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With India emerging as the bellwether of the global economy, Industrial Products Finder (IPF) – after serving the industry **for the last 52 years** – is now transforming into **SMART MANUFACTURING & ENTERPRISES** to meet the new needs of the manufacturing sector.

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- Have more columns & features carrying in-depth analysis
- Track key developments in more industrial segments
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- Go beyond products & equipment, and
- Analyse every aspect – from Technologies to Government Policies to Business Strategies

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Skilled Labour: THE MISSING LINK

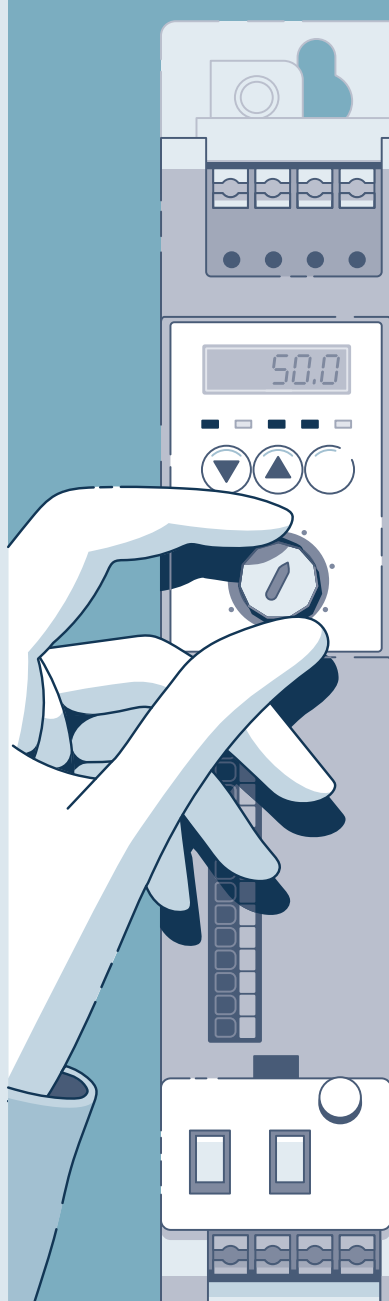
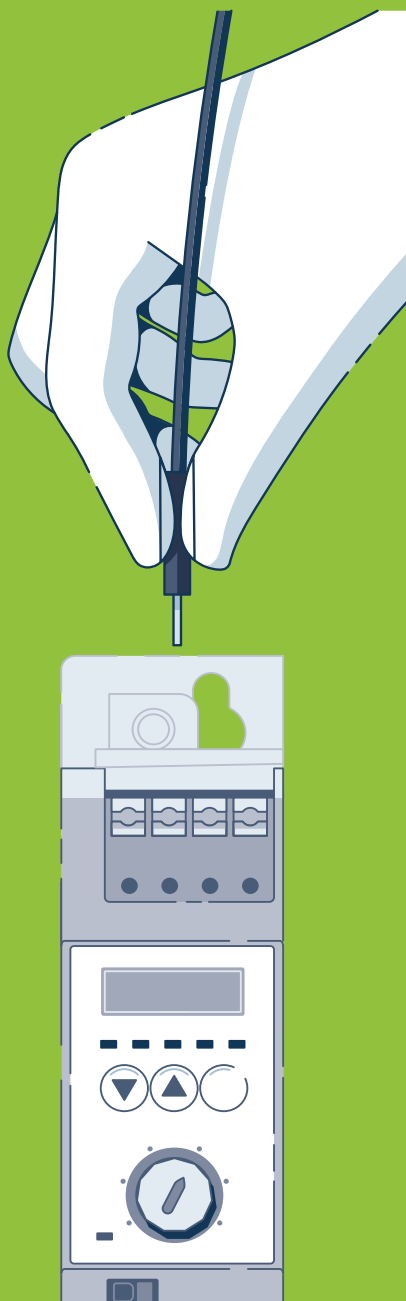
According to Morgan Stanley, shortage of skilled labour is one of the key reasons behind India's inability to reach China's 8-10 per cent growth rate. India needs to fix the skill set gap fast, to emerge as the world's manufacturing powerhouse.

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“After serving the industry for the last 52 years - will now transform into Smart Manufacturing & Enterprises (SME) to fulfill the new needs of the manufacturers and widen its coverage of industrial segments.

IPF turns smart with SME

In 1972-73, the India's economy grew by about 2 per cent compared to previous year with industrial sector registering a growth of only 4.5 per cent while agriculture production declining by 1.7 per cent. Amid this, **Industrial Products Finder (IPF)** was launched in October 1972 when India was still a closed economy with restrictions on imported products, excessive regulations and bureaucratic control (the "Permit Raj" regime). During this period, IPF played a pivotal role in bridging the knowledge gap of the Indian industry by presenting latest products from across the world.

The 1980s marked the shift towards liberalisation with Maruti Udyog Ltd (erstwhile name of Maruti Suzuki India Ltd) being incorporated in 1981 as a joint venture partnership between the Government of India and Japan's auto major Suzuki. Entry of Maruti kick-started the industrialisation in the country as the company was forced to develop local supply chain.

And then came the 1991 reforms that dismantled barriers like industrial licensing and reduced import tariffs. This resulted in rapid liberalisation exposing local industries to international competition while simultaneously presenting growth opportunities through collaboration with global companies. India also started witnessing a shift in its manufacturing dynamics. Companies started to diversify from traditional industries (like textiles, handicrafts, agro-based, etc) to engineered parts & components; thus widening India's manufacturing portfolio.

When the manufacturing sector was changing, IPF also kept on evolving.

Internationally, multinational companies in their quest to expand businesses latched onto the globalisation bandwagon while focusing on improving productivity by using modern machines. Shift was clear from manual to mechanical to automation. Introduction of computers, Internet and other kinds of electronics led to the Third Industrial Revolution (or digital revolution). This was followed by the next phase in the digitization of the manufacturing sector, Industry 4.0, which was driven by disruptive trends such as the rise of data and connectivity, analytics, human-machine interaction, and increased usage of robotics. Industry 4.0 enabled smart manufacturing via intelligent, connected factories.

Companies are now integrating cutting-edge technologies such as artificial intelligence (AI), robotics, and the Internet of Things (IoT) into its manufacturing processes. In an era marked by rapid technological advancements, manufacturing sector is undergoing transformative shifts. At the same time, Indian manufacturing sector's stature in the world has increased with monumental changes in government policies and company strategies.

In line with these changes, Industrial Products Finder (IPF) - after serving the industry for the last 52 years - will now transform into **Smart Manufacturing & Enterprises (SME)** to fulfill the new needs of the manufacturers and widen its coverage of industrial segments. Through news, views and in-depth articles, SME will give a fresh perspective on every aspects of the manufacturing sector - from Products & Technologies to Manufacturing Policies to Business Strategies.

Though the look is new, our Commitment remains the same - i.e. to be a facilitator for your business growth. As we embark upon the New Journey, we are banking on your support to make "Smart Manufacturing & Enterprises" the voice of the modern Indian manufacturing sector.

We will look forward to your feedback and suggestions on the first edition of "Smart Manufacturing & Enterprises" to serve you better in the future.



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COVER STORY

32 Skilled Labour: The Missing Link

It is paradoxical that inspite of having the world's largest employable population, Indian manufacturers are struggling to find skill labour. India needs to fix the skill set gap fast, if it wants to become a \$1 trillion manufacturing economy and emerge as the world's production powerhouse.



Country Focus: Germany

38 Indo-Germany trade alliance: A model of resilience and growth

Over time, bilateral trade has not only increased but has also led to the discovery of new business and investment prospects by



German companies in India and vice versa, writes Rajesh Nath, MD, VDMA India.

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"KRAMSKI is focusin g on new industries and exports for growth"

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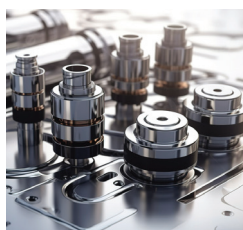
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Being a reliable option for various industrial applications, hydraulic equipment or components are witnessing



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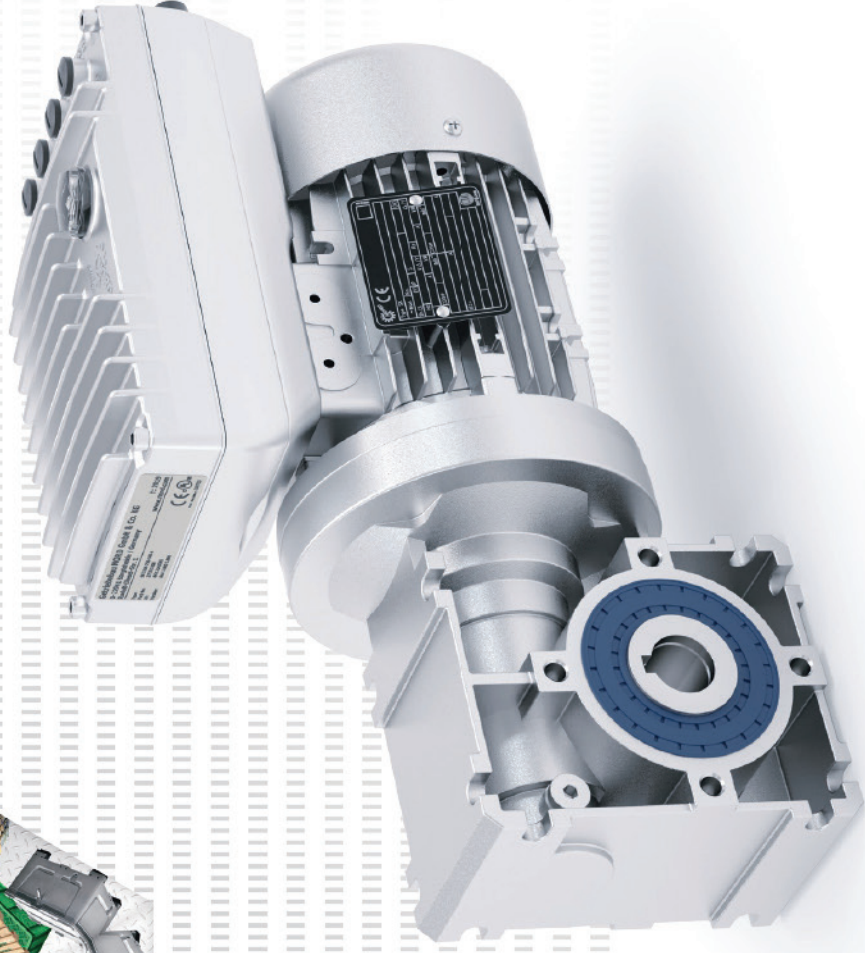
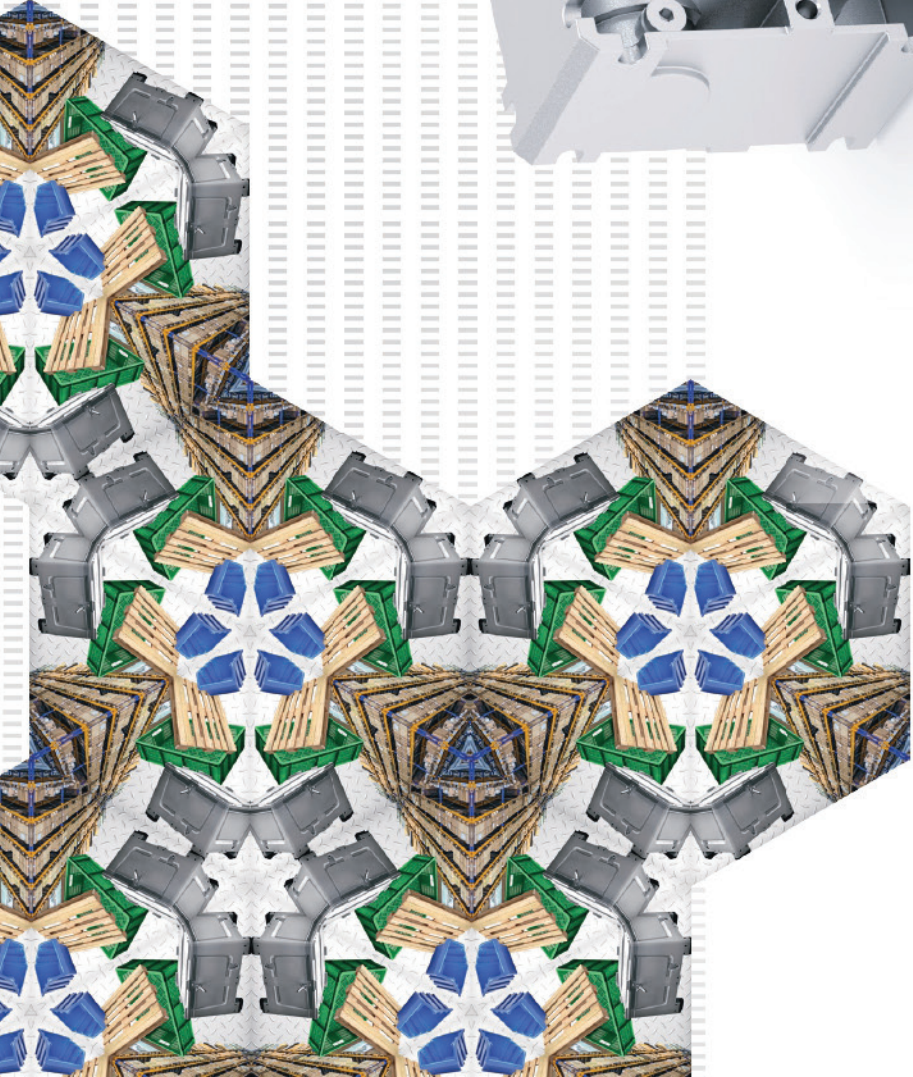
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"Woodfield Systems eyes more acquisitions to fuel growth"



