are expecting that the upcoming fiscal year will be better compared to the current one.

Also, considering that the advent of electric vehicle (EV) will have a



significant impact on the forging industry, the government should focus on creating more opportunities in other industrial verticals to help the sector continue its growth momentum.

Why is forging crucial for the success of the manufacturing industry?

Forging is indispensable to the success of the manufacturing industry due to its unique ability to enhance material properties, provide cost-effective solutions, and meet the stringent demands of various applications.

Firstly, the process of forging significantly improves the strength and durability of materials. Through the application of controlled force, forging refines the grain structure of

metals, resulting in components with superior mechanical properties. This includes increased tensile strength, improved fatigue resistance, and enhanced toughness. Such enhanced material characteristics are crucial for industries where structural integrity and reliability are paramount, such as in aerospace, automotive, and energy sectors.

Secondly, forging offers cost-effectiveness over the long term. While the initial setup costs may be higher compared to some alternative manufacturing methods, the overall efficiency of forging becomes apparent in reduced material waste and minimal additional processing. The improved material properties often lead to longer component life, contributing to lower maintenance costs and increased operational efficiency. This cost-effectiveness makes forging a preferred choice for manufacturing components where high performance and durability are essential.

Precision and tolerance control in forging further contribute to its significance. Industries with strict quality standards benefit from the ability to produce components with tight tolerances and high precision. This is crucial for applications where precise fits and specifications are essential.

In summary, forging's role in manufacturing is multifaceted, encompassing material enhancement, cost-effectiveness, versatility, and precision. These

attributes collectively position forging as a crucial element for success in industries that demand high-performance, reliable components.

What kinds of new opportunities can be tapped by the Indian forging industry in different industrial sectors like automotive, defense, railways, renewable energy, etc?

The Indian forging industry stands to gain substantial opportunities across various industrial sectors. In the automotive domain, the demand for lightweight and high-strength components positions forging as a competitive choice, particularly for critical parts like crankshafts and gears.

The defense sector presents a promising outlook due to the "Make in India" initiative and the government's restriction on the import of defense spares. The forging industry's ability to deliver components with superior strength compared to casting makes it instrumental in manufacturing spares for defense forces. Additionally, collaborations with international companies for defense-related orders can enhance technological capabilities and establish Indian forging companies as global players.

In the railways sector, forging companies can contribute significantly by supplying essential components for rail infrastructure, including axles and wheels. The ongoing modernisation and expansion of the railway network create a growing demand for high-strength parts. The renewable energy sector offers opportunities for forging in supplying specialised components for wind turbines, solar power equipment, and other renewable energy systems, where durability and strength are crucial.

The positive handling of the COVID-19 pandemic by the Indian government has bolstered international investor confidence. As a result, international companies are exploring joint ventures with Indian counterparts, particularly in defense-related manufacturing. This not only attracts investments but

also facilitates technology transfer and knowledge exchange.

By capitalising on these opportunities, the Indian forging industry can contribute significantly to the country's industrial growth, technological advancement, and global competitiveness.

What are key challenges before the forging industry? Will the growing demand for electric vehicles (EV) and technologies like Additive Manufacturing (AM) affect the demand for forging?

The forging industry faces several key challenges that may impact its growth and operations:

- ❑ **Raw material costs:** Fluctuations in the prices of raw materials, such as steel and alloys, can significantly impact the cost structure of the forging industry. Volatility in material costs can affect profit margins and overall competitiveness.
- ❑ **Energy costs:** The forging process requires substantial energy inputs. Escalating energy costs can increase production expenses, putting pressure on the industry's cost-effectiveness.
- ❑ **Environmental regulations:** Stringent environmental regulations and concerns may necessitate the adoption of cleaner and more sustainable manufacturing practices. Compliance with environmental standards could require investments in technology and processes to reduce environmental impact.
- ❑ **Skilled labor shortages:** The forging industry relies on skilled labor for precision forging operations. Shortages in skilled workers or difficulties in attracting and retaining talent can impede production efficiency and quality.
- ❑ **Technological adaptation:** The adoption of advanced technologies, such as automation and digitalisation, requires significant

investments. The industry may face challenges in implementing these technologies and ensuring a smooth transition without disruptions.

Further, the shift toward electric vehicles presents both challenges and opportunities for the forging industry. Globally, today most of the OEMs are cautious with regard to switch over to EV. Except for the OEMs in China where they have started making more than 30 per cent of the production as EV (in other countries, the car manufacturers are little bit slowly in moving to EV platform). While the overall demand for traditional forged components in internal combustion engine vehicles may decrease, there is a growing need for forged parts in electric vehicles. For example, components like high-strength chassis parts, electric motor components, and lightweight forged components are essential in EV manufacturing.

The adoption of additive manufacturing can pose a challenge to traditional forging methods, especially for certain low-volume and complex parts. Currently, additive manufacturing is used to make prototype parts and also make low volume spares for critical application like defence and aerospace, while lots of companies are also exploring manufacturing of tools using 3D printers. AM offers design flexibility, reduced material waste, and the ability to produce intricate geometries. However, traditional forging still holds advantages in terms of strength, durability, and cost-effectiveness for high-volume production of certain components. The coexistence of both technologies may depend on specific applications and industry requirements.

In conclusion, while the forging industry faces challenges, it also has opportunities to adapt to emerging trends, including the demand for components in electric vehicles and the coexistence with advanced manufacturing technologies like additive manufacturing. Successful navigation of these challenges will likely require innovation,

technological adaptation, and strategic planning within the industry.

How are factors like sustainability and automation triggering changes in the forging sector?

Sustainability and automation are pivotal factors catalysing transformative changes in the forging sector. In response to sustainability concerns, the industry is adopting eco-friendly materials and processes, with a focus on recycled alloys and reduced environmental impact during raw material extraction. Energy efficiency initiatives, waste reduction strategies, and compliance with stringent environmental regulations are becoming integral to sustainable forging practices.

Concurrently, automation is revolutionising the forging landscape. Automated systems enhance precision and consistency in manufacturing, reducing variability and improving overall product quality. Automation mitigates challenges related to skilled labour shortages by handling repetitive and labour-intensive tasks. This not only boosts production efficiency but also contributes to a more streamlined and error-resistant manufacturing process.

Furthermore, automation increases productivity by accelerating production cycles. Robots are employed in tasks such as loading and unloading, material handling, and even aspects of the forging process, leading to higher throughput. Real-time data collection through automation enables data-driven decision-making, optimising production and facilitating continuous improvement. Advanced monitoring and quality control measures, including vision systems and sensors, ensure defect detection and the production of high-quality components.

The increased use of water-based coolants in the forging industry also contribute to enhanced sustainability by efficiently dissipating heat during the forging process, reducing energy consumption, and minimising

environmental impact compared to traditional coolant options; thus, expanding the sustainability practices within the industry.

The synergy of sustainability and automation marks a significant evolution for the forging sector. Companies are not only embracing environmentally conscious practices but also leveraging automation to enhance efficiency, reduce costs, and stay competitive in an evolving global manufacturing landscape. This dual approach reflects a commitment to both ecological responsibility and technological advancement, shaping the forging industry's trajectory toward a more sustainable and technologically sophisticated future.

What are key trends to watch out for in the tooling industry in the coming years?

The tooling industry is poised for notable shifts in the coming years, marked by several key trends. Advanced materials and coatings are expected to play a pivotal role, with a focus on high-performance alloys and innovative coatings to enhance tool durability and performance.

Digitalisation and Industry 4.0 concepts are driving the integration of digital technologies, IoT, and data analytics into tooling solutions. Predictive maintenance, facilitated by sensor data, is becoming a standard practice for optimising tool performance and minimising downtime.

Additive manufacturing is gaining prominence, offering the ability to produce complex and customised tooling components with reduced lead times. Continuous exploration of new materials and processes in additive manufacturing is anticipated for tool production.

Automation and robotics are increasingly being adopted in tool manufacturing processes to achieve higher precision, efficiency, and cost-effectiveness. Robotic systems are being deployed for tasks such as tool inspection, polishing, and packaging to streamline production.

The trend towards customisation and personalisation is growing, driven by the demand for tailor-made

tooling solutions that cater to specific industry requirements. Design and manufacturing approaches supporting rapid prototyping and customisation are gaining traction.

Sustainability initiatives are gaining prominence in tool manufacturing, with a focus on eco-friendly materials, recycling, and energy-efficient processes. There is an emphasis on developing tools with longer lifespans to reduce waste and environmental impact.

Precision machining and micromachining are areas of increasing focus, especially for industries requiring small and intricate components, such as electronics and medical devices. Advances in machining technologies are geared towards achieving higher accuracy and superior surface finishes.

Global supply chain resilience is becoming a priority, with a renewed focus on mitigating risks associated with global disruptions. Strategies to enhance agility and flexibility in responding to changes in market demand and geopolitical factors are gaining importance.

Tool lifecycle management (TLM) is emerging as a critical aspect, with the implementation of comprehensive systems for better tracking, optimization, and control of tooling assets. Integration with other manufacturing systems is a key focus for improved overall process efficiency.

Lastly, recognising the importance of skilled labor, there is an increasing emphasis on training programs and initiatives to address the skills gap and ensure a qualified workforce in the tooling industry. These trends collectively reflect the dynamic evolution of the tooling sector, driven by technological advancements, sustainability considerations, and the pursuit of increased efficiency.

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“Dies & moulds are the heart of the manufacturing industry”

FIBRO India is the 100 per cent subsidiary of the Germany-based FIBRO GmbH, a global market leader offering standard parts for die and mould making industries and rotary tables for metal cutting and automation systems. The company, which has completed 15 years of operations in India, has been consistently growing with CAGR of 27 per cent. In this interview with Rakesh Rao, **Vivek Nanivadekar**, Executive Director, FIBRO India Precision Products Pvt Ltd, elaborates on the importance of moulds and dies for the manufacturing sector and the company's future growth plans.

As a supplier of standard parts for dies and moulds, how is FIBRO supporting the growth of user-industries? Would you like to highlight some of your new offerings?

FIBRO India has completed 15 years of its operation in India. We started with manufacturing guide pillars. Based on the customer feedback, we kept adding new products in our offering like guideposts, wear plates, spring plunger etc. As the die and mould industry started growing in India in 2017, we realised that the CAM units were imported as nobody was manufacturing in India being a hi-tech product. But the demand for the CAM units was increasing. Hence, we started developing simple CAM units and offered to our customers. Today, we have large range from simple to high precision CAM units up to 300 mm width and supplying to domestic as well as international markets. As of now, we have supplied more than 5,000 CAM units worldwide.

We work very closely with our customers to understand their pain areas and help them with most appropriate solution. Similarly, until few years back, nobody was doing the interconnection of gas springs. But we have the knowhow so we started offering the services of interconnection of gas springs to our customers. Initially, they were little hesitant but as of today many of them are doing the interconnection of gas springs in their dies on their



own after learning from our engineer. The interconnection of gas springs reduces the internal space ensuring the consistent performance.

Recently, we introduced WPM (Wireless Pressure Monitoring) system for gas springs which ensures the consistent performance of the die.

Why moulds and dies are considered crucial for the success of the manufacturing sector?

The die and mould industry is the heart of the manufacturing sector. Automobiles, white goods, defence equipment, etc consist of a lot of interchangeable plastic as well metal components of various shapes and contours, and they are required in large quantities. These components,

which are of high precision and consistent surface finish, are produced from dies and moulds. The designing and manufacturing of dies and moulds is highly specialised field requiring high skills and knowhow. For the safety of the passengers, the use of hot forming components in vehicle is increasing. Indian tooling industry is in a phase of acquiring these skills and technique.

What are key challenges before the dies and moulds industry today? How is FIBRO helping them overcome some of these challenges?

As mentioned above hot forming tools and processes are one of the challenges for the

Indian die and mould industry. The manufacturing dies for skin panels is another challenge as more than 65 per cent of skin panels dies are getting imported. The most important criterion for OEMs is the lead time of Indian tool makers, which is considerably longer compared to makers from other countries like China/Taiwan. Some

As the development cycle for EV is smaller than internal combustion engine (ICE) vehicles, more number of new EV models will be introduced with additional features, which would increase the tooling demand.

The designing and manufacturing of dies and moulds is highly specialised field requiring high skills and knowhow. For the safety of the passengers, the use of hot forming components in vehicle is increasing.

of the reasons for a long lead time are:

- ❑ Long lead time for die blocks
- ❑ Currently, most of the tool rooms are booked for next 12 months
- ❑ The lack of knowledge of latest technology/ practises being used in developed countries
- ❑ The lack of collaborative approach among the tool makers
- ❑ The lack of standardisation. This is the area where FIBRO India is playing vital role in supplying standard parts such as guiding elements, compression springs, nitrogen gas springs, spring plungers, CAM units, etc in the shortest time so that the tool maker does not spend his valuable time in making standard parts. FIBRO India is the first and only manufacturer of CAM units in India. As per the customer requirement, we keep adding new CAM units in our product range such as high force compact CAM units for forming high tensile components.

Which end-user industries are driving the demand for tools? Will the growing electric vehicles industry and rising use of additive technology (3D printing) affect the demand for tooling?

To the best of my knowledge, automotive, electronics, white goods and railways to certain extent drive the demand for tools. There will be more demand for semi-automation and 3D printing in defence and renewable energy sectors due to the low/medium volume of components

requirement.

The electric vehicles (EVs) will not reduce the tooling requirement; rather the batteries will increase the need of tooling. As the development cycle for EV is smaller than internal combustion engine (ICE) vehicles, more number of new EV models will be introduced with additional features, which would increase the tooling demand. Secondly, the world has started realising that the India is poised to become the global manufacturing base so the demand for tooling is bound to grow.

The 3D printing technology is still evolving and, hence, it will be too early to make any comments. But certainly, this technology is especially useful for making the prototypes and small batch components.

There will be more demand for semi-automation and 3D printing in defence and renewable energy sectors due to the low/medium volume of components requirement.

What are key trends to watch out for in the dies and moulds industry in the coming years?

The first thing is to catch up with the international trends, such as hot forming technology. This process is quite new to India and so is the tooling for that process. As the safety norms for all the equipment are becoming increasingly stringent, the processes of manufacturing are becoming more complex and hot forming is one of them. The end customer needs equipment (whether automobile or white good) which are light in weight, consumes less energy, and adhere to high safety norms. From the point of environment protection, all materials should be non-polluting and recyclable. So, the processes, especially for non-metals such as plastic, are changing drastically.

What are your growth plans

We plan to increase the range of CAM units so that the Indian customers do not depend on imports. As the world is looking at India as futuristic global manufacturing hub, we have committed to gear up manufacturing.

for FIBRO India in the next 2-3 years? What kinds of new opportunities are you looking to tap?

FIBRO has completed 15 years of operations in India. FIBRO India has been consistently growing with CAGR of 27 per cent. This has been possible due to increasing the product range to suit the market needs not only in India but globally. There is significant difference between European tools and Asian tools. As such, at FIBRO India we are manufacturing standard parts for both the markets. We started manufacturing long back such as CI wear plates, Guideposts, CAM units, etc required by Asian tool makers. We have recently started manufacturing punches and ejectors for the world market. We will increase the capacity as the market demand grows. We also have plans to increase the range of standard parts for plastic injection moulds in addition to standard parts for sheet metal forming tools.

Besides, we plan to increase the range of CAM units so that the Indian customers do not depend on imports. As the world is looking at India as futuristic global manufacturing hub, we have committed to gear up manufacturing to offer all the products ex-stock to our customers.

At present, we are tapping defence, aerospace and railways sectors to find out how we can serve these sectors.

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“As EVs grow, metal working industry needs to adopt new tech”

Renishaw Metrology Systems is a global engineering technology group creating high precision technology for metrology and healthcare. While discussing over the current EV trend, **Sanjay Sangam**, Head of Sales and Marketing - India, Renishaw Metrology Systems tells that the company supports automotive manufacturers on the road from internal combustion engines (ICE) to electric vehicles (EV) with multi-sensor rapid scanning of machined casings to material analysis of fuel cells.

How has been the growth journey of your company since it was established?

Renishaw has come a long way since it was founded in 1973. We recently celebrated Renishaw's 50th anniversary. Over the past five decades, Renishaw has become a world leader in measurement, motion control, and healthcare technology. The company's innovative solutions have transformed many industries, including aerospace, automotive, electronics, and medical technology.

Throughout our history we have made a significant commitment to research and development with typically around 13 per cent to 18 per cent of annual sales invested in R&D and engineering. This has enabled us to design, develop and deliver solutions that provide unparalleled precision, control and reliability.

Our commitment to investments in people, product development and production capacity, are all underpinned by a commitment to be a more sustainable organisation, to ensure we continue transforming tomorrow together.

What is the present status of the metal working industry? Are the government's Aatmanibhar Bharat and other initiatives helping the industry's growth?

With India's rapid growth, the metal working industry plays a very important role in fulfilling the increasing infrastructure demands and supporting the rapidly growing manufacturing sector.



Today, the metal industry plays a crucial role in the economy, serving as a foundation for manufacturing and construction industries, contributing significantly to GDP, generating employment and foreign exchange. It is clear that the market in India is already sizeable and growing – the government initiatives around 'Make in India' are further fuelling the interest and growth in the manufacturing sector. As India moves away from being a sub-contract supplier base in the lower tiers of the manufacturing pyramid towards having an entire domestic supply chain, the complexity of components and requirement for process control accuracy greatly increases.

This is where Renishaw can add the most value to the market. We have a unique offer in that we can add significant value to the machining process from ensuring

that machines are capable of manufacturing to required tolerances and standards (through our Calibration offer), ensuring tool integrity and condition and in cycle metrology (through our machine tool offer), and then post process measurements (through our gauging and CMM offers).

Renishaw is extremely well positioned to assist Indian manufacturing in the leap from a high-potential market into an advanced manufacturing economy.

In summary, the application of Renishaw technology in a manufacturing process can ensure increases in productivity, scrap reduction, increasing production utilisation and ultimately increase profitability. Our positioning of the offer is based around the points above – that process control pays for itself and can significantly improve production processes.

How important is the automotive and auto components sector for the growth of your company? Will growing demand for electric vehicles (EV) have an impact on the metal working industry?

Renishaw works throughout the automotive supply chain, with a focus on the development and adoption of new technology and helping manufacturers achieve ever more demanding performance targets. We have expertise in controlling the manufacture of powertrains.

We drive cost reduction with robust manufacturing controls. These ensure

parts are made correctly, first time and that scrap and wastage are reduced without slowing output. This reduces material costs and cycle times per component. Our technology is helping manufacturers achieve major performance improvements by working to ever tighter tolerances, especially in the critical area of engines and powertrain.

The growing demand for EV may impact on the metal working industry but now it is not very significant. The EVs have different components and manufacturing of these components often involves specialised metalworking processes. As the demand for EVs grows, the metalworking industry may need to adapt by developing new techniques and technologies to efficiently produce these components.

From multi-sensor rapid scanning of machined casings to material analysis of fuel cells, Renishaw supports automotive manufacturers on the road from internal combustion engines (ICE) to EV. To meet supply chain demands, EV battery production needs to be ramped up dramatically. Encoders are essential to overcoming this challenge, and Renishaw has an extensive range of precision encoders, meticulously engineered for critical functions, ensuring unparalleled reliability and performance.

Renishaw non-destructive Raman technologies can be used to examine battery chemistry under a range of operating conditions, such as fast-charging and extremes of temperature. See how the battery reacts, then work out how to improve its efficiency.

Besides automotive, which other end-user industries is driving the demand for your products and solutions?

Renishaw solutions are serving diverse markets across the wide range of industries, customer types and geographical regions. Industries like aerospace, electronics, energy, heavy industry, machine builders, precision manufacturing, robotics, medical and healthcare, gems and

jewellery and jewellery, education etc are driving demand for our solutions. Infact Renishaw was born out of aerospace industry. We help manufacturers do repeatable, traceable, efficient work to the finest tolerances.

Sustainability is a key focus for all industries. Do your products and solutions help your customers in achieving their "green" goals?

We are committed to playing our part in looking after the environment and protecting it from significant issues such as climate change. We do this not only by improving the footprint of our own operations, such as reducing the emissions from our manufacturing facilities, but also by providing solutions to customers. With businesses increasingly focused on their environmental impact and the need to reduce costs, Renishaw's products help its customers reduce energy consumption and minimise waste, for example by reducing unproductive machine time, eliminating scrap components and reducing the total energy consumption needed to produce the same level of machined components.

What are some of the emerging trends in the industry? How do you intend to tap them?

Globally, a shift towards smarter, leaner and efficient manufacturing is taking place through data-driven manufacturing and automation. Technology has changed the nature of manufacturing, with robotics, process and measurement machinery and IT systems now an integral part of the factory floor. Sensor technology is developing rapidly and becoming more integral. Metal cutting tools equipped with a range of new-generation sensors that enable extensive monitoring of equipment and process attributes (spindle health, tool wear, coolant temperature, power usage etc) will become commonplace.

Therefore, machine-tool connectivity is becoming easier and seamless. Combined with developments in cloud computing

and big data analytics this will provide users with the ability to make informed decisions. Cost Management, productivity gains, decreased downtime and improved quality will be the result of this.

We will also see an increased range of automation solutions. Robot technology will increase, however automation will not be only limited to robots. Automation extends beyond robots and there will be increases in integration of simpler automation solutions with metal-cutting machines too. This will make a big impact on productivity, quality and safety. These simpler solutions will include tool pre-setters, pallet changers, machine tool probes, inventory management systems, tool condition monitoring systems etc.

What are your short and long-term growth plans for the company?

Renishaw sees India as a growth market. With the current rate of change, India will be classed as a high tech, advanced economy in the near future and the Make in India strategy will drive this through the domestic production of increasingly more complex and critical systems for aerospace, defence and automotive projects.

Renishaw has always heavily invested in Research and Development - this continues at pace. With the market conditions, our leading-edge technology and a strong local team, my vision is to continue to lead the market in metrology and further strengthen this position through educating customers on the massive benefits that process control brings to them in productivity and quality gains. This ultimately leads to increased profitability, which makes the Indian industry more competitive in a global marketplace.

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IPF Annual 2024

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TRANSFORMING MANUFACTURING WITH GREENENGINEERING

IPF Annual 2024 highlights on how India can develop a vibrant low-carbon manufacturing industry to gain global competitive edge. It also showcases over 300 products, including some of the innovative new products of 2023.

Highlights of the 52nd Edition of IPF Annual

Industry Leaders presented their thoughts on carbon-neutral strategies spanning R&D, Product Development, Manufacturing, Supply Chain & Logistics, and overall business. Some of them are:

- Zurvan H Marolia, Sr. VP, Godrej & Boyce Mfg. Co. Ltd
- Ravichandran Purushothaman, President, Danfoss India
- Manish Bhatnagar, MD, SKF India Ltd
- Hemant Minocha, Chairman, Plexconcil
- Prof R Jayaraman of S P Jain Institute of Management and Research
- Meenu Singhal, Regional MD, Socomec India
- Shubhankar Chatterji, Chief Supply Chain Officer, Cummins India
- Shivaji Waghmare, CEO, Fuji Electric India
- Bharanidharan S, Chief Business Intelligence Officer, Addverb
- Seshan Iyer, President - Industrial Business, Schaeffler India
- Wilson Lawrence, VP & GM, Trane Technologies
- Bheemsingh Melchisedec, Director - Operations, Elgi Equipments & many more...

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IMTEX Forming 2024 gets exciting responses from manufacturers

The five-day exhibition covered the latest technologies and trends in metal forming such as presses, bending, welding, and joining, high-speed laser machines, robotics and automation in sheet metal working, additive manufacturing, metrology, CAD/CAM, etc.

IMTEX Forming 2024, Asia's largest exhibition on metal forming and manufacturing technologies, along with concurrent Tooltech, Digital Manufacturing and Weldexpo, organised by the Indian Machine Tool Manufacturers' Association (IMTMA), held from on January 19 to 23, 2024 at the Bangalore International Exhibition Centre (BIEC), Bengaluru.

The exhibition was inaugurated by C K Venkataraman, Managing Director, Titan Company Ltd and Geetanjali Kirloskar, Chairperson and Managing Director, Kirloskar Systems Ltd. Jamshyd Godrej (Chairman-Exhibitions, IMTMA, and MD & Chairman of Godrej & Boyce); Rajendra Rajamane (President, IMTMA, & MD, Rajamane Industries Pvt Ltd); Mohini Kelkar (Vice President, IMTMA & MD, Grind Master) and Jibak Dasgupta (Director General & CEO, IMTMA and BIEC) shared the dais at the inauguration.

Highlighting the importance of the machine tool industry in the manufacturing space, C K Venkataraman said, "With India expected to become a \$5 trillion economy by FY 2026, the manufacturing sector needs to contribute \$1 trillion and this demands a significant contribution from the machine tool industry. For the manufacturing sector to double its contribution to reach \$500 billion, the Indian machine tool industry needs to produce high-precision machines and meet the current demand of producing sophisticated parts in various metals like titanium and others. Also, with many foreign companies establishing their units in India, the country could become Factory of World 2.0."

Reminiscing about her journey which began on the shopfloor



L to R: Mohini Kelkar, VP, IMTMA and MD, Grind Master; Rajendra Rajamane, President, IMTMA; Geetanjali Kirloskar, Chairperson and MD, Kirloskar Systems; C K Venkataraman, MD, Titan Company; Jamshyd Godrej, MD and Chairman, Godrej & Boyce; and Jibak Dasgupta, Director General & CEO, IMTMA and BIEC

decades ago, Geetanjali Kirloskar said, "The manufacturing sector is positioned to do very well in the next few years. The automotive sector and the machine tool industry have a symbiotic relationship with one sector's growth pushing the demand in the other. The growth of the automotive sector has been the driving force for machine tools for many years. The automotive industry landscape is changing with the entry of hybrid, electric vehicles and flexi fuel engine vehicles giving new opportunities for the machine tool industry."

Earlier while delivering his welcome address, Jamshyd Godrej said, "The exhibition size has expanded by around 80 per cent compared to the last edition held in June 2022. This expressly reveals the growth in manufacturing and demand for machine tools in India."

Emphasising the growth of machine tools and metal forming, Rajendra Rajamane said, "The consumption of machine tools during FY 2022-23 increased by around 55

per cent. The numerous opportunities in sunrise sectors would further propel the demand for machine tools. Meanwhile, metal forming production is expected to grow at a CAGR of around 10 per cent in the next five years."

The five-day exhibition covered the latest technologies and trends in metal forming such as presses, bending, welding, and joining, high-speed laser machines, robotics and automation in sheet metal working, additive manufacturing, metrology, CAD/CAM, etc. Developments in forming machinery, near-net manufacturing, additive manufacturing, digital manufacturing, shopfloor automation, and Industry 4.0 are also being showcased.

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Zeiss redefines manufacturing standards at IMTEX Forming

ZEISS' Industrial Quality Solutions (IQS) division is empowering Make in India initiative with direct access to high-end metrology solutions.

Z EISS, a leading provider of measurement solutions, participated in IMTEX Forming 2024, where its Industrial Quality Solutions (IQS) division of Carl Zeiss India (Bangalore) Pvt Ltd showcased the latest technologies, which can transform the manufacturing landscape in India. Renowned for its innovation and unwavering commitment to quality, ZEISS' IQS division is set to revolutionise accessibility to high-end devices previously available only through dealer partners.

Globally recognised for its top-tier quality assurance and measurement systems, ZEISS IQS is breaking barriers by directly offering its cutting-edge metrology solutions to a broader market. The initiative marks a significant milestone in enhancing accessibility for manufacturers across India, aligning seamlessly with the 'Make in India' narrative.

"Our continued participation at IMTEX 2024 marks a significant stride towards fostering self-reliance in manufacturing, in line with the ideals of Atmanirbhar Bharat. Our decision to offer our cutting-edge devices directly to the masses underscores our commitment to bolstering local industries and enabling them to achieve unparalleled standards of precision and quality. We aim to further catalyze a manufacturing revolution, empowering Indian enterprises to not just meet but exceed global benchmarks, thereby contributing substantially to the vision of a Make-in-India initiative," said **Aveen Padmaprabha**, Business Head of Industrial Quality Solutions (IQS) at Carl Zeiss India (Bangalore) Pvt Ltd.

IMTEX Forming 2024 attendees



L to R: Krishna Khandelwal (Head of Operations, IQS Division, Carl Zeiss India) and Aveen Padmaprabha (Business Head of IQS Division, Carl Zeiss India)

witnessed the following technologies amongst others at the ZEISS stall and discovered how these devices can elevate manufacturing standards and drive efficiency:

- ❑ ZEISS ScanBox Series 5 provides full-field 3D measurement coordinates that can be compared against the CAD model and used for reporting. Deviations in terms of Geometric Dimensioning and Tolerancing as well as trimming and hole positions are visualized in the GOM Inspect Pro software. Programming and controlling the measuring sequences is done via the Virtual Measuring Room (VMR). ZEISS ScanBox Series 5 is automated, modular and customer driven.
- ❑ The newly developed ZEISS ABIS III sensor combines high-speed inspection with a reliable detection of all relevant surface defects such as dents, bulges, sink marks, ripples, neckings, cracks and now also scratches and pressure marks. The system inspects both moving and stationary parts reproducibly and is highly precise during

live production and within the cycle time.

- ❑ ZEISS DuraMax is a Coordinate Measuring Machine (CMM) suitable for the harsh and high temperature shopfloor metrology needs. The latest model comes as a manufacturing capability successor to the ZEISS CONTURA CMM Model.

The solutions are poised to redefine the manufacturing industry's standards. By facilitating precision measurement, quality assessment, and process optimisation, the systems play a pivotal role in streamlining operations and ensuring impeccable standards in manufacturing processes. By empowering local manufacturers with world-class technology, ZEISS in India aims to contribute significantly to the nation's growth trajectory in the manufacturing sector.

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Germany's TRUMPF to expand in India with new Pune facility

The German industrial machine manufacturing company will start manufacturing of TruBend 1000 series bending machines in the new facility, followed by the TruLaser 1000 laser cutting machine series from 2025.