Our drive solutions for logistics centres

Cost-optimised drive technology for conveyor systems

- ▶ Decentralised drive technology reduces wiring efforts
- ▶ Variant reduction optimises stocks
- ▶ Flexible thanks to small installation spaces and wide speed range

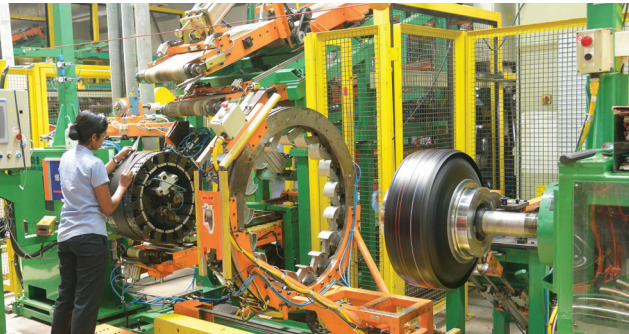


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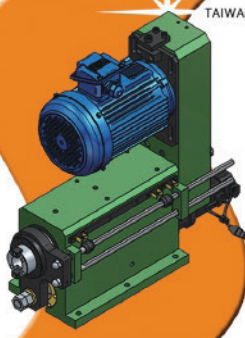
HANN KUEN MACHINERY & HARDWARE



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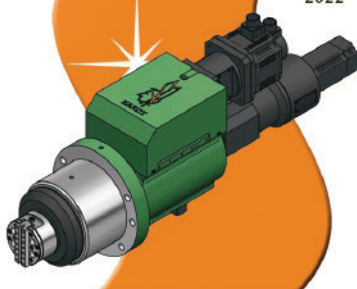
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2017



Servo Type Drilling / Tapping
Spindle Head Unit



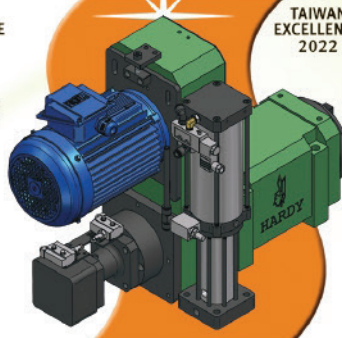
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Built-in Motor Facing Head Unit - Flange Type



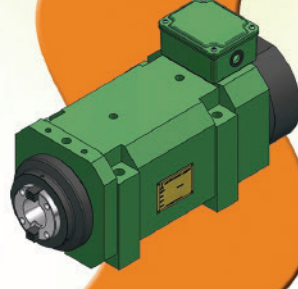
TAIWAN EXCELLENCE
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Boring/Milling Head Unit with ATC



TAIWAN EXCELLENCE
2020



Built-in Motor Spindle Unit



Built-in Spindle



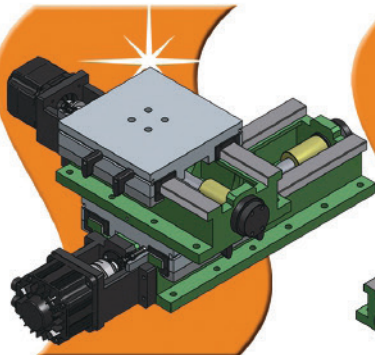
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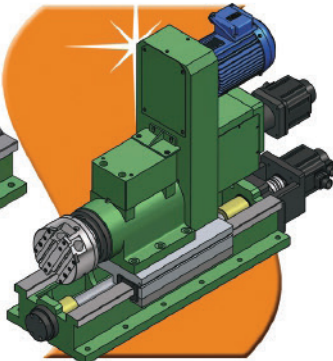
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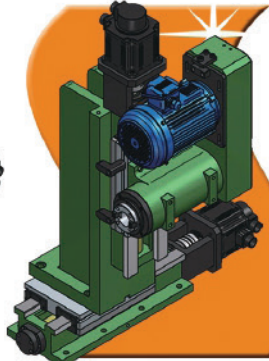
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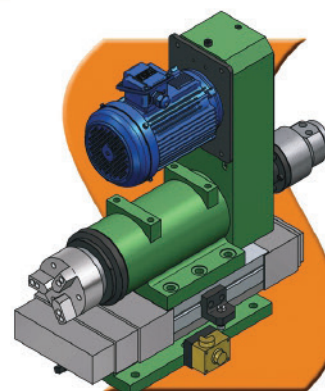
XY Servo Hardness Slide Unit



Servo Facing Head +
Servo Ball Screw Slide Unit



XYZ Servo Slide Table + Milling Head



3-Jaw Chuck Spindle + Slide Unit



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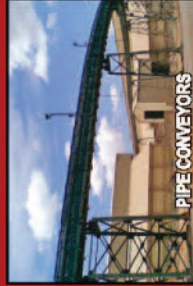
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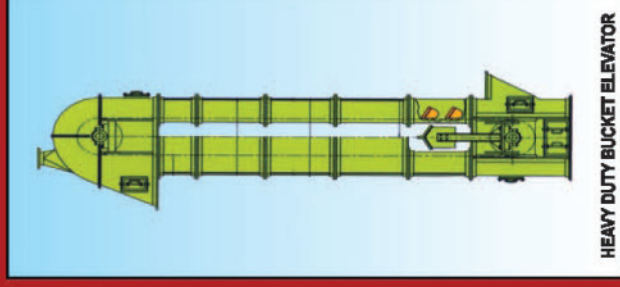
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Haimer acquires 25% of Wintool AG, agrees on global partnership with TCM group

The Haimer Group has acquired 25 per cent stake in WinTool AG and has agreed on a strategic partnership with the TCM Group, which grants HAIMER global distribution rights to WinTool and Toolbase. Prior to the decision to acquire this stake in the company, WinTool and Toolbase were introduced in the company's own production facilities and tested in continuous use, proving their worth in a very short period of time. In the future, TCM will rely on HAIMER as a strategic supplier in the field of tool holders, shrinking, balancing and presetting machines in the core business of tool management.

Tool management is becoming increasingly important in manufacturing companies. HAIMER, a global player and market leader for tool holding and presetting, has therefore been offering innovative tool room solutions for

years, in which HAIMER shrinking, balancing and presetting machines ensure high efficiency.

At EMO 2023, HAIMER took an important step forward and has since been offering its successful hardware products for machine tools alongside a powerful digital range consisting of the WinTool software, an independent tool management system, and Toolbase, a smart tool dispensing system with software and hardware components.

In order to realise this, HAIMER entered into a competence partnership with the TCM Group, which includes WinTool AG and Achterberg GmbH, who have built up an excellent reputation as developers and producers of the WinTool and Toolbase solutions over many years.

Testing Equipment

Teledyne FLIR unveils new acoustic imaging camera, FLIR Si2-Pro

Teledyne FLIR has introduced new version of acoustic imaging camera, FLIR Si2-Pro, which helps the user to significantly lower costs associated with mechanical bearing issues and partial discharge on electrical equipment. It also enables to drastically reduce leaks in facilities, cutting down expenses related to compressed air and gas leaks. With the Si2 series, the user will experience the best-in-class performance, decision support, fleet management, and enterprise data integration available.

Acoustic imaging camera offers advantages like:
Advanced leak detection: Precisely detect, locate,

and measure compressed air leaks, gas leaks, and partial discharges. Identify and quantify both minor and elusive issues from up to 200 m (656 ft) away—boosting operational efficiency and ensuring safety.

Bearing fault analysis: Save on costly repairs, reduce downtime, and enhance maintenance efficiency by identifying bearing defects before they cause equipment failure.



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Machine Tools

UNITED GRINDING to showcase latest technologies at GrindingHub

The UNITED GRINDING Group will be presenting the latest technologies at GrindingHub from the fields of grinding, eroding, measuring and additive manufacturing with 12 machines. The motto of this year's trade show appearance is "Stay Connected" and therefore the focus is on connectivity solutions, which will be presented on 840 sq m. In addition to digital assistance systems – the UNITED GRINDING Digital Solutions™ – interested visitors can find out about digital customer care solutions or how machines can be connected with each other and with their production environment via the universal

manufacturer-independent umati data interface.

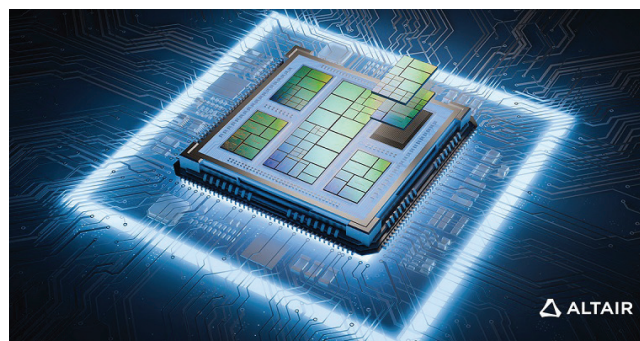
On the first day of the trade show, the group will also be unveiling an innovation from the WALTER brand in the field of tool machining as a highlight of its presence. Along with WALTER machines for tool machining, machines from the STUDER brand in the field of cylindrical grinding and BLOHM in the field of surface and profile grinding will be on display. The group will also be presenting its additive machine tool for the industrial 3D printing of metal parts, the IMPACT 4530, from its IRPD brand.

Electronics

Altair SimSolid revolutionises Simulation for electronics industry

Altair, a global leader in computational intelligence, announced the upcoming release of Altair SimSolid for electronics, bringing game-changing fast, easy, and precise multi-physics scenario exploration for electronics, from chips, PCBs, and ICs to full system design.

"As the electronics industry pushes the boundaries of complexity and miniaturization, engineers have struggled with simulations that often compromise on detail for expediency. Altair SimSolid will empower engineers to capture the intricate complexities of PCBs and ICs without simplification," said James R. Scapa, Founder and Chief Executive Officer, Altair. "Traditional simulation methods often require approximations when analyzing PCB structures due to their complexity. Altair SimSolid eliminates these approximations to run



more accurate simulations for complex problems with vast dimensional disparities."

Altair SimSolid has revolutionised conventional analysis in its ability to accurately predict complex structural problems with blazing-fast speed while eliminating the complexity of laborious hours of modeling.