The Germany-based TRUMPF Group - a high-tech company offering manufacturing solutions in the fields of machine tools and laser technology - is expanding in India by building a new production facility in Pune, Maharashtra. "India is developing strongly and has growth potential. The proximity to this emerging market allows us to produce more efficiently and respond more quickly to the needs of our customers there. In addition, the new location offers us the opportunity to take advantage of global synergies. In the long term, we want to supply additional markets from India and expand our supply chain," stated **Till Kueppers**, Chief Operating Officer at TRUMPF Machine Tools Germany. TRUMPF is investing around Euro five million in the new facility, which will begin the production this year. The aim is to produce 300 machines every year from the Pune facility.

Bending and cutting machines made in India

"This investment is the first step in our long-term growth strategy in India. Our customers benefit from high-quality products, we are closer



TRUMPF at IMTEX Forming 2024; L-R - Mohammed Hidayath, Director Sales at TRUMPF in India; Pradeep Patil, MD of TRUMPF in India; and Till Kueppers, COO at TRUMPF Machine Tools

to them and can better adapt to their needs," commented **Pradeep Patil**, Managing Director of TRUMPF in India. The plant will start with TruBend 1000 series bending machines, followed by the TruLaser 1000 laser cutting machine series by 2025. "Together with the local talents, we will ensure TRUMPF quality on site. This unique value proposition is a great contribution to the sheet metal processing industry," added **Mohammed Hidayath**, Director Sales at TRUMPF in India.

TRUMPF is also expanding its

support infrastructure with a showroom in Bengaluru, which is scheduled to go into operation later this year. This is intended to strengthen the service for customers. With a software research and development facility in Chennai, TRUMPF is also able to offer customers comprehensive IT solutions.

TRUMPF is a high-tech company offering manufacturing solutions in the fields of machine tools and laser technology. The company drives digital connectivity in the manufacturing through consulting, platform products and software. TRUMPF is one of the leading technology and market leaders in highly versatile machine tools for sheet metal processing and in the field of industrial lasers.

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A technician from TRUMPF programs a laser cutting system



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New hardware concepts for autonomous trucks of future

The era of the long-haul autonomous truck is fast approaching. With it will come both challenges and opportunities to redesign the interior of autonomous vehicles to serve new functions and activities of those who operate them.



respond to highway traffic conditions, so they can operate autonomously for much of their time on the road.

Autonomous truck models that are either prototyped or ready for use already feature substantial capabilities: They can pull into loading docks or park themselves, maintain safe speeds and distances, change lanes, navigate automatically to and through interchanges and respond to

while maintaining a more “supervisory” role, similar to airline pilots.

This provides truck designers with the opportunity to make changes in multiple areas of the truck cab to reflect how operators on long-haul vehicles will use their cab and sleeping area spaces. For example, one truck designer is seeking to improve the driver side of the cab by exploring a way to place the brake and accelerator pedals in a box that could be moved out of the way, providing greater leg room; similar approaches are being explored for moving the steering wheel and column as well — or even replacing wheel and column with another kind of control device that’s purely digital.

These kinds of driver control modifications will require careful engineering to ensure that, if control does need to be returned to the driver, it can be done quickly and safely. To be successful, these modifications may require the use of hinges that can quickly open or reposition controls, as well as access latches that make devices fully secure when in their “out of the way” position, keeping them from suddenly shifting in response to movement by the vehicle.

With these modifications, operators will perform tasks they would normally have to postpone to times when the vehicle is not in motion. This can include handling documentation such as trip journals and paperwork related to the current loads they are delivering or the next load they are scheduled to pick up.

Fixtures to support changes in cab design and functionality

New designs for cabin and crew quarters can help fleet managers

The advent of autonomous long-haul trucking sets the stage for significant changes in the role and responsibilities of the drivers. Instead of constantly controlling the vehicle, they will transition from drivers to multirole operators. This will also lead to some major changes to the design of the truck’s cabin and sleeping areas, providing opportunities for engineers and component suppliers to consider new ways that position control and access hardware products can help facilitate and serve this new architecture.

Much of the technology to support autonomous trucks is being implemented. Advanced GPS and 5G network communications technology, sophisticated onboard vehicle control systems and onboard radar and lidar sensors make it possible for these large vehicles to safely track and

changing traffic conditions and sudden actions by other vehicles to prevent accidents.

With large strides being made in the technological innovations that have lead us to developments in autonomous driving, there are a plethora of obstacles Truck manufacturers have to overcome.

With this in mind, the industry are innovating and producing brand new solutions to aid the ever-changing responsibilities and expectations of the cab driver.

New role for operators changes the cabin

Presently, truck drivers have to continually manage their vehicles, even with the latest collision avoidance and brake control systems. That is expected to change with autonomous trucks, with the operator turning over control of the vehicle

staff their vehicles with two operators, allowing the vehicle to operate over much longer distances and improve return on investment. Truck designers are modifying the passenger side of the cab to provide larger flat screens to support web, streaming video and gaming applications so it is easier to attract and staff the vehicles with two operators.

These screens can either be built into the cab console or mounted on hinges to enable users to adjust the screen's angle. Hinges and display mounts that are designed with pre-engineered constant torque technology provide a "touch point" experience that is both ergonomic and intuitive.

Using controlled torque hinges for these display mounts offers several benefits:

- ❑ They are engineered to withstand vibration and inertial loading that may result while the vehicle is in operation
- ❑ Depending on the type of mount chosen, the displays can be easily pulled toward or pushed away from the passenger as needed
- ❑ One-handed operation allows simple one-touch positioning of displays

In order to save space and be as compact as possible, some designers are exploring having flat screens serve double duty: on one side is the display screen and the other side could serve as a flat surface, as a table to hold food, books or laptop computers.

Fixed position detent hinges can easily support that kind of configuration. They can hold doors or flat panels open at predetermined angles and eliminate the cost and labour of installing additional components to maintain consistent positioning. And just like controlled torque hinges, they are engineered for a long life span and maintain their detent angles regardless of persistent vibration from the truck.

Another significant change that vehicle designers are actively pursuing is the installation of heads-up display (HUD) capabilities for

the cab. These projectors are being tested to display real-time information at the upper part of the vehicle's windscreen or onto sun visors. They can project information about the vehicle's speed, lane changes and turns onto exit or entrance ramps, as well as potentially incorporate side camera and rear camera video images.

Although the projectors are small, they must be securely mounted and adjusted. Compact detent hinges that can easily be incorporated into projector designs are available for this kind of application as well.

Safer and more reliable access hardware

In the era of the autonomous truck, vehicles will encounter a wide range of road conditions and vibrations, which could impact the security of cab and cabin fixtures that are folded or closed. These can include foldable tables and screens, storage cabinets, refrigerators and foldable bunks in the cabin, and even external cab enclosures like front grilles on the trucks.

Truck designers must carefully assess the type of latching and access hardware they select, to protect against accidental openings. For example: autonomous vehicles have sensitive radar and other sensors mounted on or just behind the grille; if for any reason the grille shifts or accidentally opens and blocks the sensors, the vehicle will be programmed to initiate an emergency stop.

These grilles are heavier than in the past (due to the sensors mounted on them), so reliable latching systems, such as rotary latches with one point or multipoint latches, may provide the best solution, depending on the grille design.

At the same time, these heavier grilles do need to be opened and closed — in some regions, they are required to function as a step that an operator can stand on to carry out routine service activities like refilling windshield wiper fluid. For these heavier grilles, traditional gas strut hinges may not provide the best functionality. Instead, there are

counterbalance hinges that provide precise control when opening and closing heavy panels, reducing safety and liability concerns while improving end user ergonomics.

Supporting the development of autonomous trucks

The evolution of truck designs to support autonomous operation is underway. To help outfit these new designs with the right access control and positioning technology, there are advantages to working with component suppliers with experience in engineering and producing components for automotive interiors, especially those actively involved with both passenger vehicle and truck designers developing autonomous vehicles.

They can help overcome bottlenecks in design, engineering and production, as well as provide options from their existing portfolios that can satisfy cost, efficiency and performance requirements.

Southco Inc is the leading global designer and manufacturer of engineered access solutions. From quality and performance to aesthetics and ergonomics, we understand that first impressions are lasting impressions in product design. For over 70 years, Southco has helped the world's most recognised brands create value for their customers with innovative access solutions designed to enhance the touch points of their products in transportation and industrial applications, medical equipment, data centers and more. With unrivalled engineering resources, innovative products and a dedicated global team, Southco delivers the broadest portfolio of premium access solutions available to equipment designers throughout the world. **IPF**

Article Courtesy: Southco Inc



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Avians' loading bay solutions elevate efficiency and safety

In today's fast-paced logistics industry, optimising loading and unloading operations is crucial for efficient dispatch and reduced vehicle turnaround time. Avians is a leading provider of loading bay solutions and offers a comprehensive range of equipment designed specifically for Indian conditions. Our dock levelers, dock shelters, dock house, and a variety of accessories ensure seamless operations while prioritising safety and performance.

Dock levelers: Avians dock levelers are intelligently designed to streamline the loading and unloading process. With a single push-button operation, these high-quality docking systems conform to the latest European standard EN 1398 & CE Certified. Avians dock levelers significantly reduce vehicle dispatch time & effort, making them an indispensable tool for continuous operations. Dock levelers offer key benefits such as smooth loading and unloading, height adjustment for different vehicles, safety features for stability, increased productivity, improved worker safety & versatility in various loading bay setups.

Dock shelters and seals: Avians offers retractable and inflatable dock shelters for loading bays. Retractable dock shelters have flexible curtain walls that wrap around trucks, creating a tight seal against external elements. Inflatable dock shelters use inflatable airbags to mold to the shape of vehicles, providing an airtight seal and temperature control. Both options are durable and suitable for various truck sizes, ensuring efficient and protected loading bay operations. For sites with limited space, Avians' dock seals offer a space-efficient solution without compromising functionality.

Dock house: A dock house is a structure built around the loading

dock area to provide protection and functionality. It shields the loading bay from weather conditions, enhances security, reduces noise, and improves operational efficiency. Avians offers customisable dock houses that create a secure and efficient environment for loading and unloading operations.

Accessories: Avians understands the importance of additional accessories to enhance loading bay functionality and safety. Here are some key accessories we offer:

- ❑ **Vehicle restraints:** This systems provide an extra layer of safety by securing trucks and trailers to the loading dock, preventing unintended vehicle movement. Avians offers both manual and automatic vehicle restraint systems designed to enhance safety at the loading bay.
- ❑ **Vehicle guides:** Vehicle guides assist drivers in aligning their trucks and trailers accurately with the dock, facilitating efficient loading and unloading operations.
- ❑ **Wheel chocks:** Wheel chocks play a crucial role in preventing truck and trailer movement during loading and unloading, promoting worker safety and preventing accidents.
- ❑ **Rubber bumpers:** These durable bumpers are mounted on loading bay walls, absorbing impact & protecting vehicles & buildings from potential damage.
- ❑ **Traffic lights:** Installed at loading bays, traffic lights provide clear signals to drivers and dock workers, ensuring smooth vehicle flow and accident prevention.
- ❑ **Interlocking systems:** Interlocking systems provide an additional layer of safety by



ensuring that specific actions or conditions are met before the loading or unloading process can begin.

- ❑ **Sensors:** Proximity sensors can detect the presence of vehicles, ensuring that dock equipment is activated only when a truck or trailer is properly positioned.

Avians' loading bay solutions, including dock levelers, dock shelters, and a range of accessories, offer an integrated approach to enhance loading and unloading operations. With a focus on safety and compliance, Avians' solutions are designed to meet international standards while catering to Indian conditions. By investing in Avians' loading bay solutions, businesses can optimise efficiency, ensure worker safety, and drive overall operational excellence in their logistics operations.

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For details contact email: sales@avians.co.in, Tel: +91 8390300400 or visit www.avians.co.in

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Racing towards the next generation utility

Meeting the increasing demands for resources from a growing population, while also addressing sustainability goals, is one of the critical challenge world is facing today, says **Sally Jacquemin**. She, in this article, presents the different faces of India's route towards electrification while addressing the challenges and opportunities to conquer.

The day when we shall know exactly what electricity is will chronicle an event probably greater, more important than any other recorded in the history of the human race. The time will come when the comfort, the very existence, perhaps, of man will depend upon that wonderful agent." - Nikola Tesla.

One of the most critical issues facing the world today is the dual challenge, that of meeting the increasing demands for resources from a growing population with rising standards of living, while also addressing sustainability goals. Home to the largest population in the world, India is working towards 100 per cent electrification, while mitigating the dual challenge. The country aims to reach net-zero by 2070 with 50 per cent of its energy coming from renewable resources by 2030. This step towards sustainability is highly significant, as India is the fourth largest emitter of carbon dioxide globally.*

A step in this direction was exemplified in 2022 with solar and wind contributing to 92 per cent of India's power generation capacity increase.**

What is changing?

Globally, for most of the last century, energy flowed in one direction. That from large, centrally located generators to homes, businesses and commercial industry through a grid managed and operated by generation, transmission and distribution utilities. With the grid getting denser, more complex,

vibrant and dynamic – the integration of increased renewable energy requires increased flexibility and tools for grid management.

These utilities are tasked with providing reliable, safe power by ensuring generation supply balances to end-consumer load on a minute-by-minute, day-by-day basis. Generated, transmitted, distributed and consumed real-time, electricity is a commodity, which necessitates visibility and control real-time.

This can be provided by automation tools, such as Supervisory Control and Data Acquisition (SCADA); Energy Management System (EMS); Advanced Distribution Management Systems (ADMS) and Distributed Energy Resource Management Systems (DERMS). A trend that is largely influenced by funding and implementation policies, the distribution sector tends to lag the transmission sector, in terms of the adoption of innovation.

While large generation plants still form the backbone of the system, operators must now account for bi-directional power flows and variable output from grid-scale renewable resources. Further complicating the picture is less predictable consumer demand due to the increased adoption of Distributed Energy Resources (DER), such as



rooftop solar, energy storage, electric vehicles and in-home smart devices.

To manage DERs, many utilities have started to utilise DERMS. These enterprise-wide software solutions enable all utility stakeholders to monitor and intelligently control DERs.

Amidst the energy transition, DERMS allow utility operators to optimise their operations today by making better, more informed decisions. They can also maximise the value of their DER assets by delivering reliable power to consumers, but with DERMS, they can plan for the next-generation systems of the future.

Exponential growth of electrification

Since 2000, global demand for power increased by more than 70 per cent with a large part of that increase being fulfilled by renewable sources, like wind and solar, which represents nearly a third of all

power generation.

Two of the largest factors behind the increase in demand are the growing number of industrial companies turning to electrification, as well as the adoption of Electric Vehicles (EVs). Globally, the International Energy Agency forecasts a 35 per cent increase in EV sales this year, or 20 per cent of all vehicle sales. It is forecasted that over 50 per cent of all vehicles sold will be EVs by 2030.

The critical point to note is that in many areas, the electric grid is already at capacity, so adding more power to the system could lead to brownouts or cause equipment breakdowns.

Towards net-zero emission goals

While it offers great promise for decarbonisation and helps the world meet net-zero emissions goals, the intermittent nature of renewable power creates a significant hurdle.

To understand how to integrate renewables into the grid, operators must be able to reliably forecast when and how much electricity they generate and what impact it will have on the grid. An additional challenge for incorporating renewable power into the grid is its lack of inertia, which plays a key role in dealing with breakdowns across the grid.

The system must react much faster, so many operators rely on smart inverters to make sure renewable power enters the grid at the right frequency, and to curtail load, as conditions across the grid change.

As DERs become increasingly abundant, the demand of managing thousands of grid-connected devices and their impact on system operations is forcing many utility operators to consider a paradigm

shift in how they do business. The traditional one-way road is being transformed into a two-way highway that carries not just electricity in both directions, but also a broad range of data from millions of DERs. Utilities need to engage consumers with new business models and programs to encourage adoption and optimal time-of-use of the many DERs available. Having visibility into what devices are connected to the grid, where they are located and how much power they are generating or consuming allows operators to make real-time decisions about how to balance load on the grid and optimise performance for customers. New regulations in India, the US and Europe are opening the door to a new class of prosumers (that is customers who produce, and then sell their own electricity).

Thriving in the energy transition

A key feature of any DERMS software is to give utility operators the ability to track, understand and even control the behavior of the thousands of DERs connected to the grid. Enterprise DERMS software systems allow operators to see, in real-time, what devices are connected to the grid, their location and how they impact load, making it far easier to balance the load and keep the power on. By enabling increased grid efficiency, DERMS also allow utilities to extend the life of existing equipment, resulting in significant savings in capital investments.

DERMS add value through the creation of virtual power plants and by enabling greater access to wholesale energy markets and encourage greater investment in DERs. DERMS also play an important role in making grids greener by allowing utilities to plan and manage more precisely how renewable energy is integrated into their systems. By providing an unprecedented level of visibility and predictability into DERs on the grid, DERMS software acts like the system's brain, allowing operators to know exactly what devices are connected to the grid, how to use them and how to optimise their performance.



Utilities must find new ways to keep the power on for customers and manage thousands – or even millions – of devices, each of which has a different and specific impact on the health of the electrical grid, while planning for a more distributed, diverse future. DERMS software, along with SCADA and ADMS, offers a pathway to create significant new value for utilities through operational improvements, more efficient utilisation of existing assets and harnessing of DERs to create non-carbon emitting grid resources. **IPF**

*<https://www.bbc.com/news/world-asia-india-59125143>

**<https://ember-climate.org/insights/research/india-data-story-2023/>

About the Author



Sally Jacquemin is the Vice President (VP) and General Manager (GM) for the power and utilities business at Aspen Technology, Inc. She is an industry professional with

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Amidst the energy transition, Distributed Energy Resource Management Systems (DERMS) allow utility operators to optimise their operations today by making better, more informed decisions.

“We are looking to innovate in biofuel sector with our new alloys”

Alleima AB is a global manufacturer of high value-added products in advanced stainless steels and special alloys as well as solutions for industrial heating. Company recently inaugurated new heat exchanger tube facility in Mehsana, Gujarat. **Sharath Satish**, President of Alleima Tube division in the APAC region, and MD of Alleima India in this interview tells the significance of such developments in the country. He elaborates on the potential of Indian market in the energy, chemicals, and petrochemicals sectors and how company is aiming to grow with the advancing Indian economy.

Alleima recently established new heat exchanger tube facility in Mehsana. What is the significance of this event in the Alleima journey in India?

Since 2019, we have been steadily expanding our Indian operations in three phases. They include a cold finishing heat exchanger tube line, an H&I tubing factory, and now the final phase is completed, this state-of-the-art heat exchanger tube facility.

This new facility will enhance capacity and capabilities of the production unit to produce advanced alloys in application tubing like heat exchanger tubes for critical segments in chemical and petrochemical, refineries, and the renewable energy segments.

The launch of our new heat exchanger tube facility marks two pivotal milestones in Alleima's journey in India: expansion and local production.

We will now be able to meet the country's growing demand for high alloy heat exchanger tubes by producing them locally, thereby optimising our supply chain, reducing lead times, and catering more effectively to the specific requirements of customers in the market.

This strategic move positions us to capitalise on India's long-term growth in chemical, petrochemical, and renewable energy sectors by locally producing the advanced alloys. The facility will serve the domestic market and act as a production base for exports to other parts of Asia.

Our growth in India also aligns



perfectly with Alleima's global growth strategy of expanding regional footprints and catering to the burgeoning demand for products in key growth markets.

How is the global market at present in terms of demand, customer requirements, challenges, and new opportunities?

The global energy market is undergoing dynamic shifts in response to various factors. The demand for energy continues to rise, driven by increasing population growth, urbanisation, and industrialisation worldwide. There is an increasing trend towards sustainable and clean energy sources, reflecting a broader global focus on addressing environmental

concerns and mitigating climate change. This surge is also driven by improved economics, supportive policies, and a strategic alignment of climate security goals. With this momentum, the world is on track for a greener and more secure future powered by clean energy.

At the same time, the traditional fossil fuels still dominate the landscape, as the transition to renewable energy sources takes time and demands substantial investments in technology and infrastructure.

Which industries are key demand drivers for Alleima, globally and in India? Are there any emerging sectors that will be key for Alleima's growth in the future?

Alleima's growth strategy is based on capitalising on megatrends such as energy transition, electrification, medical market growth, and growth in the underinvested energy sector. Alleima aims to achieve profitable growth in selected areas of its product portfolio including chemical and petrochemical, hydrogen and renewable energy, industrial heating and medical.

Our products are critical in many energy-efficient applications, including fuel cells for cars, trucks, and hydrogen production. This expansion in India plan is for us to increase heat exchanger tube capacity and capabilities to produce advanced alloys positioning us to capitalise on the growth opportunities arising from India's chemical and

petrochemical industries over the next decade. It will also facilitate the transition to the renewable energy segments and enable us to capture the opportunities from the increased demand for locally manufactured products in India

With the expanded Mehsana mill, we are perfectly positioned to meet the surging demand for renewables including biofuels, solar and the hydrogen infrastructure. We also anticipate significant growth opportunities within Asia's refining, specialty chemicals, fertilisers, and natural gas industries, where our advanced tubing solutions are tailored to meet the specific needs of these critical sectors.

What are your views on India? What factors are contributing to demand for Alleima's products and solutions?

India is projected to remain as one of the world's fastest-growing economies, with high demand across various industries including energy, chemicals, and petrochemicals. The country's burgeoning energy demand propels its transition towards a greener economy. This shift underscores the growing emphasis on developing and utilising energy-efficient and sustainable products, areas where our offerings are well-positioned to meet rising demand.

The demand for chemicals, driven by growing populations, translates to higher demand for the chemical and petrochemical industries. High-performance materials and innovative solutions with improved corrosion resistance and extended lifespan are needed to cater to this need.

With the government's concerted efforts to promote manufacturing within the country, exemplified by the Make in India and Atmanirbhar Bharat programs, we are committed to continuing our investments in India and working with our customers to drive further growth. Our new heat exchanger facility will enable us to produce heat exchanger tubes locally for the chemical and petrochemical segment, driving greater efficiency

and sustainability across renewable segments in the country.

With the government encouraging investment in renewable energy and green hydrogen in India, what kinds of new opportunities it is creating for Alleima?

Our materials expertise lies in advanced stainless steels and special alloys, crafted for the toughest conditions with over 900 different alloy recipes for various applications. Our portfolio of stainless steels, special alloys, and industrial heating products is well-suited for constructing and maintaining the infrastructure required. Our materials play a crucial role in solar infrastructure, ensuring corrosion resistance and durability, contributing to the realisation of ambitious solar energy capacity targets. Additionally, our involvement in the emerging hydrogen infrastructure is vital for enabling this transition. Moreover, with our new high-performance alloys like Sanicro® 35, there is opportunity to position our innovation in biofuels, where India sees a strategic role for biofuels in the energy basket. Furthermore, the recyclability of our materials further aligns with sustainability goals, enabling Alleima to actively contribute to India's renewable energy transition through innovative solutions and eco-friendly practices.

What are the key challenges before industries (i.e. your customers) today? How is Alleima helping them solve some of them?

Regulations and sustainability goals are pushing industries to reduce their carbon footprint and optimise energy consumption. This involves not only transitioning away from fossil fuels and adopting renewable energy sources, but also improving process efficiency across all levels of operation. Alleima's portfolio of clean technologies and services, including carbon capture and storage (CCS), empowers our customers to achieve these goals, enabling them to significantly reduce

their CO₂ emissions and transition towards more sustainable operations.

Beyond our offerings to customers, we demonstrate our commitment to sustainability by leading by example. At our own sites, we utilise approximately 83 per cent recycled material, power our operations with more than 96 per cent fossil-free electricity and prioritise responsible resource management through initiatives like reduced water usage, careful chemical management, and effective use of byproducts. This commitment to sustainability fuels innovation and inspires others to embrace a cleaner future.

With respect to R&D, what is the focus area for Alleima?

We currently have five R&D centers strategically located globally - in Sweden (Hallstahammar and Sandviken), Germany, India, and China. The centers actively collaborate with universities and institutes to develop new and improved materials for their products, focusing on properties like corrosion resistance, high-temperature performance, and lightweight. This global network fuels our extensive portfolio of over 900 actively alloy recipes processed for diverse niche applications. We are dedicated to enhancing the performance of our alloys across key metrics: strength, durability, corrosion resistance, and high-temperature capabilities.

Furthermore, we are committed to minimising the environmental impact in our manufacturing processes. As such, we continuously invest in R&D to develop next-generation alloys with reduced environmental footprints and continue to research on low-carbon alternatives, focusing on materials with improved strength, corrosion resistance, and recyclability.

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“Components made at Belagavi have least carbon footprints”

Founded in 2006 and nurtured as a unique, diversified contract manufacturing company, Aequs, provides vertically integrated product solutions across the aerospace, toys, and consumer durable goods industries. **Rohit Hegde**, President, Consumer Verticals, Aequs in this interview provides insights on company’s sustainable manufacturing practices.

How is your company contributing to the growth of the Indian manufacturing sector?

Manufacturing in India has been growing impressively promising a tremendous boost to the economy. The government’s Make in India and Atmanirbhar Bharat campaigns and other policy initiatives aimed at promoting domestic manufacturing have been a signal to the world that we are open for business.

Speaking for Aequs, making in India for the world has been the core philosophy for the company. Set up in 2006, Aequs Manufacturing started the Aequs Aerospace SEZ, India’s first notified precision engineering SEZ, in 2008 in Belagavi. Today, Aequs counts itself among the largest aerospace supply chain companies in the country. So much so, we have a saying at Aequs: Every airliner has some part made at Belagavi. The company, with its end-to-end manufacturing value chain, accounts for over 3000 parts manufactured at its facilities. Aequs counts global aerospace OEMs like Airbus, Boeing, Collins and Safran among its customers. Our focus has always been incremental in-country value addition on the parts and components we make. Beginning at 20 per cent in-country value addition, today I am proud to say the aerospace components manufacturing has over 90 per cent value addition. Aequs has been instrumental in growing and maturing the aerospace supply chain capability in the country over the past many years.

Driven by our success in the aerospace industry, Aequs ventured



into the consumer industry in 2016 with manufacturing toys for global brands. Still in the realm of precision engineering, toys manufacturing is a complex activity, but with low skill requirement and a huge potential for employment generation. Today Aequs exports to over 56 countries, making it one of the biggest toy exporters from India. More recently, Aequs also set up India’s first toy manufacturing cluster, the Koppal Toy Cluster (KTC), opening avenues for creating more jobs in the most backward district of Karnataka.

Further, Aequs ventured into consumer durable goods manufacturing in 2021, making kitchen appliances for several global brands. It also set up the Hubballi Consumer Durable Goods Cluster (HDC), again a first in India, to create a global ecosystem for manufacturing consumer durables.

The common thread in all three

clusters is that they are ecosystems seeking to create all the infrastructure, supply chain and engineering capabilities required by manufacturers across the three industry verticals. This is a step change in the Indian manufacturing scenario.

Companies (including your customers) across industries are emphasising on sustainability. How is your company helping them meet their sustainability goals?

The global aviation sector has set itself the target of being net zero by 2050. While this objective is sought to be met by switching over to sustainable aviation fuels, given the huge target, aerospace OEMs have set in process measures to contribute to it. As a result, they are now focusing more on process and material efficiencies among their suppliers, including Aequs. Having said that, the very basis of Aequs’ Ecosystems of Efficiency® value proposition, ab initio, is predicated on sustainability. Typically, any aerospace part would have to move over 5000 kilometres between each production process. However, given that its cluster approaches no part moves more than 500 metres within the Aequs SEZ which provides integrated and collocated facilities for an end-to-end manufacturing capability. As a result, Aerospace components manufactured at the Belagavi Aerospace Cluster have the lowest carbon footprint compared to anywhere else in the world.

Likewise, in its consumer verticals, Aequs works to global standards that

Aequs exports to over 56 countries, making it one of the biggest toy exporters from India. More recently, Aequs also set up India's first toy manufacturing cluster, the Koppal Toy Cluster (KTC).

require the highest attention to safety and sustainability, be it in the production process or materials used. At the same time, Aequs' three campuses adhere to all environmental norms employing green technologies and energy efficient equipment.

Could you please highlight on some of the Green Engineering solutions offered to your customers in the industrial sectors?

World over there is an increasing realisation that sustainable manufacturing is integral and essential to good and successful business. The emphasis is on creation of products through economically-sound processes that minimise negative environmental impacts while conserving energy and natural resources and enhancing employee, community and product safety and wellbeing.

As such Environmental, Social & Governance (ESG) practices at Aequs are seen as part of long-term business strategy. As explained above, given its ecosystem approach, the Aequs operating model is built for sustainable manufacturing ab initio. The Belagavi Aerospace Cluster (BAC), which houses 30 plus manufacturing units, is the most ecofriendly manufacturing campus anywhere, especially for Aerospace components, by virtue of offering collocated facilities for end-to-end capabilities. Likewise, in our consumer businesses the focus is on environmentally friendly manufacturing processes with the utmost attention to product safety and durability. Our shop floors on the other hand, are quickly moving to an Industry 4.0 framework where interconnected machines deliver

optimal processes and operational advantages that lead to more sustainable manufacturing.

What are some disparities in the manufacturing setups of India and other countries? Is there any special quality standards or certificates which are needed for these setups?

India is increasingly seen as an alternative manufacturing destination as global conglomerates continue to adopt a China plus one strategy and in some cases even looking at relocating entirely from China. At the same time, the addressable markets being global in nature, including the domestic market in India, the emphasis on product quality is increasingly becoming uniform. Having said that, whether India will be able to compete with other countries on manufacturing across sectors depends on pricing, which in turn is dependent on scale. This is something that India lacks currently in many sectors. For instance, in toy manufacturing India can compete with Chinese companies on input costs and quality. But the scale of operations and government subsidies they get, put Chinese manufacturers at an advantage compared to Indian companies. Aequs is seeking to address the issue of scale and supply chain maturity through its Ecosystem, there is a case for more nuanced support from the government. For instance, PLI for toy manufacturing is a long pending ask from the toy manufacturing industry which would level the playing field to a certain extent vis-à-vis the Chinese manufacturers. As for quality standards, given that we are catering to the global OEMs across our industry verticals, all certification requirements across the world are uniform.