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Robotics

Piaggio Fast Forward unveils robot with smart tracking tech, Kilo

Piaggio Fast Forward (PFF), the Boston-based subsidiary of the Piaggio Group active in robotics and mobility for the future, has presented kilo, a revolutionary robot featuring smart following technology. Unveiled at Modex, America's main supply chain tradeshow hosted in Atlanta (Georgia, USA) from March 11-14, 2024, kilo is a hands-free robotic flat bed with a payload of up to 130 kg. Fitted with the innovative package of sensors and 4D radar imaging developed by PFF, it can follow the operator, move autonomously, and travel along more than 100 paths stored in memory.

"Our robotics technology is augmenting workforces around the world; kilo offers customisable options with



the ability to utilize state-of-the-art software tools to manage the human-robot relationship. From manufacturing to any industry that relies on the repetitive movement of goods across campuses and production facilities, PFF's autonomous technology allows our robots to safely move with and around workers in complex

environments, streamlining workflows and increasing productivity," said Greg Lynn, CEO, Piaggio Fast Forward.

kilo is designed to work alongside humans, enabling users to move materials naturally and reducing the risk of injury.

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MSME Update

DGFT partners with DHL to prepare MSMEs for export in 76 districts

The Directorate General of Foreign Trade (DGFT), an arm of the Commerce and Industry Ministry, Government of India, on March 14, 2024, signed an agreement with global logistics service provider DHL to make Indian micro, small and medium enterprises (MSMEs) of 76 districts export-ready by leveraging e-commerce, a government spokesperson said. The Union Commerce Ministry has been actively engaging in boosting e-commerce exports from the country, leveraging its 'district as export hubs' initiative. The goal is to promote and enable MSMEs to explore the international markets through e-commerce channels.

Taking this initiative further, DGFT has been collaborating with various e-commerce platforms and other service providers to handhold and hold capacity building and training sessions in the identified districts.



As DGFT signed the MoU, Commerce Secretary Sunil Barthwal underscored the importance of e-commerce ecosystem, and underscored the strides taken by India to create a digital infrastructure which could be leveraged to encourage MSMEs from rural India to connect to the world market. DGFT and DHL aim to bring together a team of knowledge experts to assist Indian exporters and MSMEs in the identified districts through handholding sessions and develop a start-up kit for first-time exporters wanting to go global.




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Renewable Energy

RECPDCL, BHEL sign MoU for RE projects

REC Power Development and Consultancy Limited (RECPDCL), a wholly owned subsidiary of REC Limited, has signed a MoU with Bharat Heavy Electrical Limited (BHEL) on March 15, 2024. The MoU targets for joint development of utility scale renewable energy (RE) projects across the country thereby contributing to the clean energy targets of the nation through a dedicated Special Purpose Vehicle (SPV). The SPV will be benefitted by the core engineering expertise of BHEL and infrastructure investment expertise of REC Limited. The SPV will focus to cater energy requirement of preferably the commercial and industrial segment with initial capacity of 1 GW which would further be scaled up. Koppu Sadashiv Murthy, CMD, BHEL said that there are ample opportunities available in the RE segment for leveraging joint strengths of both the organisations in order to achieve the ambitious targets set by GoI.



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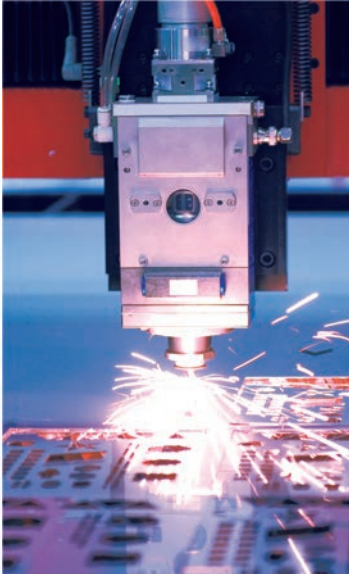
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Godrej, Thales join hands for sustainability

In a landmark move towards a low-carbon future, Godrej Precision Engineering, a key player in the Godrej & Boyce (G&B) manufacturing conglomerate, has entered into a letter of intent with Thales, a global technology leader in defence and security, aeronautics and space, and digital identity and security, agreeing to work together to tackle climate change in their respective value chains. Underlining the significance of this collaboration, Godrej Precision Engineering has pledged to align its operations with Thales' ambitious CO2 emission reduction targets for 2030 across Scope 1, 2, and 3 emissions. Thales is working with its strategic suppliers to achieve its CO2 emissions reduction targets for 2030, which have been validated by the SBTi and are compatible with the objectives of the Paris Agreement. Thales also aims to achieve net zero operations-related CO2 emissions (Scopes 1 and 2) by 2040.

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Autonomous Vehicles

Ashok Leyland ropes in Minus Zero to revolutionise autonomous trucking



Ashok Leyland, the country's leading commercial vehicle manufacturer, has formed a strategic alliance with Minus Zero, an autonomous driving technology startup. This long-term partnership aims to revolutionise commercial trucking through the deployment of autonomous solutions at scale.

The initial focus of this collaboration will be on developing tailored autonomous trucking solutions for ports, factory operations and corporate campuses. Future endeavors include expanding into hub-to-hub applications and long-haul trucking, subject to evolving regulatory frameworks surrounding autonomous driving.

At the core of this alliance is the seamless integration of Minus Zero's industry-first autonomous driving platform leveraging its pioneering nature-inspired AI technology, into Ashok Leyland's fleet of commercial vehicles. Leveraging Ashok Leyland's esteemed product portfolio and safety standards alongside Minus Zero's expertise in self-driving technology, the collaboration aims for safe and scalable adoption of autonomous driving in commercial vehicles.

N Saravanan, Chief Technology Officer, Ashok Leyland, said, "Ashok Leyland has been looking for ways to reduce the cost of logistics in India in line with the Government's National Logistics Policy. We see a role for autonomous driving in select sectors in achieving this and we have been partnering pioneering startups in this area. Minus Zero's capabilities and plans impressed us, and we are excited to be working with them to develop India-specific solutions, that can be scaled globally. We see spin-off benefits in developing cost-effective active safety solutions to reduce the road accidents."

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Process Equipment

Johnson Controls strengthens India business with expansion in Pune



Johnson On the heels of launching the Net Zero Buildings Initiative in partnership with Mahindra Group, Johnson Controls - the global leader for smart, healthy, and sustainable buildings - has announced the expansion of its third manufacturing facility in the country, located in Pune. "India's vibrant economy, skilled workforce, and thriving manufacturing sector have made it an attractive destination for businesses worldwide. We are thrilled to be a part of this dynamic landscape and excited for what our future holds here. By expanding our presence in Pune, we are strengthening our commitment to serve our customers better and meet their evolving needs," said George Oliver, Chairman and CEO, Johnson Controls.

Johnson Controls' Pune plant produces air-cooled and water-cooled chillers for wide range of applications, including data centers. With a planned 50 per cent increase in floor space, the plant expansion will allow the company to further develop made-in-India parts and products that support India's growth in digital technologies. Johnson Controls is also sourcing local supplies wherever possible to expand the plant.

Anu Rathninde, President, Asia Pacific, Johnson Controls, elaborated, "The expansion of our Pune facility marks an important step in Johnson Controls' unwavering commitment to sustainability, which is also focused on supporting local growth. Powering the facility with latest sustainability-oriented advancements, we are not just expanding our facility, but also cultivating a cornerstone for eco-conscious manufacturing, thereby solidifying our dedication to environmental stewardship and being a sustainability transformation partner to India."

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Skilled Labour: The Missing Link

It is paradoxical that inspite of having the world's largest employable population, Indian manufacturers are struggling to find skilled labour. India needs to fix the skill set gap fast, if it wants to become a \$1 trillion manufacturing economy and emerge as the world's production powerhouse, says Rakesh Rao, Executive Editor.

Recently, while speaking to one of the news channel, Chetan Ahya, Morgan Stanley's Chief Asia Economist, said that it was unlikely for India to match China's impressive economic growth rate of 8-10 per cent primarily due to infrastructure deficiencies and a shortage of skilled labour. Similar sentiment was echoed by Banmali Agrawala, Senior Adviser, Tata Sons Pvt Ltd, during a function organised by the NGO United Way of Chennai, who stated that India needs a skilled workforce to seize the opportunity in the global manufacturing trade, which is estimated at \$ 15 trillion (with India accounting for less than 1 per cent share).

These observations are not exceptions, but are widely articulated by industry experts. With India

aiming to increase its exports share in the merchandised goods trade, availability of skilled labour will be important. "India's aspiration to become a \$1 trillion manufacturing economy underscores the critical role of skilled labour in driving this monumental transformation. Skilled labour acts as the cornerstone of the manufacturing sector, providing expertise and precision vital for enhancing productivity, fostering innovation, and ensuring global competitiveness. The proficiency of skilled workers is instrumental in optimising production processes, thereby significantly contributing to product quality, operational excellence, and overall industry growth. This robust foundation of skilled labour is essential for sustaining India's manufacturing

momentum and advancing its position on the global stage," opines **Ravichandran Purushothaman**, President, Danfoss India.

Jibak Dasgupta, Director General & CEO, Indian Machine Tool



“Skilled labour acts as the cornerstone of the manufacturing sector, providing expertise and precision vital for enhancing productivity, fostering innovation, and ensuring global competitiveness.”

Ravichandran Purushothaman, President,
Danfoss India

Manufacturers' Association (IMTMA), adds, "Skilled labour is indispensable to attract and retain investments as more often than not investors zero in on locations that have availability of trained manpower in addition to other business needs that they look for."

India's growing labour market

Though India offers competitive advantages with its lower wage structure and access to a vast labour market, pay scale varies depending on the factory location - typically wages in tier two and three cities are much lower than tier one. Auto industry, the largest contributor at 22 per cent of the manufacturing GDP and seven per cent of India's overall GDP, is the biggest employer in the manufacturing sector. *Figure 1* presents indicative pay scale for various position in auto component manufacturing plant in different places.

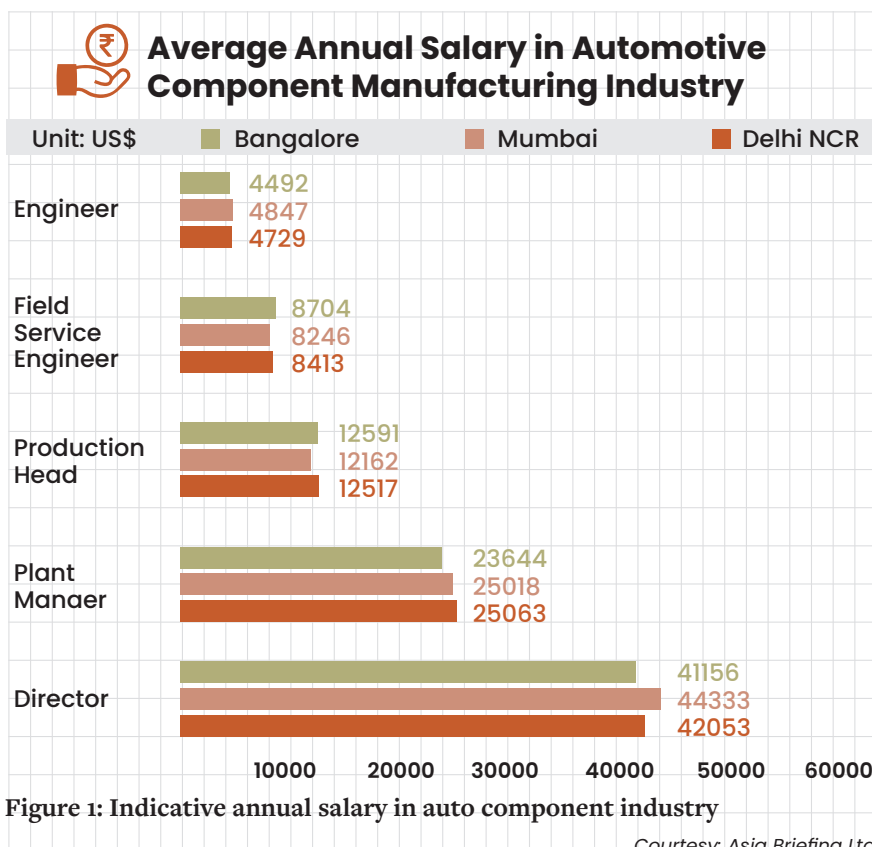
Reasons for skilled labour shortage

According to Neeti Sharma, CEO, TeamLease Digital, the sector in specific suffers from lack of highly skilled talent for multiple reasons such as:

- **Wage dilemma:** Migrants and informal workers are reluctant to take low-paying urban jobs due to inadequate access to housing, healthcare, and other essentials. Instead, they choose local, lower-paying work for immediate survival.
- **Educational deficiencies:** India's education system prioritises theory over practical skills. Vocational training is lacking, limiting the talent pool for manufacturing.
- **Skill shortage:** Manufacturing demands specialised skills, yet workers lack training in robotics, automation, and other technical areas.
- **Sectoral shift:** Industries like e-commerce, IT, BPO, and retail attract workers away from manufacturing with better pay and job security.
- **Shift based requirement:** Employees calling out of shift, labour schedule adjustments and high employee burnout are some of the major challenges faced by companies.