Speaking of our export operations, while in aerospace we export 100 per cent of our output, in toys also it is predominantly export oriented though recently we have started looking at the domestic market in India through our Original Design Manufacturing (ODM), initiatives. Likewise, in our consumer durable

With respect to revenues, we are targeting revenues of Rs 1,200-1,300 crore for FY24. In the last financial year, we earned just under Rs 1,000 crore. A 20-25 per cent growth is something we anticipate.

goods operations, it is a mix of exports and domestic output.

How do you plan to scale up your business in the future?

Where aerospace is concerned, 2023 was exceptionally good returning to health from the Covid-19 debacle. The good tidings are expected to continue in 2024 with the surge in demand for aircraft, because of increasing air travel. Aequs is well geared to meet this increase in demand both in terms of capacity and workforce. Likewise, in our toys and consumer durables verticals, we have enough capacity to cater to emerging demand for contract manufacturing from OEM and ODM customers. Recently, we ventured into a new industry vertical, Advanced Technology Products (ATP), aiming to tap into the fast-growing potential for precision machining for consumer electronics products. R&D is a continuous effort at Aequs and the Aequs Innovation Centre (AIC), set up in 2022 conducts cross-vertical product and process development across the group. Currently, it is focusing on a few programs for our consumer durables and toys verticals.

With respect to revenues, we are targeting revenues of Rs 1,200-1,300 crore for FY24. In the last financial year, we earned just under Rs 1,000 crore. A 20-25 per cent growth is something we naturally anticipate.

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“India Rubber Expo 2024 will give a platform for collective growth”

The All India Rubber Industries Association (AIRIA) is diligently gearing up for the India Rubber Expo 2024 (IRE 2024) – to be held from March 20-22, 2024 at Bombay Exhibition Center, Mumbai - aiming to make it a benchmark event. While the Indian rubber industry exhibited resilience in 2023 amid the global turmoil, the industry anticipates a gradual recovery in 2024 fuelled by increased domestic procurement and infrastructure projects. In this interview, **Vishnu Bhimrajka**, Chairman & Chief Convener, IRE 2024, and Director, Polmann India Ltd, outlines the importance of value-added rubber products, government initiatives, and industry collaboration.

How are preparations for the India Rubber Expo 2024 shaping up?

AIRIA is working tirelessly to ensure that India Rubber Expo 2024 becomes a benchmark event for the rubber industry. We are focused on creating a platform that fosters collaboration, showcases technological advancements, and addresses key challenges faced by the industry. Our efforts include strategic partnerships, engaging relevant stakeholders, and curating a comprehensive agenda that reflects the current needs and future potential of the rubber sector.

What will be the key highlights of IRE 2024 that set it apart from the previous editions?

IRE 2024 is set to surpass previous editions in terms of innovation, collaboration, and global participation. Key highlights include specialised sessions on emerging trends in the International Rubber Conference, more than 90 per cent stalls booked as bare (which is a rare occasion for exhibitions), etc. IRE 2024 will draw crowds as the expo will feature cutting-edge technologies and a robust international presence. The expo will provide a unique opportunity for networking and big business through the Reverse Buyer and Sellers Meet (RBSM) you can forge long-term connections with original equipment manufacturers and government



bodies. Connect with biggest procurement companies like Indian Railways, DRDO, ISRO, Indian Navy, etc in a one-to-one interaction.

How do you see the performance of the Indian rubber industry in 2023 amid global turmoil? What is your expectation for 2024?

The Indian rubber industry faced challenges in 2023 due to global uncertainties and disruptions. However, the industry showcased resilience and adaptability. Looking ahead to 2024, we anticipate a gradual recovery as the global landscape stabilises. Key factors like increased domestic procurement by government PSUs and ongoing

infrastructure projects will contribute to a positive trajectory for rubber industry. On the rubber machinery front, the machinery players have experienced improved domestic footprint with some players achieving an export to domestic ratio of 60:40.

On the rubber plantations front, Rubber Board is doing a great job by increasing and exploring more avenues for plantations in the Northeast region. India also exports to nations like Vietnam, Cambodia etc species of rubber plants which are grafted and grown in controlled environment in the private nurseries in Kerala.

Why are value-added rubber products crucial for the success of the manufacturing industry?

Value-added rubber products play a pivotal role in the manufacturing industry for several reasons: They enable diversification of product offerings, enhance performance and functionality, and contribute to supply chain efficiency. Moreover, adherence to regulatory standards, cost-efficiency, and adaptability to customisation make them

On the rubber machinery front, the machinery players have experienced improved domestic footprint with some players achieving an export to domestic ratio of 60:40.

Adherence to regulatory standards, cost-efficiency, and adaptability to customisation make rubber products indispensable for manufacturers aiming to stay competitive and innovative.

indispensable for manufacturers aiming to stay competitive and innovative.

The recently introduced Quality Control Orders (QCOs) for 24 footwear products is in the direction to improve quality of rubber products. These QCOs were implemented for large and medium enterprises from July 1, 2023, while for the small and micro units it is applicable from this year January 1, 2024.

What are the key challenges before the rubber industry?

The Indian rubber industry confronts challenges such as competition from cheaper imports, outdated technology, escalating raw material costs, adherence to BIS specifications, limited innovation adoption, and aging industry tools. Addressing these challenges requires a collaborative approach, technological upgrades, and a commitment to industry best practices.

Further, government has also tried to put in efforts to raise and nurture industries through PLI Schemes. But, in case of rubber, the companies are smaller in size and many in number which does not meet classifications. Importantly, harmonising PLI Schemes according to the needs of rubber industry can solve this issue and AIRIA is working on the same with government.

Moreover, the rubber industry is sailing through challenges of climate change and adverse weather conditions such as flash floods, excessive rainfall etc which demands for security through insurance schemes. The state of Kerala is also working towards giving compensation to the ones affected by

including the rubber crop as an agricultural commodity thereby qualifying it for schemes of state government.

What kinds of new opportunities can be tapped by the makers of value-added rubber products in different industrial sectors?

Makers of value-added rubber products have a multitude of opportunities across diverse sectors. In automotive industry, due to lightweighting being the trend, lightweight rubber products have a sea of opportunity. Defence industry has now opened up for private companies in a big way which has specialised application areas such as rubber bullets, anti-vibration solutions, rubber tracks, and radiation-proof seals to name a few. Silicone rubber, known for human implants, offers versatile applications. Vande Bharat trains and Metro coaches being expanded across the country drive demand for specialised applications. Government PSUs favouring domestic industry presents a significant growth factor.

What are the key trends to watch out for in the rubber industry in the coming years?

Key trends in the rubber industry include a surge in raw rubber imports due to exponential consumption, growing export surplus, and a focus on technological advancements. Observing the trends in 'HSN 40' of exports and imports, we foresee an increased emphasis on meeting domestic demands through innovation and efficiency. Natural rubber production in India is growing year-on-year and Rubber Board has taken initiatives to build and expand plantations of specific rubber types in

Defence industry has now opened up for private companies in a big way which has specialised application areas such as rubber bullets, anti-vibration solutions, rubber tracks, and radiation-proof seals to name a few.

Key trends in the rubber industry include a surge in raw rubber imports due to exponential consumption, growing export surplus, and a focus on technological advancements.

the North-eastern region, which has similar terrain like the state of Kerala which dominates in the rubber production in India.

One of the new trends seen recently is that of industries getting listed on share market. This helps in a dual way; one as the trust of the company procuring material can view their performance publically and the company can raise capital easily.

Any message to the industry, on the eve of IRE 2024...

As we approach India Rubber Expo 2024, my message to the industry is one of optimism, collaboration, and resilience. Let's seize the opportunities presented by the changing global landscape as every challenge brings big opportunity. I would like the rubber industry to take leverage of government schemes by understanding them in detail. AIRIA is doing its part by holding free seminars, conferences which serves as a primary platform for such information exchange.

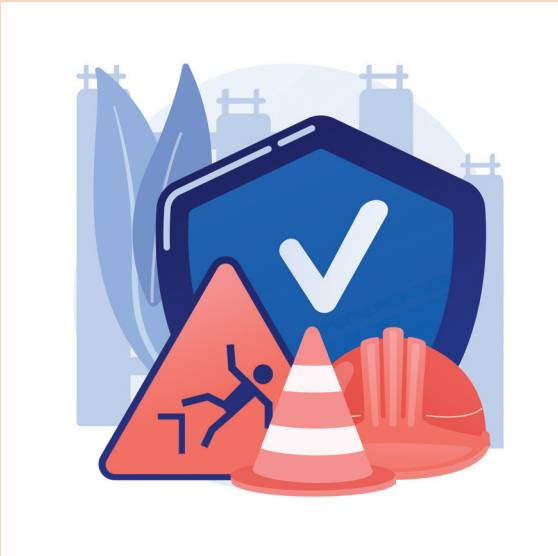
IRE 2024 will also give a platform for collective growth, and I encourage all stakeholders to actively engage, learn, and contribute to the success of this pivotal event. I seek more and more participation in the India Rubber Expo 2024 in Mumbai so that we connect and go ahead collectively as an industry.

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Constructing safely: Preventing slips, trips and falls

Performing risk assessment to identify potential for slips, trips, and falls is the first step towards keeping people safe from hazards at the workplace, says **Kamarajan M** in this article while informing on some measures towards workplace safety.



from height in the construction industry showed that falls were the leading cause of occupational injuries and fatalities in the sector in the UK and Australia in 2013, accounting for 31 per cent and 12 per cent, respectively, of the fatalities in those countries. In the UK, slips, trips, and falls account for about 25 per cent* of non-fatal workplace injuries in the construction sector. This alarming number of occupational injuries related to slips, trips and falls necessitates

The construction industry is among the top employers and economic contributors in most parts of the world, including India. However, its safety record is not among the best, since the sector is known to be hazardous, with the constantly changing workforce aggravating the risk of injury every day. Of accidents that could occur at construction sites, slips, trips, and falls account for the leading causes of severe injuries and fatalities. Statistics show that 67 per cent of the fall accidents happen at the same level, with the remaining are falling from a height.

In the US, a report showed that in 2020 over one-third of the deaths in the construction sector were due to falls, slips, and trips. The report also stated that the construction sector accounted for 46 per cent of all fatal falls, slips and trips in the US that year. Most importantly, the report says that those deaths were preventable. A study evaluating falls

improved workplace safety.

In the Building and Construction Workers Act & Rules of India, there is an exclusive provision on the subject of "slip, trip and fall hazards", which makes it mandatory for the employer to:

- ❑ Keep all the passages and platforms free from accumulations of dust, debris, or similar material and from other materials that may cause tripping;
- ❑ Remove or otherwise make safe any sharp projections, protruding nails, or similar projections;
- ❑ Ensure that water, grease, oil, or any other similar substances on the passage or platform be removed, or sanded or covered with suitable material to make it safe;
- ❑ Prevent workers from using any platform or passage from using any platform or passage

which is not safe due to slippery substances;

- ❑ Cover or guard all openings through which any person may fall down;
- ❑ Provide adequate fall protective appliances that are manufactured as per the relevant Indian standard;
- ❑ Provide safety nets to prevent fall of materials from height

A slip occurs when the friction or traction between the footwear of the worker and the floor surface is too little or inadequate. When a worker is walking, the heel of the front foot slips forward, as the individual is transferring weight causing the worker to fall backwards.

Trip occurs when the feet collide on an object on the floor accidentally, causing the person to lose balance.

Performing risk assessment to identify potential for slips, trips, and falls is the first step towards keeping people safe from these hazards. Here's a look at some of these causes* and the methods of remedying them.

Uneven floors: Uneven surfaces contribute to many slips and trips. The employers must encourage all employees to report any such occurrences in the workplace immediately so that such hazards may be quickly detected and corrected. When any such hazards are reported, the employers must put up signposts as an immediate measure and the workplace must be cleaned to remove contamination and objects that could cause people to trip, slip, or fall as soon as possible. Improving lighting conditions is one of the sure ways of reducing the slip, trip and fall hazard.

Obstacles: In process building

materials and waste can unexpectedly cause slips or trips if they obstruct a person's path. It can be challenging to rely solely on employees to be consistently mindful of these obstacles during their daily tasks. Establishing designated waste collection areas, providing adequate bins, and assigning responsibility for regular waste removal contribute to a safer site. Additionally, careful planning of deliveries ensures timely processing, preventing obstacles and unpackaged materials from becoming slip or trip hazards on floors.

Trailing electrical cables: To minimise the risk of employees tripping over trailing power cables, suspending them above the floor or work surface in construction, maintenance, or cleaning tasks is advisable. Similarly, prioritising cordless power tools over corded ones eliminates the hazard, significantly reducing the likelihood of cable-related trips. Little bit of planning, ahead of the execution, about the need for power supply at various locations of the project will help in making provisions for adequate number of electrical sockets and outlets which will reduce the need for laying temporary supply cables criss-crossing the floors.

Wet or slippery surfaces: Drying and cleaning up wet surfaces at the earliest helps prevent slips. Treating wet surfaces with suitable anti-slip measures, such as applying grit on icy paths or anti-slip coatings on more permanent fixtures, like vinyl floors, can be considered. Preventing leakages from vehicles through timely preventive maintenance and preventing spillages using suitable methods to transfer liquids from one container to the other are some of the simple methods to be used to prevent slippery floors.

Changes in levels: Unexpected level changes between floors can catch employees off guard, increasing the risk of slips, trips, and falls. To minimise these hazards, employers should set up ramps for floor-level transitions. If ramps are not possible, warning signs should be prominently displayed to alert



individuals to the level change.

Education: Educating and reminding employees about slip, trip, and fall risks is crucial in preventing such incidents. Employers must legally provide information, instruction, and training on accident prevention to all the employees. Employers can tap into their valuable insights to enhance risk management, improve work areas, and access routes by involving and consulting employees.

Equipment: Slip-resistant shoes and boots help in ensuring personal safety. However, selecting suitable slip-resistant footwear for the workplace can be a daunting task, due to varied sole descriptions lacking specific suitability information. The experts, who are involved in the selection, should consider the factors like durability, comfort, and safety features. Trials with a representative workforce sample are advisable to assess suitability for all workers and environments, ensuring informed decision-making.

Risk assessment: When assessing slip and trip risks, it is vital to consider potential contaminants like water, oil, chemicals, foodstuffs, dust, and condensation and evaluate their risk levels. For example, balancing slip resistance with durability, comfort, and acceptance is crucial when choosing slip-resistant footwear. Factors such as contamination frequency and surface conditions guide the selection of appropriate slip-resistant footwear. During the construction of one of the airports, since the slope of the ramp leading to the basement floor was quite steep, the baggage handling vehicles could not get the necessary

traction and hence the entire ramp had to re-laid with slip resistant coating materials.

Prioritising safety at construction sites

Slips, trips, and falls are a significant challenge for most companies in the construction industry. However, employers can reduce such incidents by prioritising safety compliance, risk assessments, hazard identification, preventive measures, employee education, and suitable footwear. Overall, these efforts will improve worker safety and well-being, reduce absences, and improve the construction industry's safety reputation.

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**<https://www.britsafe.org/publications/safety-management-magazine/safety-management-magazine/2023/still-slipping-up-on-safety/>*

About the author



Kamarajan M is Head of Education at the British Safety Council in Chennai, India. He is experienced in Health Safety Environment with a demonstrated history of working in the construction industry. Skilled in HSE Management Systems, ISO 14001, Gas, Petroleum, and HSE auditing, he is a Bachelor in Engineering focused in Mechanical Engineering from Government College of Engineering, Salem.



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Delta Electronics launches 'Innovation on Wheels' initiative

Over two decades, the company has been deploying smart energy-saving solutions to support the rapid transformation of India's information technology, e-mobility, renewable energy, and manufacturing sectors

Delta, a global leader in power and thermal management solutions, commemorated two decades of nurturing energy conservation in India with the launch of its "Innovation on Wheels" solutions demonstration initiative, which will traverse 50+ cities, covering over 10,000 kilometres across India. This ground-breaking project, featuring the depth and breadth of Delta's cutting-edge Data Center Solutions, exemplifies the company's commitment to advancing technology and connectivity throughout the nation.

Benjamin Lin, President, Delta Electronics India, remarked, "Since acquiring ASCOM Energy Systems and its India subsidiary 20 years ago, Delta has been transforming industries and empowering businesses across India with cutting-edge energy-efficient products and solutions. Our 'Innovation on Wheels' solutions demonstration truck marks a remarkable stride in Delta's journey of innovation and enhanced customer engagement. This impressive showcase reflects our unwavering commitment to delivering smart, energy-efficient, and innovative solutions that seamlessly align with the evolving needs of our valued customers."

The pioneering project aims to bring Delta's advanced technology and solutions directly to customers, showcasing the company's strength and commitment to the Indian market. Inside the "Innovation on Wheels," visitors will explore Delta's diverse portfolio, including data center infrastructure solutions, telecom products, electric vehicle chargers and automation solutions.

Optimise, Orchestrate & Operate Data seamlessly with Delta's All-in-One Containerised Data Center Solutions, designed to accommodate various load sizes for diverse micro, mini, and edge DC applications. Our integrated, plug-and-play solution ensures rapid deployment, coupled with excellent reliability and flexibility.

This initiative aims to showcase Delta's expertise across various sectors and highlight the company's commitment to delivering sustainable and energy-efficient solutions. Traveling across the diverse landscapes of the country for over three months, the truck will make strategic stops at all major business centres and industrial hubs, offering an interactive and memorable experience for all onlookers. Delta's commitment to sustainable products and solutions is evident in the "Innovation on Wheels," showcasing the company's efforts to integrate sustainability into every aspect of its business.

Niranjan Nayak, Managing Director, Delta Electronics India, states, "We are thrilled to embark on the Innovation on Wheels' initiative, a tangible demonstration of Delta's commitment to innovation and customer-centric solutions. This mobile showcase underscores our dedication to bringing advanced Data Center Infrastructure solutions directly to our customers, providing them with a first-hand experience of Delta's cutting-edge technologies."

The cross-city promotional tour is a strategic move within Delta's broader marketing strategy, fortifying the brand's presence and reaching new customers. This initiative aligns with the company's steadfast



L-R: Rajesh Kaushal (VP, Delta Electronics India), Benjamin Lin (President, Delta Electronics India) and Niranjan Nayak (MD, Delta Electronics India)

commitment to innovation and customer engagement, highlighting Delta's adaptability and effectiveness in connecting with consumers

Globally, Delta has thrived for five decades and has transformed itself into a global leading provider of smart energy-saving products and solutions. From 2010 to 2022, Delta's technologies enabled over 39.9 billion kWh of electricity savings for its customers worldwide.

As Delta celebrates 20 years of innovation in India, the 'Innovation on Wheels' initiative is a testament to Delta's dedication to reaching every corner of the country, delivering next generation solutions directly to customers and partners and strengthen relationships with existing customers and forge new partnerships across India.

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Maharashtra secures investments worth \$44 billion at WEF 2024

At World Economic Forum (WEF) 2024, the state was able to attract a total investment of Rs 4.5 lakh crore, with a potential to create about 2 lakh jobs in various sectors including electronics, IT/ITeS, data centers, gems & jewellery, agriculture, auto and renewables.

At World Economic Forum (WEF) 2024 in Davos (Switzerland), Maharashtra signed investment MoUs worth Rs 3.53 lakh crores (about \$44 billion) and received an expression of interest for an additional Rs 1 lakh crore (about \$12.5 billion) investment, to generate nearly 2 lakh jobs across various sectors.

During his visit to WEF 2024, Eknath Shinde, Chief Minister of Maharashtra - accompanied by Minister of Industries, Uday Samant - signed 19 MoUs across sectors and laid the groundwork to propel Maharashtra into phase of rapid growth to achieve its trillion dollar aspiration. This trip builds on the successes from WEF Annual General meet in 2023 and continues to show the global belief that Magnetic Maharashtra is the stable and dependable gateway to India.

Presenting Maharashtra as the premier investment hub under the theme "Bringing Confidence during a changing World", Shinde successfully concluded number of meetings with global political leaders, industry leaders, and decision-makers, and formalised MoUs worth Rs 3.53 lakh crores and received an expression of interest for an additional Rs 1 lakh crore investment, attracting a total investment of Rs 4.5 lakh crore all having significant FDI component, with a potential to create about 2 lakh jobs in various sectors including Electronics, IT/ITeS, Data Centers, Gems & Jewellery, Agriculture, Auto and Renewables.

Maharashtra CM participated in a Multilateral Meeting on Place-based Innovation for Growth, Sustainability, and Shared Prosperity, which was a roundtable discussion held during the

WEF congress session. Based on the various successes from across Maharashtra, CM discussed the potential of place-based innovations as an inclusive solution to global challenges and shared his ideas on steps that can be taken to amplify this potential. The roundtable also featured prominent speakers from different countries and top executives from leading companies like Deloitte, Salesforce, and Citigroup.

These strategic investments and expansion plans are poised to significantly boost the state's economic landscape. They include setting up a green hydrogen and ammonia plant by Inox Air Product, battery separator film manufacturing facility by BC Jindal, paper production capacity expansion by a global Natural Resource Conglomerate, brewery business expansion by ABInBev, Dighi Port expansion by Adani Group, JSW Steel in renewables, Godrej Agrovet's investment in cattle feed expansion and chemical segments, CtrlS Data centers setting up solar parks, Web Werks investment in IT/ITES Data Center and Hyundai Motor expansion plans.

Concluding his visit, **Eknath Shinde** said, "My visit to the World Economic Forum proved highly productive. The diverse investments across sectors reaffirm Maharashtra's unique position as India's gateway. I am resolute in leading the state's initiatives to achieve our ambitious



Officials of Maharashtra Government at WEF 2024

\$1 trillion GDP goal. The future holds promise, and I am enthusiastic about propelling Maharashtra's on-going success on the global stage which is only possible because of the amazing and talented people in Maharashtra."

MoUs were also signed with India Jewellery Park Mumbai (IJPM) for a gems and jewellery park, expansion by Indospace Logistics and ALU TECH. Steel companies including Llyod Metals, Surjagarh Ispat, Kalika Steel, Arcelor Mittal and Million Steels Pvt Ltd also signed MoUs for significant investments in the state. Swiss India Chamber of Commerce (SICC) & an 8 company Swiss Delegation also signed a MoU for exploring investment in multiple sectors. These ventures collectively represent a substantial infusion of capital and development, fostering economic growth and employment opportunities in Maharashtra.

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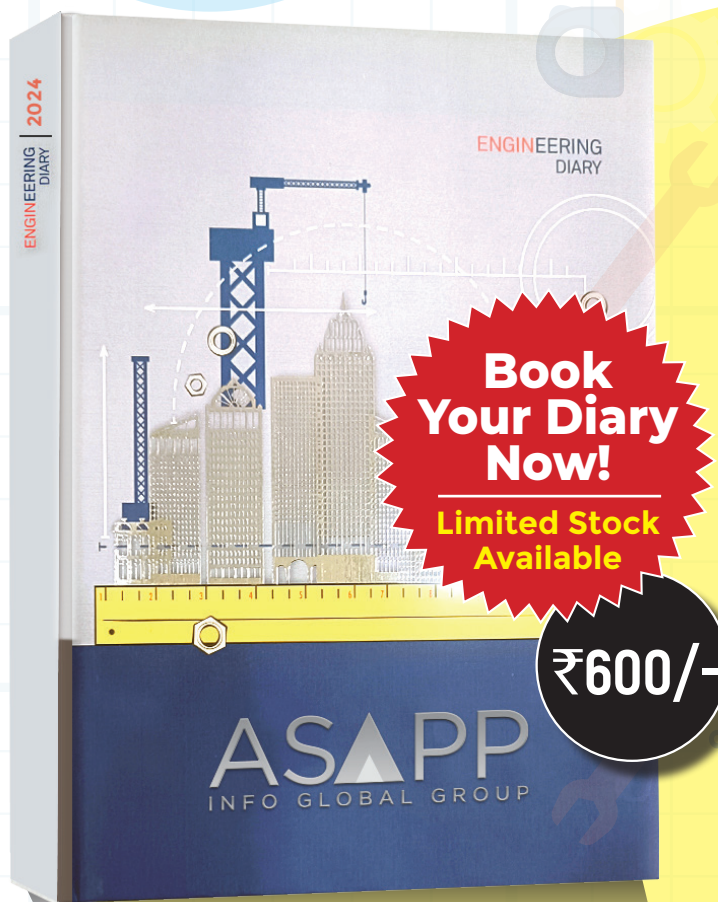


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Length		Mass (weight)		Temperature	
inches		grams		°C	
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0.6	15.24	10	253.5	32	0.0
0.8	20.32	100	2,268	32	0.0
1.0	25.40	1,000	22,680	32	0.0
1.2	30.48			32	0.0
1.4	35.56			32	0.0
1.6	40.64			32	0.0
1.8	45.72			32	0.0
2.0	50.80			32	0.0
2.2	55.88			32	0.0
2.4	60.96			32	0.0
2.6	66.04			32	0.0
2.8	71.12			32	0.0
3.0	76.20			32	0.0
3.2	81.28			32	0.0
3.4	86.36			32	0.0
3.6	91.44			32	0.0
3.8	96.52			32	0.0
4.0	101.60			32	0.0
4.2	106.68			32	0.0
4.4	111.76			32	0.0
4.6	116.84			32	0.0
4.8	121.92			32	0.0
5.0	127.00			32	0.0
5.2	132.08			32	0.0
5.4	137.16			32	0.0
5.6	142.24			32	0.0
5.8	147.32			32	0.0
6.0	152.40			32	0.0
6.2	157.48			32	0.0
6.4	162.56			32	0.0
6.6	167.64			32	0.0
6.8	172.72			32	0.0
7.0	177.80			32	0.0
7.2	182.88			32	0.0
7.4	187.96			32	0.0
7.6	193.04			32	0.0
7.8	198.12			32	0.0
8.0	203.20			32	0.0
8.2	208.28			32	0.0
8.4	213.36			32	0.0
8.6	218.44			32	0.0
8.8	223.52			32	0.0
9.0	228.60			32	0.0
9.2	233.68			32	0.0
9.4	238.76			32	0.0
9.6	243.84			32	0.0
9.8	248.92			32	0.0
10.0	254.00			32	0.0
10.2	259.08			32	0.0
10.4	264.16			32	0.0
10.6	269.24			32	0.0
10.8	274.32			32	0.0
11.0	279.40			32	0.0

Area		Volume	
sq. in.	sq. cm.	cu. in.	cu. cm.
1	6.45	1	16.39
10	64.5	10	163.9
100	645	100	1,639
1,000	6,450	1,000	16,390
10,000	64,500	10,000	163,900
100,000	645,000	100,000	1,639,000
1,000,000	6,450,000	1,000,000	16,390,000
10,000,000	64,500,000	10,000,000	163,900,000
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To Order

Govt implements QCO for stainless steel water bottles

Indian government has introduced Quality Control Orders (QCO) for stainless steel vacuum-insulated water bottles and portable stainless steel water bottles. The All India Steel Bottles Association stands firm and urges government for the non-extension of the QCO implementation date.

The All India Steel Bottles Association applauds the Indian government's commendable step in introducing Quality Control Orders (QCO) for stainless steel vacuum-insulated water bottles and portable stainless steel water bottles. As the industry faces challenges, this move aligns with 'Make in India,' 'Aatma Nirbhar Bharat,' and broader goals for a 'Swasth Bharat' and sustainable environment. This initiative has the potential to generate approximately 25,000 new jobs, predominantly in the MSME sector, which also boasts a substantial women employment base. The industry's commitment to quality and adherence to BIS standards has positioned India competitively on the global stage, with hopes of increased export volumes shortly.

The Bureau of Indian Standards (BIS) has played a crucial role in setting stringent quality standards across various industries, witnessing significant benefits in sectors like Toys, ACs, Helmets, Footwear, and 387 others. This has not only guaranteed product reliability but has also spurred innovation in vital sectors crucial for India's technological advancement.

The All India Steel Bottles Association, representing the voice of the industry, underlines the critical need for the non-extension of the QCO implementation date. As of the current date, numerous manufacturing units have obtained the necessary licenses, with others actively in the application process. However, the import lobby has requested a six-month extension on the BIS implementation, raising concerns among domestic

manufacturers. This potential delay could lead to inefficiencies, jeopardizing investments and creating market imbalances with low-quality imports. The livelihoods of over 30 per cent of the workforce, predominantly women, stand at risk due to the surge in imports, impacting their employment opportunities.

Bharat Agarwal, Director of Crown Craft, a leading player in the industry and a representative of the association, emphasised the industry's gratitude, stating, "We need to thank the government for bringing in the QCO, which, when implemented, will give a lifeline to our industry and offer Indian consumers better quality products. It's a very positive move. Indian companies already have installed capacities ready to replace import volumes immediately, showcasing our dedication to meeting the BIS standards. An extension would be a punishment to manufacturers who have diligently equipped themselves with the right materials and stocks compliant with BIS standards, assuming that non-BIS products would not be allowed for sale after January 14, 2024. The only beneficiaries will be importers who promote the marketing of cheap and substandard Chinese products, undermining the efforts of those invested in producing quality goods adhering to BIS standards."

Vedant Padia, Director of Placero International, states, "China's influx of low-quality products at lower rates poses a severe threat to MSME manufacturers. The raw material costs for stainless steel sheets have surged in the domestic market due to



the stoppage of imports, making it difficult for domestic manufacturers to compete with imported finished products. International stainless steel raw material prices have decreased, while domestic prices have increased due to QCO on raw materials. Despite these challenges, India's MSMEs have showcased the capacity to match domestic requirements. From having only one vacuum-insulated manufacturer from 2007 to 2017, the leadership and guidance of Prime Minister Modi Ji led the industry to witness the establishment of 20 factories in 5 years. However, compared to China, with over 10,000 factories employing over a million people, India's MSMEs are still far from reaching that scale."

The industry calls upon stakeholders, policymakers, and influencers to support the timely implementation of BIS QCO, ensuring a thriving and competitive environment, especially for the MSME sector.