In the recent years, wage hikes in manufacturing have been consistently high compared to other sectors. According to AON's Annual Salary Increase and Turnover Survey 2023-24 India (refer *Figure 2*), the manufacturing sector is likely to lead

pay hikes in 2024 with 10.1 per cent increase. Explaining the reason, **Amit Kumar Otwani**, Director, Talent Solutions, India, Aon, says, "Manufacturing sector leading the salary increments list is reflective of India's promising growth story led by a strong push by the central government through initiatives be it Production Linked Incentive (PLI) schemes for 14 key sectors (with an incentive outlay of Rs 1.97 lakh crore) or the FAME subsidies for incentivising the growth of EV and EV batteries industry in India (with outlay of Rs 10,000 crore). This strategic move is further coincided with the geopolitical scenario



“Skilled labour is indispensable to attract and retain investments as more often than not investors zero in on locations that have availability of trained manpower in addition to other business needs that they look for.”

Jibak Dasgupta, Director General & CEO, IMTMA

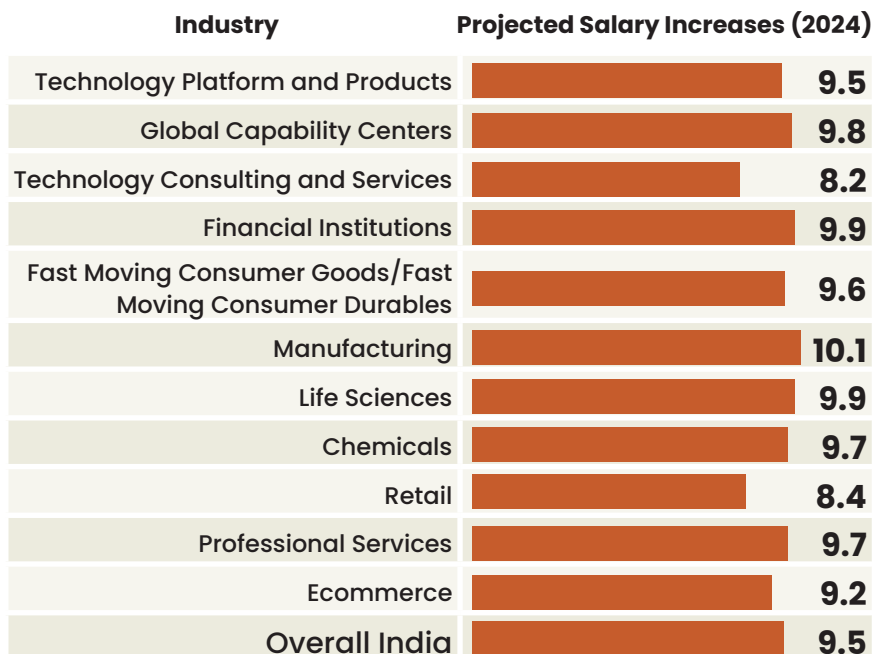


Figure 2: Expected pay hikes in 2024 across sectors

Source: Aon Annual Salary Increase and Turnover Survey 2023-24 India

pushing global manufacturers to diversify their manufacturing bases (due to rise in supply chain risks)."

Despite these job opportunities, industries in India are facing skill shortage, which is threatening the growth story.

Big gap between demand and supply

But, how grave is the problem of scarcity of manpower in manufacturing? **Neeti Sharma**, CEO, TeamLease Digital, answers, "The country is currently experiencing an alarming shortage of 150 million skilled workers, up from 138 million three years ago, according to TeamLease Services. The data from 2023 highlights a critical challenge we face: a severe shortage of skilled workers across multiple sectors, including our factories, engineering units, manufacturing plants, assembly lines, and infrastructure projects."

The country is poised to maintain a growth trajectory of 6-8 per cent until 2035, solidifying its position as a key global manufacturing center. Given the rising demand for skilled

workers in the manufacturing sector, the availability story is no match, she says.

With 12 million young Indians entering the employable age every year, the country is projected to have 1.04 billion employable persons by 2030. Confederation of Indian Industries (CII) report, Decoding Jobs, in 2023 had estimated that there would be a gap of 68 per cent between demand and supply as there would be a significant reduction in the number of migrants returning to tier-1 cities in 2022 (compared over the previous year). The talent scarcity in white-collar jobs is evident across all levels, including entry-level, mid-level, and senior-level positions. **Otwani** states, "There are certain reasons which attribute to this occurrence including lack of vocational training in the Indian educational setup leading to the mismatch & low productivity. While there is growing reliance on technology & automation, the industry is getting handicapped with an unfulfilled demand for manpower capable of operating and maintaining

them. Industries such as IT, Ecommerce, BPO, hospitality, etc have attracted workers away from a lower-paying factory job."

Sushil Virmani, Managing Director, Best Power Equipments, adds, "As manufacturing technology evolves, it requires workers to have higher education and new skills. According to a recent study done by a workforce agency, the manufacturing industry is facing a lot of labour crisis. Factors like the Covid 19 pandemic, employees retiring or transitioning into other sectors, etc have contributed to this."

Problem more acute in SMEs

Despite India's stature as one of the world's largest economies and its claim of having abundant pool of skilled professionals, small and medium-sized enterprises (SMEs) struggle to attract talent. Several factors contribute to this shortage of skilled workers, says **Neeti Sharma**.

One of the foremost challenges faced by SMEs is the escalation of costs coupled with declining revenues. This encompasses factors such as inflation, rising raw material expenses, escalating insurance premiums, subdued demand for products and services, and various other operational expenses.

Furthermore, she says, "SMEs often grapple with the loss of skilled employees to competitors,

Skills in demand

Manufacturers are looking at following skills while hiring:

- Data analytics
- Control and automation engineering
- Instrumentation engineering
- Systems engineering
- Simulation engineering
- Lean manufacturing

particularly larger firms within the same industries. While larger corporations can offer opportunities for personal growth and career stability, there are additional reasons why skilled individuals opt to depart from SMEs. This exacerbates another issue: the prevalence of a poor work culture. Many SMEs suffer from inadequate work environments, resulting in elevated rates of employee turnover.”

Smart factories need new skills

Increasing need to automate manufacturing processes to stay competitive in the market is leading to skill gaps. Otwani states, “Digital transformation and Industry 4.0 are revolutionising how the manufacturing operations work and hence, the skilled manufacturing talent is increasingly harder to come by. Research tells us by 2028, close to 2.4 million manufacturing jobs will be unfilled. Hence, there is a shift on the talent and skills front which manufacturers need in order to succeed the factory of the future.”

With industries adopting latest manufacturing technologies, it becomes critical for companies to invest in skilling, reskilling, and upskilling the workforce which can help them in maintaining the competitive edge. For all those industries embracing digital and AI-powered technologies with open arms, there’s a caveat, cautions Dasgupta. “Deploying technology alone wouldn’t give their business an edge, they need to employ a skilled workforce who can understand and use the technologies. As we all know industries aren’t strangers to technological shifts, changing market dynamics, and regulatory procedures. They are aware of the awards to be reaped when a skilled workforce is employed for a certain assignment,” he states.

Dasgupta elaborates, “The skill set that will be crucial for the

workforce to upgrade will be technical proficiency in AI, robotics, IoT and many other Industry 4.0 technologies; the ability to analyse and interpret complex data sets as part of digital literacy; the ability to predict and troubleshoot problems well in advance for more complex systems; adaptation and flexibility to new work environment; more exposed to collaborative work with cross-disciplinary subjects; and nurture a habit of continuous learning in a rapidly accelerating technological paradigm.”

Low participation of women

India’s manufacturing sector, which accounts for roughly 16-17 per cent of the national GDP, suffers from a serious gender imbalance. Neeti Sharma states, “This skew can derail the country’s larger economic ambitions like building a \$ 5 trillion economy. Currently, the composition of women in Indian manufacturing is between 3 per cent (core engineering) to 12 per cent (other engineering streams), compared to over 30-40 per cent employment in the services sector.” While the numbers may seem low, she says, the trends for participation of women has been increasing over the years.

With an intention to expand the talent pool, many manufacturers in India are looking to increase women workforce - breaking down



“Women workers are contributing to higher efficiency and productivity, along with lesser attrition. Given these factors, companies are increasingly investing in building workspaces that are safer for women and more inclusive of their needs.”

Neeti Sharma, CEO, TeamLease Digital



“While there is growing reliance on technology & automation, the industry is getting handicapped with an unfulfilled demand for manpower capable of operating and maintaining them.”

Amit Kumar Otwani, Director, Talent Solutions, India, Aon

gender stereotypes in the work floor. For example, in Aditya Birla Group, women account for over 50 per cent of newly hired engineers on the shop floor. Similarly, JSW Steel’s new colour-coated steel manufacturing facility in Pulwama (Kashmir), which is expected to be commissioned soon, will have more than 50 per cent women.

“More manufacturing organisations are employing women, particularly in the traditional leather, FMCG, textile, and automotive industries, as well as in developing fields like electric vehicles, battery electronics, and solar cell manufacture. Women workers are contributing to higher efficiency and productivity, along with lesser attrition. Given these factors, companies are increasingly investing in building workspaces that are safer for women and more inclusive of their needs. For example, work transport, hygienic work conditions, better pay, and gender inclusive policies,” observes Neeti Sharma.

Tamil Nadu: The leading women employer

Tamil Nadu, one of India’s most industrialised states, has emerged as the torchbearer when it comes to employing women in factories. The state, which has seen massive investments in automobiles, electronics, textiles, and footwear, accounts for 42 per cent of the

country's total women factory workforce, as per the data of 2021-22 Annual Survey of Industries (refer Figure 3). In fact, nearly 69 per cent of all women working in industries are employed in the southern states of Tamil Nadu, Andhra Pradesh, Karnataka, and Kerala.

Ravichandran of Danfoss India, which has manufacturing factory at Oragadam near Chennai, attributes, the success of Tamil Nadu (in promoting women's employment in factories) to its implementation of supportive policies that create an enabling environment for women to thrive in the manufacturing landscape. "Additionally, initiatives aimed at enhancing women's safety and welfare within factories play a pivotal role in attracting and retaining female workers, thereby fostering a secure and conducive work environment that prioritizes their well-being and comfort. Furthermore, Tamil Nadu's emphasis on cultivating inclusive and gender-diverse work environments promotes a culture of equality and

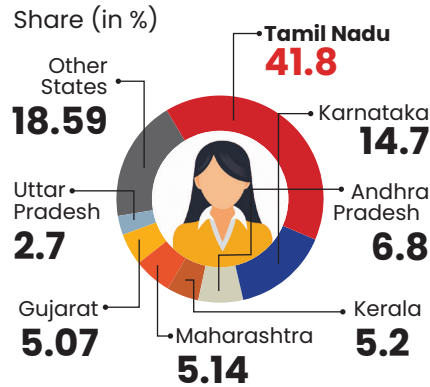


Figure 3: Share of women workers in Indian factories in 2021-22

Source: Annual Survey of Industries

empowerment, instilling a sense of belonging and encouraging greater female participation in the manufacturing industry," he explains.