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Igus adds new assembly helper to the readychain service

Efficient workflows and innovative solutions that save time and resources are essential. Motion plastic developer and producer, igus is supplementing its services with a new assembly helper: the fast positioner to handle ready-to-install e-chains more easily.



If machines or systems are at a standstill, this costs production companies valuable time and money. To make it easier for customers to install energy supply systems and reduce installation time, igus offers the readychain service with pre-assembled systems consisting of chain, cables, connector and many other components. What makes it special: igus offers customers everything from a single source igus. The energy chain is filled, fully harnessed with connectors, quality-checked and delivered ready for connection - on request in the exact installation position. Igus is now supplementing this service with a new "assembly helper": the fast positioner. This simple tool makes handling ready-to-install e-chains even easier.

In today's fast-paced world, time is invaluable, especially when it comes to operating machines and

systems. Efficient workflows and innovative solutions that save time and resources are therefore essential. "This is precisely why we offer our readychain service," says Markus Hüffel, Product Manager readychain and readycable at igus. Customers don't only benefit when it comes to professional work, such as cutting to length, assembling and

testing the cables. Assembly time is also reduced, which increases productivity. Hüffel: "It is important to us to deliver not just a product, but a complete solution. We also think about the customer's upstream and downstream processes and want to actively improve them. For this reason, we have now added a simple tool to our service that offers great added value: the fast positioner. It makes handling and precise positioning of the ready-to-connect energy chain systems even easier, safer and faster." Igus supplies the readychains including fast positioner in a preset installation position. For the customer, this simply means: unpack, position, detach the fast positioner - and the e-chain is ready for connection. There is no need for any other tools or double handling by several people. This makes it easier and faster to install.

Customised and sustainable solution

"We manufacture the individual parts of the fast positioner using 3D printing. They are tailored precisely to customer requirements - including individual colour selection and imprints as an identification aid," emphasises Hüffel. They can be easily placed between the upper and lower part of an energy chain and fixed in place with cable tie wraps. Removal after placement is just as simple. In addition, the material can be reggranulated and recycled. It is also possible to make the fast positioner from sustainable materials, such as corn starch. The material is both very robust and lightweight. It cannot rust and is compostable, depending on the source material.

Complete solution from a single source

The advantage with igus: customers get everything from a single source. Igus carries out design, production and harnessing on site. Hence, throughput times are short and delivery fast. The fast positioner, the latest addition to the readychain service, is not only a carrying handle, but also serves as a fixing device so that the chain is always in the ideal installation position. "With this tool, we show our customers that we have thought out our solution carefully from start to finish," concludes Hüffel.

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2nd METRO RAIL CONFERENCE

ACCELERATING THE LIFELINE OF URBAN TRANSPORT

28th FEB 2024

**Courtyard by
Marriott, Mumbai**

KEY HIGHLIGHTS OF THE CONFERENCE:

-  India boasts the third-largest metro network globally, with operational lines in 20 cities across 900 km.
-  By 2047, it is targeting 5000 km of operational metro rail in 100 cities.
-  Explore strategies for sustainable metro expansion in cities with varying populations.
-  Discuss the role of metros in curbing emissions, reducing congestion, and enhancing urban mobility.
-  Examine case studies of successful metro implementations and ridership growth.
-  Explore technologies which promote safety and sustainability.

ANTICIPATED RESULTS:

-  Networking prospects for stakeholders to engage in collaborative efforts for upcoming metro initiatives.
-  Development of practical strategies for expanding metro networks in burgeoning cities.
-  Understanding of the environmental and economic advantages associated with metro rail.
-  Insights into financing models to ensure the financial sustainability of metro projects.

METRO RAIL ORGANISATIONS THAT ATTENDED THE CONFERENCE



OUR ESTEEMED SPEAKERS



Dr E Sreedharan
'Metro Man of India'
Padma Vibhushan



Sanjay Bhatia
Upa Lokayukta,
Government of Maharashtra



KVB Reddy
MD & CEO,
L&T Metro Rail
(Hyderabad) Ltd.



Vinay Kumar Singh
CEO,
NCRTC



Dr Sanjay Mukherjee*
Commissioner,
MMRDA



Shravan Hardikar*
Managing Director,
Maharashtra Metro Rail
Corporation Limited



Shantanu Goel
Joint Managing Director,
CIDCO



Sudhendu J. Sinha
Advisor (Infrastructure
Connectivity & Electric Mobility),
NITI Aayog



UJM Rao, IRAS
MD,
Andhra Pradesh
Metro Rail Corporation Ltd.



Kumar Keshav
CEO, Dentschu Bahn
RTS Operations
India Ltd.



Mahesh Moroney
Dy Chief Project
Manager, Maharashtra
Metro Rail Cor. Ltd.



Suneet Maheshwari
Managing Director,
Udvik Infrastructure



Karun Raj Singh Sareen
Partner – Major Projects
Advisory, KPMG India



Suyash Trivedi
Executive Director (Civil),
Mumbai Metro Rail
Corporation Limited



Col. Shubhodoy Mukherjee
Chief Executive Officer,
Metro Business of
Reliance Group

* Invited

PANEL DISCUSSIONS:

Panel 1 - Technological Innovations in Metro Rail Infrastructure

Panel 2 - Smart Metro Cities: Integrating Metro Rail with Urban Development

Panel 3 - Improving Ridership for Metro Rail Network

OUR PARTNERS:

Technology Partner



Associate Partner



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Synergy Steels clinches award for Best Environment & Pollution Control Practices



Anubhav Kathuria, Director of Synergy Steels

Synergy Steels, a leading stainless steel company with its manufacturing facility in Alwar, has been honoured with the prestigious India Green Award for Best Environment and Pollution Control Practices, 2023.

The India Green Awards is a leading event-organising platform for environmental development, sustainability, leadership, and innovation. A highly esteemed recognition in environmental stewardship, the award serves as a platform to acknowledge organisations demonstrating exemplary commitment and innovative initiatives towards environmental sustainability. In this regard, Synergy Steels stood out, showcasing a resolve to address environmental challenges through its green initiatives.

A company with a green heart, Synergy Steels has implemented a holistic strategy to fortify sustainability across its manufacturing procedures and supply systems. The stainless-steel manufacturer has a comprehensive pollution control system designed not only to manage emissions from its manufacturing facilities but also to address fugitive emissions in workplaces. Further, the company, in recognition of the fact that LPG is a greener energy source, has transitioned to using LPG instead of LSHS, integrating it into critical processes such as reheating furnace, annealing furnace, preheaters, and other essential functions for the past year. Additionally, in pursuit of responsible waste management, Synergy Steels has also established a slag processing unit to efficiently process solid waste.

Over the years, in a bid to fulfil 50 per cent of its energy requirements through alternative sources by 2030, Synergy Steels has shifted its focus to solar power to meet its energy needs. The company has also established alliances with solar companies to fulfil a substantial portion of its energy requirements. Additionally, Synergy Steels utilises green hydrogen generated by renewables that is used with direct-reduced iron in its steel-making process.

Anubhav Kathuria, Director of Synergy Steels, expressed gratitude for the acknowledgement, stating,

"Receiving the Best Environment and Pollution Control Practices award is a testament to Synergy Steels' underlying commitment to environmental sustainability. Acknowledging the significant carbon footprint associated with the steel sector, contributing to approximately 7 per cent of global emissions, we are aligned with the Indian government's target of achieving net-zero emissions by 2070. Synergy Steels looks forward to playing an active role in realising this goal. As a company, we believe in leading by example, and this recognition motivates us to continue pushing the boundaries of what is possible in terms of eco-friendly manufacturing practices."

With an in-depth grasp of the planet's environmental problems, Synergy Steels remains steadfast in its commitment to environmental sustainability – striving for continuous improvement across its manufacturing procedures and supply systems.



LAPP India unveils all-encompassing single core wire, ÖLFLEX® WIRE MS



LAPP India, a leader in cable and connection technology, has launched ÖLFLEX® WIRE MS, an all-encompassing single core wire designed to revolutionise connectivity solutions across diverse industries and applications. Engineered with precision, these wires are making remarkable impact due to its high performance and reliability, offering versatility and a unique advantage in its voltage range.

ÖLFLEX® WIRE MS product family signifies all-around single core wires, finding applications across various industries. Its adaptability and versatility make it a preferred choice for different wiring needs across the Asian market. ÖLFLEX® WIRE MS adheres to multiple standards – UL/CSA, EN Standard – making it a versatile choice for a range of applications. Available in 1.05 (300V), 2.15 (600V), and 2.25 (1000V), ÖLFLEX® WIRE MS caters to diverse voltage requirements. ÖLFLEX® WIRE MS is built on a foundation of reliability, featuring certified PVC single cores that ensure consistent and secure connections in every application. It is designed to be cost-effective, providing a high-quality solution without compromising on affordability. ÖLFLEX® WIRE MS is ideal for internal wiring in electrical and electronic applications, making it a crucial component for seamless connectivity.

Gary Bateman, Managing Director at LAPP India, mentioned, "ÖLFLEX® WIRE MS reflects our commitment to providing innovative solutions that address the

dynamic needs of our customers. This all-round single core wires, manufactured locally, is poised to set new standards in connectivity solutions." Distinguished by its UL/CSA certification, ÖLFLEX® WIRE MS signifies compatibility across key markets. This certification offers various advantages, including a reduction in technical documentation, corrosion prevention with tin coating, and compliance with EU Directive 2011/65/EU (RoHS) and REACH.

As part of the ÖLFLEX® power and control cable lineup, ÖLFLEX® WIRE MS signifies a leap forward in cable and wire technology. It brings forth cutting-edge solutions for power and control requirements. The product is designed to be cost-effective, providing a high-quality solution without compromising on affordability.



Danfoss, Google enter into a strategic partnership on AI and energy efficiency



Danfoss and Google announced a strategic partnership to make use of the latest advances in artificial intelligence (AI) and promote energy efficient solutions in data centres.

Under the partnership, Danfoss, the Danish multinational engineering group, will use Google Cloud's generative AI capabilities to optimise the customer experience, streamline internal work processes and improve productivity across the organisation. This can be done, for example, by using gen AI to collect and surface information, automate knowledge, generate product descriptions, and create solutions with chatbots in e-commerce.

As a global leader in energy-efficient solutions, Danfoss is working with Google to implement sustainable cooling systems for data centres and to design systems that reuse the excess heat produced by data centres. Danfoss Turbocor® compressors provide highly reliable, highly efficient solutions when expertly applied by OEM partners and are being installed by Google to improve the energy efficiency and decarbonise heating and cooling systems in data centres.

The new agreement, announced during the AHR Expo in Chicago, USA, builds on an existing collaboration between the two companies, which were among the

founders of the net zero innovation hub in Fredericia, Denmark, announced in September, 2023, where a number of major players joined forces to accelerate the green transformation of data centres. Danfoss and Google are now taking a step further by entering into a broader partnership.

Google Vice President of Data Center Innovation, JP Clausen said, "This is a great example of a partnership utilising each other's strengths and using technology to optimise the customer experience, increase productivity and reach sustainability goals. Danfoss is a leader in energy efficiency, and these solutions help support Google's 2030 goal of running our data centres on carbon-free energy 24/7. We're happy to deliver AI innovation through Google Cloud, enabling businesses like Danfoss to operate in new and smarter ways."



Govt honours women workforce at Republic Day

In a remarkable celebration of Republic Day 2024, Prime Minister Narendra Modi invited guests from various fields and ministries to witness the Republic Day parade at Kartavya Path. This year, approximately 13,000 special guests had been invited to participate, aligning with the Government's vision of Jan Bhagidari, encouraging citizens from all walks of life to actively engage in the national festival.

Over 250 women workers from five prominent companies – Samsung, Wistron, Dixon, Pegatron and VVDN – participated in the Republic Day Celebrations. The presence of these women workers from the electronic manufacturing industry at the Republic Day parade reflects the government's dedication to inclusivity, diversity, and active citizen participation.

To honour and recognise the contribution of women workforce in Electronics Manufacturing Industry in India an event was organised by Ministry of Electronics and Information Technology (MeitY) and National Institute of Electronics & Information Technology (NIELIT) at Dr Ambedkar International Centre, New Delhi on January 27, 2024 wherein the Secretary, MeitY S Krishnan, graced the occasion as the Chief Guest. The other officials present during the event were Dr Madan Mohan Tripathi, DG, NIELIT Dr Abhilasha Gaur, CEO, ESSCI, Girija Vedi, SVP, VVDN, and Subhanshu Tiwari, ED, NIELIT.

The Secretary, MeitY, addressed and interacted with these Women Workers from Electronics Manufacturing Industry. Addressing the participants during the event, S Krishnan said, "Women exhibit a spectrum of qualities that significantly contribute to the success and dynamism of any industry." He hailed, "Women consistently demonstrate reliability, integrity, and a steadfast commitment to their roles, fostering a sense of dependability within the workplace."



Tata Motors introduces Turbotronn 2.0 engine for truck



Tata Motors, India's largest commercial vehicle manufacturer, introduced its technologically-advanced engine, Turbotronn 2.0, to deliver a new benchmark of excellence in trucking. Highly fuel efficient and reliable, this indigenously-developed versatile engine will power Tata trucks in 19-42 tonne range for multiple applications across categories. Perfectly suited for rapidly growing e-commerce, logistics, parcel and courier segments, the Turbotronn 2.0 engine is designed to address specific needs expressed by customers; offers enhanced driving experience and are engineered to deliver robust performance with inherent benefits of lowering Total Cost of Ownership (TCO). It has been rigorously tested for over 30 lakh km and 70,000 cumulative hours across diverse duty cycles and harsh terrains. Fully compliant with the BS6 Phase 2 emission norms, the Turbotronn 2.0 is platform-agnostic and offered with Signa, Ultra, LPT and cowl platform and comes with a warranty of 6 years/6 lakh km.

A 5-litre turbocharged diesel engine, the efficient and versatile Turbotronn 2.0 is offered in multiple states of tune ranging from 180-204 PS and engineered to offer a flatter torque curve in the range of 700-850 Nm for better drivability. With longer oil drain and service intervals of 1 lakh km, its distinctive attributes ensure more vehicle uptime to generate higher revenues.

As a comprehensive mobility solutions provider, Tata Motors commercial vehicles come with advanced features, efficient powertrains and richer value-additions. Fleet owners benefit from better fuel efficiency, lower operating costs, high vehicle uptime, real-time tracking and analytics through Tata Motors Fleet Edge. Its Sampoorana Seva 2.0 initiative provides unmatched vehicle lifecycle management services, including fleet management solutions, annual maintenance contract and roadside assistance amongst others. With the widest service network of 2500+ touchpoints, staffed by trained specialists and backed by Tata Genuine Parts, Tata Motors ensures unparalleled quality and service commitment.



LOHUM ties up with TORK Motors to recycle EV batteries

LOHUM, India's largest producer of sustainable energy transition materials via battery recycling and low carbon refining and battery repurposing, and TORK Motors, India's pioneering electric motorcycle manufacturer, are pleased to announce a strategic partnership through a multi-year supply contract agreement for the collection and recycling of TORK's flagship Kratos R electric motorcycles' Lithium-ion batteries upon reaching end-of-life.