Mission skilling

Understanding the criticality, the government has taken multiple steps for skill development, including establishing the National Skill Development Council (NSDC).

"NSDC has played a role of a catalyst in the skilling ecosystem and has nurtured private sector organisations to be part of the skilling value chain either as training partners, mobilizing partners, placement partners or encouraging innovations. This has particularly worked for manufacturing because the access to quality technical trainings has gotten better for the young people from Tier 2 or 3 cities who want to get employed. This is improving the quality of factory workers," she explains.

Companies are also recognising the urgent need to prioritise employee training and upskilling. Virmani states, "Best Power Equipments (BPE) understands the significance of digital transformation and the use of technology to grow our workforce and yield better results at work. We continuously make efforts to improve our efficiency by reducing the impact of labour shortages through strategic planning and the utilisation of advanced technology. These

Tips to fill the skill gap in manufacturing

The demand-supply gap of skilled manpower is more accentuated when there is increase in demand emanating from an equivalent enhancement of manufacturing capacity, comments Amit Kumar Otewani, Director, Talent Solutions, India, Aon. According to him, Indian organisations need to take significant steps to address this issue through some of the following channelised approaches:

- **Succession planning:** Establishing a balance between build & buy decision with developing the existing workforce to assume management roles & hiring entry level manpower for building the talent pipeline.
- **Gig workers:** Innovative solutions such as 3D printing, robotics, machine learning and artificial intelligence are changing the manufacturing landscape; hence, hiring temps for jobs that don't require much skill will make the most economic sense for the manufacturers.
- **Internships & apprenticeships:** This is a powerful mechanism for unlocking manpower potential and bridging the gap between workers scouting for opportunity and businesses starving for talent. Employers benefit from recruiting skilled talent, improving productivity and induct them into the workforce as per need & capability.
- **Reskilling:** Manufacturing companies today need to train as well as reskill people to meet the newer requirements of the industry as it goes about expanding its industrial capacity by adapting latest technologies, since most emerging jobs in the manufacturing sector would require definitive skill sets, as resonated by Finance Minister Nirmala Sitharaman in the budget proposal for FY24.
- **Cross leverage from other industries:** With the focus on technology, automation, analytics & related skills, manufacturing sector need to leverage the talent pool from sectors such as technology, financial services, etc to exploit the subject matter knowledge and utilise them for the relevant requirements within the manufacturing setup. This fungibility of talent will be the driving force to mitigate the talent scarcity.

strategies enable us to effectively address workforce challenges and build a resilient workforce for the future, ensuring continued success in growing manufacturing sectors.”

According to Dasgupta, manpower challenges could be addressed with the collaborative efforts of the government and industries. “Businesses need to invest in employee training and development programs, offer competitive wages and benefits to attract and retain the workforce, and collaborate with institutions to ensure that their employees are skilled. The government needs to provide sops (tax breaks and subsidies for training) and allocate funds for vocational training and educational initiatives to develop manufacturing skills. It also needs to streamline immigration policies to attract workers from overseas and fill the void. Research that drives innovation in manufacturing technologies should be supported,” he elaborates.

Building tech-talent

To foster skill development initiatives and enhance employability of the students, companies are also collaborating with educational institutes. Ravichandran opines, “Amidst the increasing demand for automation within the manufacturing



“According to a recent study done by a workforce agency, the manufacturing industry is facing a lot of labour crisis.

As manufacturing technology evolves, it requires workers to have higher education and new skills.

Sushil Virmani, MD, Best Power Equipments

sector, it is imperative for companies, the government, and the industry

to collaborate on strategic initiatives aimed at equipping the workforce with the necessary skills to effectively integrate and optimize automation technologies. In this regard, Danfoss is actively involved in multifaceted initiatives to address this urgent need. Through investments in employee training, collaboration with academic institutions, and advocacy for supportive policies, Danfoss is making significant advancements towards ensuring that the manufacturing workforce is well-equipped to navigate the transformative shift towards automation. This ultimately strengthens the sector’s overall readiness for the future.”

Jayasankar Kuruppall, Senior Vice President, Manufacturing, CEAT, says, “We are seeing a higher attrition in the last 2 years and are taking various innovative actions to bring the attrition down. We recruit fresh diploma holders from colleges and train them in class room setting as well as on the job. This has so far enabled us to meet our manpower requirement. We also leverage on digital mechanisms to address these issues with initiatives like faster onboarding, training of manpower and VR models for our critical

assembly operations machine in which the operators are trained in a virtual environment. This has helped us reduce the overall training time by more than 30 per cent.”

Companies are aligning their skill development initiatives to equip the workforce to proficiently utilise automation for enhancing productivity and operational excellence. For example, the Bajaj Group recently committed Rs 5,000 crore to social impact initiatives over five years with a sharp focus on skill development under the ‘Bajaj Beyond’ initiative.

Making workforce future-ready

With manufacturing evolving rapidly as a ‘new-age’ and ‘green’ ecosystem, it needs to attract talented manpower. The industry in itself is catching up with the innovations and moving from the traditional set-up, which implies that the workforce at large will too. “Companies can address this by offering on-the-job trainings, apprenticeships, and hire-train-deploy solutions to ensure that the foundation skills required are instilled and assessed right from the beginning. Such investment signals to the employable talent that the sector is ready to partner in their success. Laterally, within companies, there is a need to upskill current employees so they can step into the new opportunities without feeling overwhelmed/outdated. A fundamental set of ‘smart skills’ or ‘new age’ skills can be imparted to many teams, appealing to their readiness,” says Neeti Sharma.

Companies will have to invest proactively in skill development to not only enhance their talent pool but also significantly enrich India’s manufacturing capabilities and bolster its competitive edge in the global market. Only workforce proficiency can catalyse India’s path to a \$1 trillion manufacturing economy.

SME



“We are seeing a higher attrition in the last 2 years. We recruit fresh diploma holders from colleges and train them in class room setting as well as on the job. This has so far enabled us to meet our manpower requirement.

Jayasankar Kuruppall, Sr VP, Manufacturing, CEAT



Alliance of Resilience and Growth!

Over the years, bilateral trade between the India and Germany has not only increased but has also led to the discovery of new business prospects by German companies in India and vice versa, says **Rajesh Nath, MD, VDMA India**.

In the ever-evolving global trade landscape, the partnership between India and Germany stands out as a shining example of resilience and opportunity. Over centuries, these two nations have cultivated a strong foundation of economic exchange, weaving a rich tapestry of trade and cooperation that has endured the test of time. From the historical Silk Road to modern-day trade routes, India and Germany have continuously engaged in commerce, evolving into a robust collaboration that transcends geographical boundaries and enriches both economies.

With a trade history spanning over 500 years, India and Germany share a deep-rooted connection forged through centuries of economic cooperation. Over time, bilateral trade has not only increased but has also led to the discovery of new business and investment prospects by German companies in India and vice versa. From the 16th to the 18th centuries, numerous German enterprises were established with the intent of engaging in trade with India and other East Asian nations. This longstanding relationship is characterised by mutual respect, trust, and a shared vision for prosperity, making it a beacon of stability and growth in the dynamic landscape of global trade.

In recent times, this partnership has flourished significantly, witnessing an exponential surge in bilateral trade, solidifying India and Germany's positions as pivotal trading partners for each other. India, recognised as one of the fastest-growing economies globally, presents a plethora of opportunities for German companies. Presently, over 2000 German companies are actively operating in India, contributing to approximately 400,000 direct and indirect employment opportunities. Furthermore, Germany holds the position of being India's largest trading partner in Europe and features among India's top ten global trade partners, and is the seventh largest Foreign Direct Investment (FDI) source for India. The collaboration between India and Germany extends to over 1600 partnerships and encompasses more than 600 joint ventures. To facilitate the exploration of business prospects in India, various initiatives and programs have been instituted, including the Fast-Track-System for German companies and the

Make-in-India Mittelstand-Program. These endeavours aim to streamline processes and support the realisation of business opportunities in India. The total bilateral trade between the two countries stood at \$31.4 billion during the year 2022, marking a notable increase from \$21.76 billion in FY 2020–21. In December 2023 alone, Germany exported approximately \$1.39 billion worth of goods to India and imported around \$1.03 billion from India, resulting in a positive trade balance of approximately \$364 million. What sets the Indo-German trade relationship apart is its inherent reciprocity, with both nations reaping mutual benefits from their collaborative endeavours.



Indian PM Narendra Modi (left) and German Chancellor Olaf Scholz shake hands after a contact signing ceremony in Berlin on May 2, 2022.

Germany's advanced technology and manufacturing prowess perfectly complement India's burgeoning market potential and highly skilled workforce, resulting in fruitful collaborations across various industrial sectors. This synergy has been particularly evident in sectors such as automotive, engineering, pharmaceuticals, renewable energy, and machinery, where joint ventures and strategic partnerships have flourished. In the fiscal year 2023, India's exports to Germany reflected the depth of this collaboration, with a total of 5,842 commodities exported, amounting to

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approximately \$10.13 billion. Notably, between April and November 2023 alone, India's exports to Germany reached \$6.29 billion, showcasing sustained growth and partnership. Major exported items spanned across various sectors, underscoring the diversity of India's export portfolio. These figures highlight the depth of collaboration between India and Germany, as well as the significant contributions of various sectors to bilateral trade and economic growth.

Conversely, India imported a total of 5,955 commodities from Germany in fiscal year 2023, with imports totalling approximately \$15.93 billion. During April to November 2023, India's imports from Germany included reactors and parts thereof at \$3.16 billion, electrical machinery and equipment at \$1.43 billion, aircraft and spacecraft parts at \$1.42 billion, and optical, photographic, cinematographic measuring, medical, or surgical apparatus parts and accessories at \$1.08 billion. Importantly, imports from Germany to India stood at \$11.46 billion during April to November 2023.

Despite notable achievements, persistent challenges persist, particularly in the shortage of skilled labour within the manufacturing sector, posing significant hurdles to further growth. Acknowledging this obstacle, India and Germany are poised to address it through collaborative efforts in vocational training, knowledge exchange programs, and skill development initiatives. Germany's esteemed dual education system serves as a model of success, offering valuable insights for India to refine its educational curriculum. This ensures that the workforce not only acquires essential skills but also remains adaptable to the evolving demands of industry. In addition to addressing labour shortages, sustainability and advanced technologies emerge as critical factors in enhancing global trade competitiveness. Leveraging Germany's expertise in these areas presents a significant opportunity for India to drive sustainable development and technological advancement across various industries. By implementing innovative solutions and adopting best practices, India can propel its economic growth while contributing to global efforts towards environmental conservation and resource efficiency. Collaboration between India and Germany in these domains is essential for overcoming current challenges and seizing future opportunities. Through strategic partnerships and knowledge exchange, both nations can leverage their respective strengths to foster innovation and competitiveness. This collaborative approach not only benefits the economies of India and Germany but also contributes to global progress towards a more sustainable and technologically advanced future.

Strategic cooperation and ongoing policy dialogue are paramount for India and Germany to strengthen their

trade relations, especially in the face of global uncertainties. By creating an environment conducive to collaboration and innovation, both nations can bolster their resilience and adaptability to changing market dynamics. As we look towards the future, the Indo-German trade relationship holds immense potential for further growth and diversification. By nurturing a business-friendly environment, fostering innovation driven entrepreneurship, and deepening bilateral cooperation, both countries can explore new avenues of economic collaboration and mutual prosperity.

To reiterate, India stands to benefit from Germany's renowned vocational training system, which can effectively address its skill gap challenges and enhance workforce readiness for emerging industries. Furthermore, diversifying trade portfolios, minimising trade barriers, and harnessing digital technologies are pivotal strategies that can drive sustained growth and prosperity for both nations. Through collaborative efforts in these areas, India and Germany can not only strengthen their bilateral ties but also contribute significantly to global economic development.