LOHUM is TORK's first battery Extended Producer Responsibility (EPR) partner in India as both companies strive to accelerate sustainable e-mobility and scale up a low-carbon EV battery materials supply chain in India. LOHUM being registered as R4 recycler under India's Battery Waste Management Rules (BWMR 2022) enables EV battery OEM's to rely on LOHUM to go closed-loop. The agreement synergizes both companies' vision for circularity to drive the EV revolution and energy transition currently underway in India, while reducing the demand for mined, primary ecosystem battery raw materials, which come at steep environmental and humanitarian costs.

The agreement, enabled by LOHUM's DETX™ weighted future battery buyback price index. Under the partnership, LOHUM will recycle lithium-ion batteries from TORK Motors via the NEETM™ multi-stage hydro-metallurgical process at LOHUM's 'Reclaim' facility in Greater Noida.

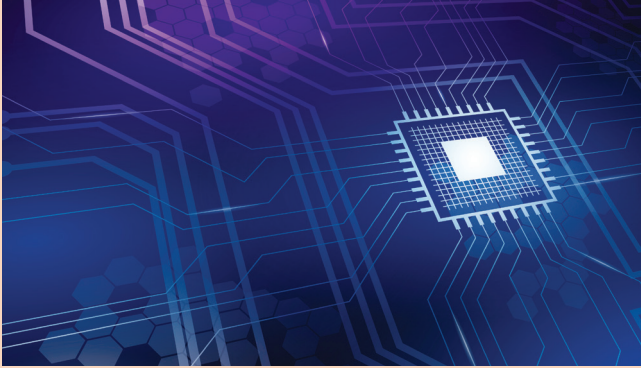
LOHUM's Senior VP of Business Operations, Chetan Jain expressed, "We applaud TORK Motors' commitment to making sustainable EV motorcycles ideal for India's diverse driving conditions, and the company's readiness for new opportunities for innovation. This partnership with TORK will help accelerate the proliferation of Electric Vehicles in India's massive 2-wheeler segment while contributing to a sustainable supply of recycled, secondary ecosystem energy transition materials from used inventory."

The agreement designates LOHUM as TORK Motor's preferred recycling partner to ensure that TORK motorcycle EV batteries are recycled sustainably under India's BWMR requirements to produce battery raw materials with EPR certification.



IESA launches comprehensive report on semiconductor, ESDM policies in India

India Electronics and Semiconductor Association (IESA), the premier industry association and thought leader to the Nation in Semiconductor and ESDM space, have launched a new report, the 2024 Edition of Compendium of Semiconductor & ESDM Policies in India. The report is a comprehensive and updated guide to the policies and incentives offered by the Government of India and 14 states for the Semiconductor and ESDM sector. The report



got launched by S Krishnan Secretary MEITY at IESA Vision Summit 2024.

The Government of India is a key enabler in providing financial and non-financial support in addition to ease of doing business to boost interest and investment by the private sector in large scale design and manufacturing. Around 8 states in India, including Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Odisha, Tamil Nadu, Telangana, and Uttar Pradesh, have come up with a clear mention of catering to Semiconductor Industry. Out of these, 4 states (Gujarat, Odisha, Tamil Nadu, Uttar Pradesh) have already come up with a specified Semiconductor Policy. IESA's latest report compares and contrasts the various policies and incentives offered by different states, and provides insights and recommendations for the stakeholders.

Prepared in partnership with Feedback Advisory, the report aims to serve as a ready reckoner for those who need to make decisions — the government, the investors, the business leaders and the entrepreneurs and also the future policy makers of the country. It provides a factual summary of the Semiconductors and ESDM related Policies of the Government of India and State Policies, covering aspects such as Manufacturing and Fabless Policy, Eligibility of Companies, Fiscal Subsidies, Non-Fiscal Subsidies, and Policy for Fabless Firms.

The 2024 Edition of Compendium of Semiconductor and ESDM Policies is a must-read for anyone who wants to understand the current scenario, the opportunities, and the challenges of the Semiconductor and ESDM in India. The report provides insights and recommendations for the industry and the policy makers to take the necessary steps to make India a global destination for the industry. IESA, as the voice of the industry, will continue to work with the government and the stakeholders to create a conducive ecosystem for this sector in India.



Schaeffler showcases advanced fuel cell, transmission systems at SIAT Expo 2024

Schaeffler India, the motion technology company, participates in the 18th edition of the SIAT Expo, held from January 23-25, 2024, in Pune, India. The company showcased its latest advancements in fuel cell and clutch, transmission systems and lifetime solutions, highlighting

its commitment to sustainable and efficient mobility solutions.

SIAT Expo 2024, themed Transformation Towards Progressive Mobility serves as a premier platform for showcasing the latest advancements in automotive technology. Schaeffler India stands among the leading exhibitors, presenting innovative solutions that address key challenges in the automotive industry, including emissions reduction and improved fuel efficiency. Aashish Bhatia, President Automotive Technologies, Schaeffler India, stated, "We are pleased to present our solutions in fuel cell, clutch, and transmission systems at SIAT Expo 2024. Our goal is to push the boundaries of efficiency and sustainability, and these technologies showcase our unwavering commitment to achieving both. From clean-burning fuel cells to intelligent transmission systems, we deliver solutions that pave the way for a cleaner and more efficient future for mobility."



Fuel Cell system

Schaeffler showcased its latest fuel cell technologies, which offer a clean and efficient alternative to traditional internal combustion engines. The company's fuel cell systems are designed for a variety of applications, including passenger cars, commercial vehicles, and buses. Company also showcased advanced clutch and transmission systems, which are designed to improve fuel efficiency and performance. The company's products include a variety of innovative technologies, such as dual-clutch transmissions and automated manual transmissions. Schaeffler Lifetime Solutions offers a comprehensive range of industrial maintenance products, services, and solutions for machines, covering various industries. It is specifically designed to keep workshops and plants running smoothly throughout their lifetime.

Schaeffler's participation in SIAT Expo 2024 underscores the company's commitment to the Indian automotive market. The company has been operating in India for over 50 years and is a leading supplier of automotive components to major OEMs. Schaeffler is also committed to sustainability and is working to reduce its environmental impact.

Gandhi Automations offers whole range of logistics solutions

Electro-hydraulic Dock Levelers offered by Gandhi Automations are not only “a bridge for connecting a vehicle”, but also facilitate fast, smooth and safe transition by compensating the difference in heights between the loading bay and the vehicle.

Gandhi Automations is India's top entrance automation and loading bay equipment company. This widely recognised position has been achieved over years of hard work, innovation, commitment to quality and reliable customer service. The company is also proud to be certified to ISO 9001 : 2015, ISO 14001 : 2015 & ISO 45001 : 2018. Since its inception in 1996 we have been manufacturing, importing, distributing and installing products that are problem free and easy to operate.

The company offers complete logistics solutions by providing dock levelers, dock shelters, sectional overhead doors and dock houses.

Electro-hydraulic Dock Levelers offered by Gandhi Automations are not only “a bridge for connecting a vehicle”, but also facilitate fast, smooth and safe transition by compensating the difference in heights between the loading bay and the vehicle. This contributes to minimising energy used and savings on heating and chilling costs resulting in maintaining the quality of the transported goods. Dock



Levelers offered by Gandhi Automations are designed as per EN 1398 standard for the most demanding loading and unloading operations.

Efficient loading and unloading the goods

The importance of efficient loading the goods has always been evident, and it has increased over the years, essentially for two

reasons: the lesser availability and the higher cost of manpower. Consequently lesser qualified manpower is being utilised which leads to damage to the goods.

The cost of loading and unloading the goods can be calculated precisely and is exactly definable, which allows for a scientific approach to find out the investment that goes into the process. Gandhi Automations has always designed solutions based on such scientific approach and feedback from clients. The dock levelers offered by the company ensure loading and unloading with lesser effort and minimal cost.

It is possible to load and unload your products in a safe way and in the process, obtain remarkable energy savings. The dock leveler remains with the loading bay in rest position and the sectional overhead door closed, until the vehicle is positioned. The driver drives back centring to the dock shelter and



stops the vehicle the moment it gets in contact with the bumpers.

The sectional overhead door is then opened only when the vehicle is positioned, brakes are applied and engine is shut off. This eliminates the exit of hot air, intake of cold air (or the opposite in hot area and inside air conditioned places). After the sectional overhead door opens, the lip of the dock leveler connects to the truck bed for loading/unloading to take place.

At the end of the loading/unloading the dock leveler is put in rest position and the sectional overhead door is closed, without moving the vehicle. The vehicle then departs at the end of the process. Following are the four types of dock levelers:

❑ **Radius Lip Dock Levelers:**

Radius Lip Dock Levelers are available in multiple size and capacities. It allows the dock to connect with the truck bed, thus making it convenient to drive directly on and off with forklift trucks etc. Also the Self-Cleaning Lip - Hinge System does not retain dust and dirt which allows a smooth operation.

❑ **Telescopic Lip Dock**

Levelers: Telescopic Lip Dock Levelers are ideal for connecting vehicles unable to drive near dock i.e. sea containers, side loading railway wagons etc. These Dock Levelers can be supplied with a lip extending up to 1 m.

❑ **Edge-of-Dock Levelers:**

Edge-of-Dock Leveler is developed in compliance with the latest European safety standard, EN 1398. It has a capacity of 6000kg and is suitable for use with all types of material handling equipments.

❑ **Forklift Roll-Off Barrier Lip**

Dock Levelers: The newly introduced product Forklift Roll-Off Barrier Lip Dock Leveler add a run-off protection which prevents accidental forklift roll-off when



the Overhead door is open and no trailer is stationed at the dock. These dock levelers are designed and built to provide all the benefits of the hydraulic dock leveler along with the additional benefit of providing a formidable barrier.

Entrance door with automations

Gandhi Automations offers Porto and Max Vista - Automatic Sectional Overhead Doors - the ideal solution for all industrial and commercial needs.

Porto: Porto Sectional Overhead Doors are ideal for all industrial and logistics needs. The design and different solutions offered ensure the door to be aesthetically pleasing and perfectly suited to any architectural environment - from modern and traditional industrial buildings to fine commercial buildings. As these doors slide vertically, stopping in the proximity of the ceiling, they blend in with the architectural features of the building. Porto doors are built to ensure the highest ease and flexibility of use which, in turn ensures a quick, hassle free and accurate replacement of old doors. Their compact size ensures more available space both inside and outside the premises. Depending on the structure of the building and the requirement, a choice can be made from a standard lift, vertical lift, horizontal lift, low headroom or inclined lift. Porto range comprises of a wide series of track systems, panel options and safety features.

Special glazed doors provide excellent lighting and vision into the building.

Max Vista: Max Vista Sectional Overhead Doors are ideal for industrial and commercial buildings. The doors are made with a combination of aluminium panels and transparent acrylic, gridded or meshed windows giving it a distinctive look and enhancing the look of a building. Max Vista Doors make the environment bright and pleasant to work in as it allows natural light to pass through the large clear areas.

Gandhi Sectional Overhead Doors provide heat insulation and sound proofing thus improving the working conditions on the premises and saving energy. The products are affixed with a CE mark making them reliable and safe.

Gandhi Automation's Dock Levelers & Sectional Overhead Door are equipped with the most secure safety devices and accessories. **IPF**

For more details contact Gandhi Automations Pvt Ltd, Mumbai, Tel: +91 2266720200/66720300, email: sales@geapl.co.in or visit: www.geapl.co.in

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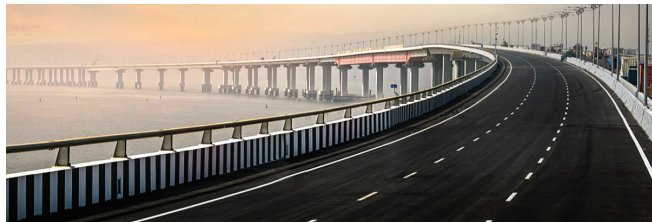
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Trending Technologies

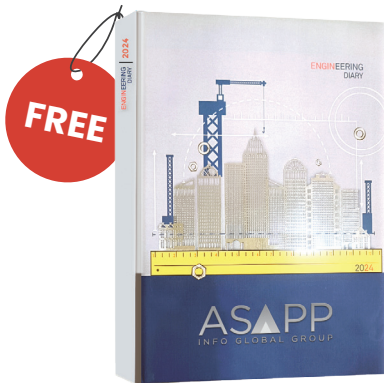


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IESS XI 2024	March 04-06, 2024, Codissia Trade Fair Complex Coimbatore	EEPC India, Kolkata Tel: 033-22890651/52 Email: eepcho@eepcindia.net
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SIAF - SPS INDUSTRIAL AUTOMATION FAIR GUANGZHOU	March 04-06, 2024 Canton Fair Complex Haizhu District, Zhanchang W Rd 510308 Guangzhou, Guangdong, China	Guangzhou Guangya Messe Frankfurt Co. Ltd. Guangzhou, China Tel: +86 (0)20 38251558 Email: phil.wong@hongkong.messefrankfurt.com
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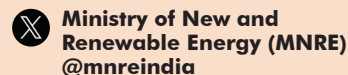
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Witnessing history unfold in Budaun as Hon'ble CM of UP, Yogi Adityanath Ji, pioneers a green revolution by inaugurating HPCL's Biomass CBG Plant.

This groundbreaking project is set to transform the energy landscape of Uttar Pradesh by ushering sustainable energy. The project will empower local farmers and create immense employment opportunities in the region. Under the visionary leadership of Hon'ble Union Minister Sh. Hardeep Singh Puri Ji, this initiative marks a transformative step towards greener #ViksitBharat #DeliveringHappiness



The revised guidelines for #PM_KUSUM have just been released, simplifying the process and boosting implementation efficiency.

A major step towards accelerating progress in sustainable agriculture & renewable energy.



NGEL signs MoU with Govt of Maharashtra for development of #GreenHydrogen, Pump Hydro and #RE projects. #greenenergy #poweringprogressresponsibly #NTPC



Today the Hon'ble Minister of #MoPNG & @MoHUA_India, Shri @HardeepSPuri, and Shri Pankaj Jain, @Secretary_MoPNG, spoke at a Curtain Raiser press conference for the #IndiaEnergyWeek2024 in New Delhi. #IndiaEnergyWeek2024 set to unfold in Goa from Feb 6-9, this year's event showcases a remarkable growth in scale and impact over the inaugural event in 2023, with more global participation, delegates and exhibitors. A pivotal moment in the energy sector!



Coal India to set up 300 MW solar power project in Gujarat #CoalIndia



India had successfully launched its inaugural commercial flight featuring 1% ethanol-blended Sustainable Aviation Fuel (SAF). To reach the targeted 1% SAF blending in Aviation Turbine Fuel (ATF), India anticipates an annual requirement of 14 crore liters, escalating to 70 crore liters for a 5% blending goal. A significant leap toward sustainable aviation practices. Ethanol blending will immensely benefit sugar farmers and help green energy transition.



Watch @Gol_MeitY's tableau at #RepublicDayParade 2024 reflecting the role of AI in daily life, showcasing in an aesthetic manner, with women as key protagonists in all sectors.





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