In conclusion, the Indo-German trade partnership serves as a powerful symbol of the potential for synergy and collaboration in our interconnected global landscape. This partnership not only exemplifies mutual success but also lays the foundation for prosperity and sustainable growth for both nations. Given that India is ranked as the 5th and Germany as the 4th largest economies globally, there exists immense potential for both countries to capitalise on their complementary strengths. By leveraging their respective advantages, fostering innovation, and embracing sustainable practices, India and Germany can chart a course towards a brighter future built on collaboration, resilience, and shared prosperity.

The Indo-German trade partnership represents more than just economic cooperation; it embodies a commitment to working together towards common goals in a rapidly changing world. Through joint efforts, both nations can navigate challenges, seize opportunities, and create a sustainable and prosperous future for generations to come. This partnership not only benefits India and Germany but also contributes positively to the global community, showcasing the power of collaboration in driving meaningful change on a global scale.

SME**About the author:**

Rajesh Nath, Managing Director, VDMA India. Nath has more than 32 years of experience working in various industries in Germany and India. He has been accorded the "Cross of the Order of Merit" – highest civilian award from the German President, for promoting Indo-German Trade in Engineering Sector.

New laser distance diffuse sensor with TOF technology - ODT3CL1-2M



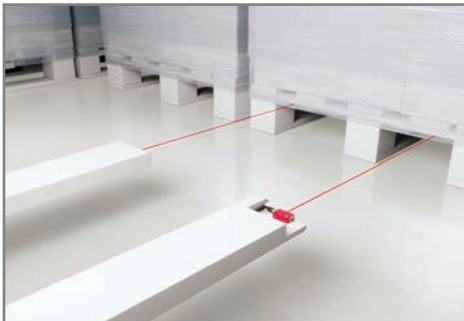
Compact diffuse sensor for detection and measurement tasks with high operating ranges



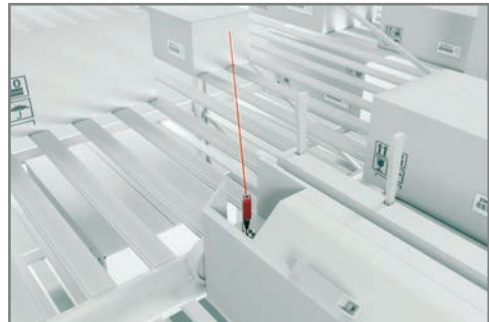
The ODT3CL1-2M solves detection tasks and supplies the machine control with distance information. The sensor also detects colored structured objects at a distance of up to two meters.



Thanks to the extremely small and space-saving housing (11.4 mm x 34.2 mm x 18.3 mm), the ODT3CL1-2M can be used in many different applications.



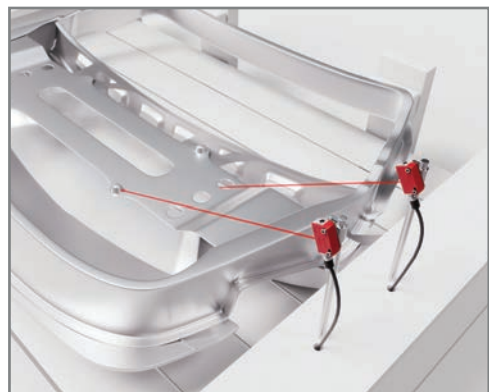
On automated guided vehicles, the ODT3CL1-2M optical sensors monitor that pallets are correctly received and transferred, for example.



The diffuse sensors are ideal for compartment occupation checking with shuttles. They detect whether a space to be occupied is free.

Advantages for you

- 2-in-1 sensor: The detection and output of measurement values using just one sensor saves time and money during procurement, installation, commissioning and operation
- TOF technology: High operating range up to 2 meters makes applications over large distances possible
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- Compact housing: Use in applications with limited installation space
- Integrated object test: Mode with brightly flashing light spot to check the function reserve
- Degree of protection IP69K: Allows use in harsh conditions
- Output of process data via IO-Link: Extensive diagnostic data from the device, e.g. temperature value, signal quality and warning



In addition to detecting the presence of a component, the ODT3CL1-2M laser diffuse sensor can also detect defined reference points on the component and thus check the quality. Here the sensors work reliably even with different surface structures.

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"KRAMSKI is focusing on new industries and exports for growth."

The Germany based KRAMSKI Group is a global solution partner for technologically sophisticated stamping and injection molding technology. In this interview, **Andreas Reinhold Kramski, CEO, KRAMSKI Group**, explains the company's growth plans and importance of India for the group.

How is KRAMSKI serving its customers?

KRAMSKI is a medium-sized family business with over 45 years of expertise in manufacturing stampings and overmolding plastic-metal composites in high quality. The strategic manufacturing locations of the KRAMSKI International Group of companies ensure that 'local for local' availability for manufacturing and technical support to our customers are achieved across the continents - Asia, Europe & America.

KRAMSKI is the one stop supplier for finding cost effective ways for producing parts to customer prints. In house tooling and manufacturing capabilities enable us to find the best solution for the customer.

How was the performance of your company in 2023?

KRAMSKI Group and KRAMSKI India have met the planned targets for 2023 and are looking to expand and strengthen our foothold in electronics, electro-mobility (electrical vehicles), aerospace, medical and telecom sectors.

What is the contribution of exports to your turnover? What are your plans to increase exports?

As we manufacture for international customers, our parts are being used in local businesses and are also exported to the customer locations worldwide. Increasing exports is a logical consequence of adding more customers and value addition to our produced parts, so they can be delivered to the respective customer assembly lines worldwide.

With focus on new industry verticals, we are going to increase our impact to the Asian markets and will expand our exports in the near future.

With global companies adopting China



Plus One policy, are you seeing more business coming to India?

India's strength has mainly been its domestic market. There will be more opportunities as customers are going to look for more buying options in other countries like India. We already see an increase in requests for quotations and will have a lot of opportunities to increase our customer database in near future.

Do you think to gain orders from global companies, adopting "sustainability" has become critical?

become critical?

We have been implementing environmental and sustainability targets from the beginning of our inauguration – similar to the rules of our German headquarters. Sustainability will be one of the future factors to generate more business with new customers.

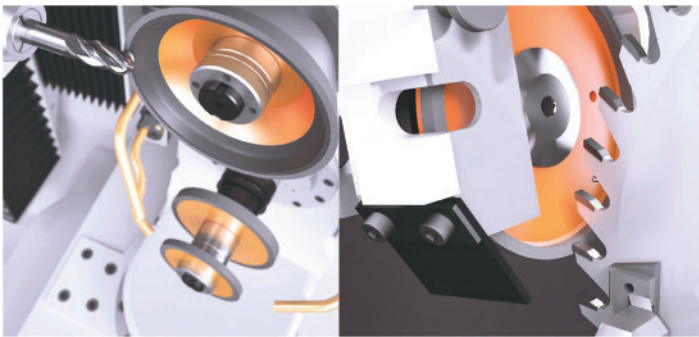
Have you taken any steps towards sustainability?

As part of our social responsibility every employee of the KRAMSKI Group is bound by the Corporate Code of Law/Living Shared Values. This ensures that all of KRAMSKI's business practices are carried out with integrity, honesty, fair practices and compliance with all applicable laws in line with the United Nations Global Compact.

What are the key challenges for growing your business and increasing exports?

Government bureaucracy needs to minimise in the midterm for successful growth, especially in importing and exporting goods. Stable and consistent electric power to industries is needed to reduce rejections, breakdowns, dependency on DGs, and thereby help in reducing pollution. Development of local raw material manufacturing hubs is essential to reduce cost impacts on manufacturing goods in India.

THE TECHNOLOGY FULLLINER

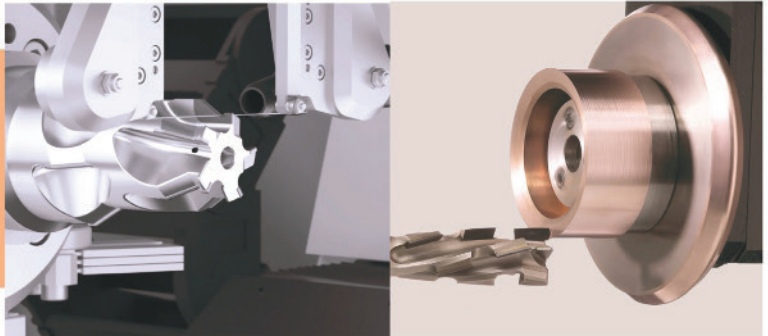


GRINDING Machines for

- > Solid Carbide Rotary Tools
- > Circular Saw Blades
- > Band Saw Blades

ERODING Machines for

- > PCD Rotary Shank Tools
- > PCD Circular Saw Blades



LASERING Machines for

- > Tools with Ultrahard Materials (PCD/CVD-D/MCD)



TRUMPF inks pact with HLRS to develop AI models

The agreement to provide TRUMPF employees with extensive computing capacities of the High-Performance Computing Center Stuttgart (HLRS). The technology company wants to use it to develop AI models and virtually recreate prototypes.

TRUMPF - a high-tech company offering manufacturing solutions in the fields of machine tools and laser technology - on March 19, 2024 signed a cooperation agreement with the High-Performance Computing Center Stuttgart (HLRS) of the University of Stuttgart. The aim of the agreement is to provide TRUMPF employees with the extensive computing capacities of the HLRS. "This cooperation shows that we in industrial Germany also have a powerful digital ecosystem. With the help of these mainframes, our developers can virtually simulate machine functions even before the first prototype is built and train AI solutions for our systems more quickly. This allows us to innovate more sustainably and efficiently," said Berthold Schmidt, CTO, TRUMPF.

The "Hawk" supercomputer provided by HLRS has a peak performance of 26 petaflops, which corresponds to 1,000,000 billion computing operations per second. It is one of Europe's most powerful computers for industry and will be supplemented by its even more powerful successor model, Hunter, with around 39 petaflops at the end of 2024. "With Hawk and Hunter, we can support the further development of technologies at TRUMPF. We are proud that we can continue to contribute to the strengthening and competitiveness of the Stuttgart economic region with our computing power," said Prof (Dr) Michael Resch, Director of the HLRS. Within the framework of the partnership, the participants also hope to gain joint insights into further possible applications of mainframe computing systems in industry.

Investment in AI and quantum computing

For simpler simulations, TRUMPF has its own high-performance computers. However, more complex tasks with higher accuracy can only be performed with supercomputers, such as those located at HLRS. One example is the simulation of quantum computers, which is so computationally intensive that it will be accelerated in the future with the help of the computing capacity of the HLRS. In the future, TRUMPF will also train AI models on the HLRS supercomputers. For several years now, TRUMPF has been offering its customers machine tools that use artificial intelligence to work faster and better. In the future, further solutions will be added to the offering.



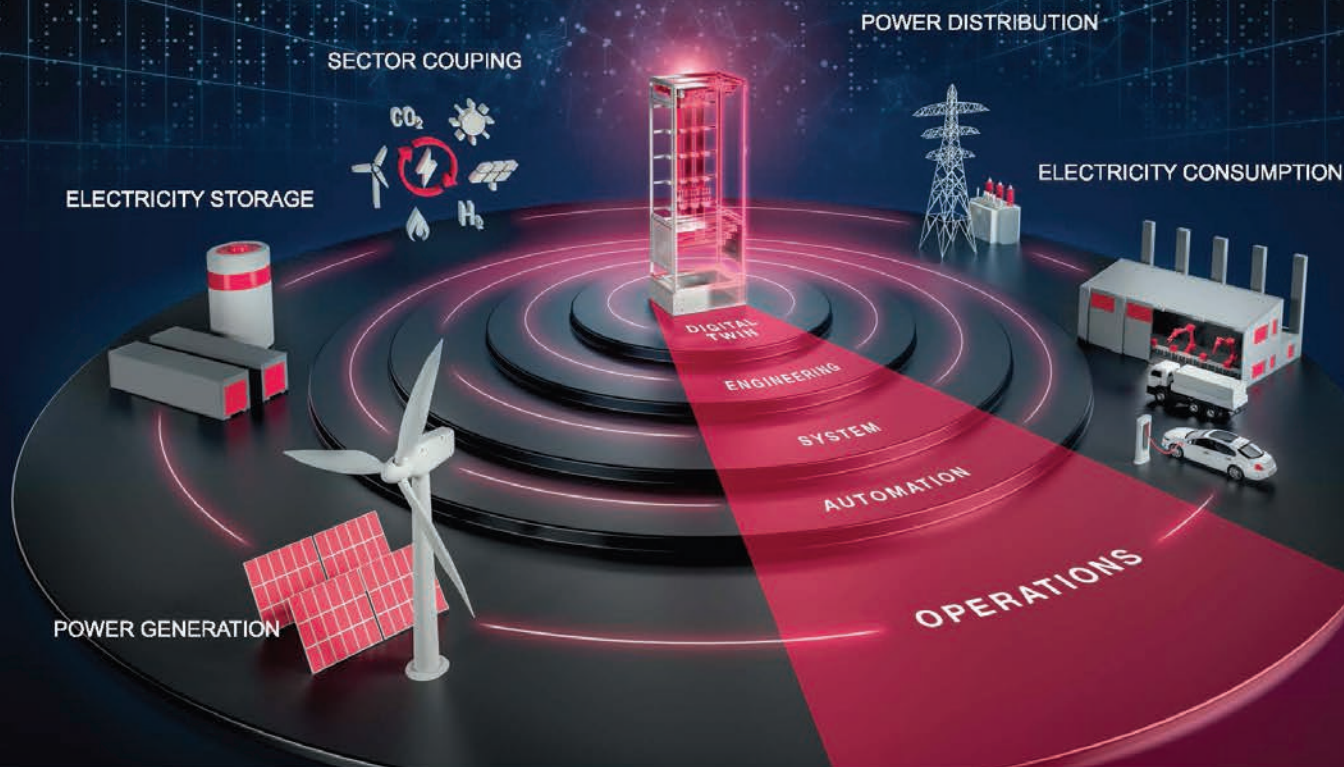
"Hawk" supercomputer is one of Europe's most powerful computers for industry.

The High-Performance Computing Center of the University of Stuttgart (HLRS) was founded in 1996 as Germany's first high-performance computing center. As an institution of the University of Stuttgart and a member of the Gauss Centre for Supercomputing, HLRS makes its computing capacities available to users from science and industry. HLRS operates state-of-the-art high-performance computing systems and, as an expert in the latest technologies, offers first-class training in the fields of programming and simulation. The center conducts research on groundbreaking questions and technologies related to the future of high-performance computing (HPC). HLRS' expertise includes parallel programming, numerical methods for HPC, visualization, cloud computing, high performance data analysis (HPDA), and artificial intelligence, among others. The users of the center's systems conduct research in a wide variety of research areas with a focus on engineering and applied science.

TRUMPF is a high-tech company offering manufacturing solutions in the fields of machine tools and laser technology. It drives digital connectivity in manufacturing through consulting, platform products and software. TRUMPF is one of the technology and market leaders in highly versatile machine tools for sheet metal processing and in the field of industrial lasers. In 2022-23, the company employed some 18,400 people and generated sales of about Euro 5.4 billion.

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Rittal Expands its India Capacity

The new Integration Centre for cooling units and LCP solutions will increase the German firm's overall production capacity and meet the growing demand for industrial cooling solutions in the market.



Lars Platzhoff, Executive VP of Business Unit Cooling Solutions, Rittal GmbH & Co KG, inaugurating Rittal's new Integration Centre for cooling units and liquid cooling package solutions at Bangalore.



Rittal Pvt Ltd - a wholly owned subsidiary of Germany-based Rittal GmbH & Co KG (a Friedhelm Loh Group company) and a manufacturer of enclosures, power distribution, climate control and IT infrastructure systems - inaugurated its new Integration Centre dedicated to cooling units and liquid cooling package (LCP) solutions at its manufacturing facility in Bangalore. This significant expansion will increase company's

Emphasising the significance of this milestone, **Lars Platzhoff**, Executive Vice President of Business Unit Cooling Solutions, Rittal GmbH & Co KG, Germany, said, "This facility marks a groundbreaking achievement to Rittal and becomes the 3rd facility to produce the world's best industrial cooling units. Rittal cooling units are unique in the market and well recognised for its disruptive technology and exceptional efficiency."

Over the past few years, Rittal Cooling Units have received an overwhelmingly positive response from customers. **Mathew Jacob**, Vice President of Sales and Marketing, Rittal Pvt Ltd, expressed, "With this expansion, we further strengthen our commitment to India and neighbouring markets. We shall continue to focus on customer value creation by developing intelligent Industrial Cooling Solutions that help our customers reduce energy consumption, save cost and combat climate change."

Rittal cooling units are globally recognised for their quality, longevity, and productivity. Due to their exceptional properties such as flexibility and ease of use, Rittal cooling units are the ideal choice for a broad range of applications. The growth of the industrial cooling solutions market is driven by various factors, including the rising awareness of safety, energy efficiency, carbon reduction, and increasing customer expectations for sustainable performance.

Rittal Pvt Ltd is the world's leading manufacturer and supplier of enclosures, power distribution, climate control and IT infrastructure systems.

SME



This new facility is strategically incorporated to support continued growth in India and other emerging markets even more efficiently with premium made in India products.

overall production capacity and meet the growing demand for industrial cooling solutions in the market.

The new Integration Centre is a state-of-the-art facility equipped with latest machines and testing centres designed to meet optimum productivity and flexible to manufacture cooling units for industrial applications and LCP solutions for IT infrastructure. This new facility is strategically incorporated to support continued growth in India and other emerging markets even more efficiently with premium made in India products.

EMAG Middle East: Dubai Launch

With this, EMAG is taking an important step into the fast-growing markets of Central Asia and the Middle East.

The EMAG Group, the Germany-based manufacturer of CNC machine tools, has officially opened its new sales company EMAG Middle East with the International Free Zone Authority (IFZA) in Dubai. With this expansion, the company is taking an important step into the fast-growing markets of Central Asia and the Middle East.



The opening ceremony, which took place on February 1, 2024, attracted a number of German business leaders and industry experts. The EMAG Group stands for comprehensive expertise in metalworking and covers the entire machining process chain with its technologies and machine tools. This includes turning, drilling, milling, gear cutting, grinding, electrochemical machining and laser welding. Particularly noteworthy are the turnkey production solutions that are used in various sectors such as the automotive industry, the supplier industry and general mechanical engineering.

Igor Andronov, CEO EMAG Middle East, emphasized that EMAG's customers benefit from specific experience that is incorporated into every project. Based on the quantities, accuracy requirements and the required unit production costs, advisory services are provided and the most effective manufacturing solution is developed together with the customer.

The EMAG Group is optimistic about the future of the dynamic markets of Central Asia and the Middle East and is convinced that its solutions and technologies offer customers in these regions real added value.

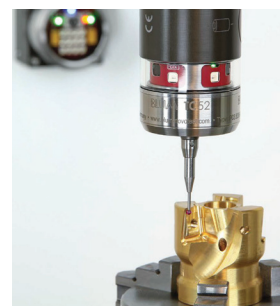
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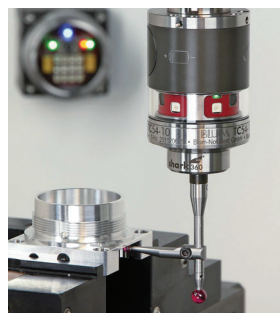
Blum offers universal touch probe systems for fast measurements in medium and large machine tools, providing superior precision and speed. These solutions are used in various industries, like- Die & Mold, Automotive, Aerospace, Medical, Construction equipment, Heavy Engineering, tractors, Defense and General Engineering.



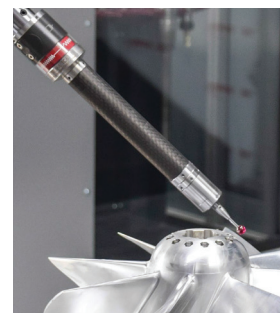
TC50 | TC60 – High-speed touch probe for workpiece measurement in CNC machining centres



TC52 | TC62 – Compact high-speed touch probes for workpiece measurement



TC54 -10 | TC64 -10 – Compact touch probes for turning and milling machines



TC53 | TC63– Modular 3D CNC touch probes for complex measuring tasks



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Bar Peeling: Heavy-duty Machining!

As a partner for successful bar peeling, Boehlerit offers complete tool systems, i.e. peeling head, holder and cassettes.

Bar peeling, also known as skiving, is one of the most demanding chip-removing machining operations, in which the process engineering know-how lies to a particular extent directly at the point of action. As a partner for successful bar peeling, Boehlerit offers complete tool systems, i.e. peeling head, holder and cassettes.

In terms of process technology, bar peeling is a kinematically reversed longitudinal round turning in which the workpiece is concentrically passed through a rotating tool, the peeling head. In fact, bar peeling is heavy machining that is economically operated in diameter ranges from 20 to 500 millimetres. With standard materials, feed rates of up to 18 millimetres per revolution are practised nowadays, which is many times more than is possible with general turning. At the same time, cutting depths of up to 15 millimetres can be achieved with appropriate cassette systems.

However, users also associate heavy cutting in connection with bar peeling with heavy, in the sense of difficult. The processes take place under enormous quantities of cooling lubricant and are not visible to the machine operator. In addition, due to the high loads, vibrations or guiding problems occur in the long run. Another complicating factor is that in bright steel production, materials that are difficult to machine, such as stainless steels or nickel-based alloys, are often processed. In addition, forged bars in particular are often relatively crooked and out of round.

Process reliability depends heavily on the experience of the machine operator. It is particularly important to avoid the breakage of indexable inserts. This would lead to enormous damage to the cassettes, possibly to the entire peeling head, the bar and above that also to the guide rollers in the insertion apparatus.

The only options left for optimal process control are the assessment of the machining results via the dimensional accuracy and the surface quality achieved, as well as the assessment of the chips, the wear on the WSP and one's own experience. The challenge lies in the adaptation of the process parameters and the application-related matching of the inserts. This is usually done in close cooperation with the manufacturer of the WSP via cutting material compositions and geometries, i.e. cutting edge length, chip shape stage and support chamfer design.



As a partner for successful rotary peeling, Boehlerit offers complete tool systems, i.e. peeling head, holder and cassettes

Always in the lead

Bar peelers benefit from the comprehensive know-how from a wide range of applications and processes when it comes to achieving performance increases through new coating developments. In addition, Boehlerit has all coating technologies in-house. Due to the process and the extremely high feed rates, the greatest challenges result from the necessary coating adhesion. The application-specific design of the cutting edge geometries is much more important in rotary peeling than in conventional turning. In the Boehlerit portfolio, users will find the widest range of geometries in standard versions, adapted to a wide variety of material classes.

Currently, simulation software is used for the development of new plate geometries in order to recognise the chip flow, the resulting temperatures and forces in order to achieve the best possible results.

A large number of parameters are entered into the software in order to obtain results that are as close to reality as possible. The interaction of cutting material, coating geometry and cutting edge dressing is mostly dependent on the machine and the material to be machined.

The application is constantly changing, as new materials to be machined are constantly being developed and, due to cost savings, the allowance before the peeling process is reduced to a minimum, especially in smaller diameters. This aspect poses some challenges, especially in terms of roundness and surface quality. In larger diameters, this is only possible to a limited extent due to the manufacturing process, which is why tandem or trio

peeling systems with large round plates are still used for large material removal.

Current examples of innovative solutions for machining new materials or for significant performance increases in bar peeling are the development of a new WSP grade for machining duplex or superduplex steel, the nanotechnology of the universal bar peeling grade LC228E or the new grade BCP35P for the round insert RNMH 5018.

The company

As a carbide pioneer, the Boehlerit Group is one of the world's leading manufacturers of wear protection solutions and cutting tools for machining metal and composite materials. With cutting materials, semi-finished products, precision tools and tool systems for milling, turning, grooving and forming, the family-owned company has been ensuring process reliability and efficiency worldwide since 1932. Around 800 employees offer customers comprehensive know-how in all aspects of metallurgy in order to be able to realise process-optimised manufacturing technologies, the highest quality and an edge in tool productivity. With three production sites in Europe and Asia, international



subsidiaries and a network of sales partners, the carbide and tool specialist has a global presence. Together with its two legally independent sister companies Leitz and Bilz, the Boehlerit Group forms the globally active Brucklacher Group, in which over 4,000 employees generate an annual turnover of around Euro 450 million.

Bilz has been represented in the Indian market with a production facility for over 50 years. Boehlerit as a sister company uses the synergies with Bilz and wants to establish itself in the Indian market in the long term with its high-quality cutting tools.

SME

For details, contact Otto Bilz India Pvt Ltd, Bengaluru (Karnataka), on Tel: +91 80 2263 8700, Mob: +91 81231 22425, or Email: prabhu@bilztool.com

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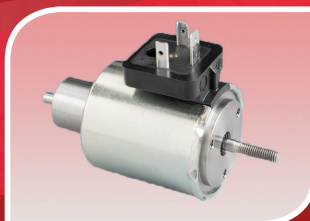
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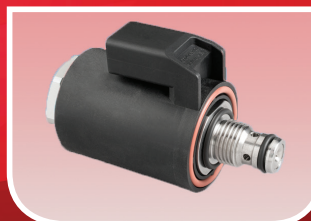
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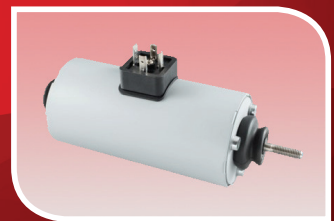
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Big Impact of Igus Micro-Gears!

The delicate teeth of Igus' micro-gears (with modules as small as 0.2) make them suitable for very precise applications in small installation spaces.

From micro-drives to microscopes to precision engineering, engineers around the world are building increasingly compact products. Igus now produces micro-gears for them with modules as small as 0.2. Tooth dimensions are very close to those of a human hair. Thanks to high-performance plastics, the teeth still allow precise, low-wear movement for high-quality products.

When a photographer zooms his camera, a gearbox consisting of tiny gears spanning just a few millimetres moves inside the lens. Their teeth are much smaller and scarcely visible to the naked eye. "Such precision-engineering applications require micro-gears that are still strong and wear-resistant enough to operate reliably for years," said Steffen Schack, Head of Business Unit iglidur Gears at igus. "For this reason, we have optimised our production to mechanically manufacture micro-gears with a module as small as 0.2 from high-performance plastic." The company uses iglidur bar stock, including iglidur A180 and iglidur A500. These materials are tribologically optimised: not only are they robust, they also have very good friction and wear specifications. At the same time, they are much lighter than metal gears.



For very precise applications, igus now offers wear-resistant microgears made of high-performance plastics



The gears are suitable for a wide range of applications that require finely coordinated movements in very small installation spaces, for instance microscopes and other optical instruments.

Teeth as fine as a human hair

With modules as small as 0.2, igus has further pushed the

limits of its mechanical production. "The capability of manufacturing gear teeth that can hardly be seen with the naked eye sets us apart from many competitors on the market," said Schack. "Despite their size, the teeth have excellent mechanical specifications. They allow reliable, highly precise movements in precision engineering."

Economical pricing even for small quantities

Igus now offers customer-specific production of micro-gears made of high-performance plastics. "Our mechanical production from iglidur bar stock allows economical pricing even for small quantities. We can produce large quantities with injection moulding - for automobile series production, for instance," said Schack. The gears are suitable for a wide range of applications that require finely coordinated movements in very small installation spaces, for instance microscopes and other optical instruments, miniature motors and micro-drives.



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Revolutionising tool manufacturing with VHybrid 260

The VHybrid 260 sharpening machine, a marvel of precision and adaptability, caters to the dynamic needs of tool manufacturers pursuing flexibility in their operations.

In this interview, Alexander Schmid, the visionary product manager at VOLLMER Werke Germany, delves into the cutting-edge world of the VHybrid 260 sharpening machine, a technological masterpiece that seamlessly merges grinding and erosion processes.

Unraveling the "Hybrid" essence

Derived from the Greek term for crossing or mixing, the term "hybrid" in the VHybrid 260 encapsulates the fusion of the best from both worlds – grinding and eroding. This technological marvel, inspired by VOLLMER's VGrind tool grinding machine, boasts two vertically configured spindles. The upper spindle is dedicated to grinding, while the lower spindle handles both erosion and grinding, making it a true hybrid in the realm of tool manufacturing.



Versatility at its core

The VHybrid 260 caters to the dynamic needs of tool manufacturers pursuing flexibility in their operations. Supporting the sharpening of both carbide and diamond tools, it stands as the epitome of adaptability. As global demand for intricate tools like full-head PCD tools rises, the VHybrid's combined machining prowess proves essential for precise and cost-efficient production.

Simplicity meets innovation

Addressing concerns about the complexity of operating a dual-technology machine, Schmid assures that VOLLMER relies on a proven concept. The machine's intuitive operation, coupled with familiar software solutions, ensures a seamless transition for users. The emphasis on unmanned operation further underscores the machine's user-friendly design.

Technology behind the advantages

The heartbeat of the VHybrid is the Vpulse EDM erosion generator, a technological marvel developed in-house. With a surface quality reaching an astonishing 0.05 μ RA, the generator offers users the flexibility to prioritize efficiency or surface quality. The introduction of software-based V@ boost performance packages, enhancing machine performance by up to 35 percent, adds an extra layer of customization for tool manufacturers.

Charting new frontiers

Targeting the global manufacturing industry's demand for PCD tools with diameters under 150 millimeters, the VHybrid 260 is positioned as a game-changer. At EMO 2023 in Hannover, VOLLMER showcased its ability to produce microtools with diameters as small as 0.45 millimeters, meeting the precision demands of industries such as electronics and medical technology.

Future forward



For Alexander Schmid and the VOLLMER team, the journey doesn't stop at innovation. The focus remains on continual improvement, with an emphasis on automation and digitalization. Initiatives like the IoT gateway and V@dison underscore the commitment to leveraging smart technologies for enhanced flexibility and efficiency in sharpening processes. In the ever-evolving landscape of tool manufacturing, the VHybrid 260 stands as a beacon of ingenuity, blending tradition with cutting-edge technology to redefine what's possible. As the industry advances, VOLLMER's commitment to growth through smart technologies remains unwavering, heralding a future where precision and adaptability coalesce seamlessly. 

For details, contact VOLLMER Technologies India Pvt Ltd, Bengaluru, Karnataka, on Tel: +91 80 4171 1155, Mob: +91 90088 44977, or Email: ravindra@vollmer-group.com

(Communication provided by the management of the company)

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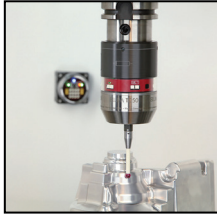
About the Company: Blum Novotest Measuring & Testing Technology Pvt Ltd has made a name for itself in the list of top suppliers of bore gauge, radio receiver in India.

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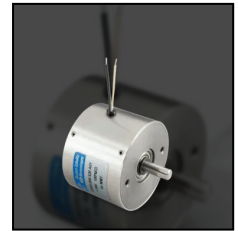
About the Company: Established in the year, 1997, 'Magnets India', are one of the leading trader, distributor & suppliers of an extensive range of Electromagnetic Actuators and Electromagnetic Products.

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ZEISS India offers a wide range of advanced shop floor coordinate measuring machines.

Features:

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- ZEISS Industrial metrology is a leader in CNC coordinate measuring machines and complete solutions for multidimensional metrology in the metrology lab and production.

About the Company: In July 2012, a new assembly hall and demo center for ZEISS Industrial Metrology Business Group was opened in Bangalore, India.

The Tech Center, which is also located at the site, allows ZEISS to offer its customers services such as demos, training, contract programing, contract

measurements as well as a service hotline.

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Contact:

ZEISS India, Bangalore
Tel: 080-43438102
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ENERGY LOGGER

Weidmuller Electronics India Pvt Ltd offers a wide range of energy logger.

Features:

- As well as the consumption of electrical energy, the consumption of, for example, compressed air, water, and gas can also be optimised.
- Energy Logger D550 enables the provision of cross-plant measurement data in the network. The Energy Logger D550 can collect and save impulse signals from up to 15 measurement devices and forward them via a LAN interface.
- Its features include: Integrated temperature measurement; Integrated modbus gateway; integrated data memory; compact and cost-effective solution.

About the Company: Weidmuller Electronics India Pvt Ltd is smart industrial connectivity: electrification, automation, digitalisation, electrical connectivity, electromobility and renewable energies – markets in which Weidmüller feels right at home.

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Contact:

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HARTING India Pvt Ltd offers a wide range of HARAX® toolless rapid termination.

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- Its features include: termination technique for M8 and M12; toolless rapid termination; very quick; IP 65/67 standard for use in outdoor and humid areas.

About the Company: HARTING India seeks to enhance the country's Industrial capability and competitiveness to become a Global Player in terms of Technology and Markets, by providing the latest technology and innovative Interconnection solutions. With its vast experience and global reach, HARTING will be the most preferred partner for Interconnection solutions in India in the field of Factory Automation, Machinery, Energy, Transportation, Event Management Technology, Infrastructure and Medical technology. HARTING India is also an associate member of the Indo-German



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About the Company: Wendt India known for its diversified and impressive Product Portfolio, Innovation strategy, strong Product Development, Personalized technical services and providing Technology Solutions in Grinding to its 750+ direct customers in the domestic market.

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About the Company: Since its inception in 2000, Kabel has been known for its authentic commitment to customer satisfaction. This standard of excellence has allowed us to grow to where we are now. For more information about our products and services, contact us.

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WIRE ROPE GREASES

Bechem Lubrication Technology offers a wide range of wire rope greases.

Features:

- Bechem's range of wire rope greases posses excellent corrosion protection properties and provide long term lubrication for wire ropes that are subjected to high loads and stress.
- Heavy duty wire ropes of cranes operate mostly in dusty and humid environments. The ropes are subjected to intense pressure during operation with the strands experiencing severe internal friction.
- Wire ropes on cranes operating in ports and marine applications are exposed to saline water and corrosive environments as well. Health of the wire rope is a critical safety consideration.



About the Company: Bechem's range of wire rope greases posses excellent corrosion protection properties and provide long term lubrication for wire ropes that are subjected to high loads and stress. These adhesive greases resist water washout and have excellent creeping-in properties ensuring effective lubrication to every strand of the wire rope.

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Email: sales@bechemindia.com



Hydraulics on a High!

Being a reliable option for various industrial applications, hydraulic equipment or components are witnessing robust demand due to the rise in industrialisation in developing countries, says a Straits Research report.

The growth in mining and construction industries, agricultural automation, and the expansion in the manufacturing sector are increasing the demand for hydraulic machinery. Manufacturers of hydraulic equipment have implemented several strategies to improve their product offerings and provide better customer service to meet the rising demand. Such tactics encourage the market's expansion by increasing demand for hydraulic equipment with cutting-edge technology.

According to Straits Research, the global hydraulic equipment market - worth \$ 43.825 billion in 2021, is estimated to reach \$ 62.375 billion by 2030, growing at a CAGR of 4 per cent during the period (2022 - 2030).

There are multiple factors driving the demand for hydraulic equipment such as:

Adoption of mechanised agricultural equipment: Agriculture has been a fundamental and significant business across the world for ages. Various activities such as ploughing, sowing, fertilizers & pesticide spraying, harvesting, and different processes were carried out manually in older times. With the increase in industrialisation and the invention of various novel equipment, farmers prefer using machines for agriculture-related activities. Advanced equipment such as atomized tractors or harvesters is used in agriculture activities to increase efficiency and save high labour costs. Adopting automation and machinery in farming is likely to boost the growth of the hydraulic equipment market.

Increase in industrialisation: The rise in industrialisation in developing countries is propelling the requirement for hydraulic equipment. Industries such as mining & construction, packaging, material handling, etc require equipment that can handle heavy operations. Hydraulic motors, pumps, valves, cylinders, and actuators can carry out heavy-duty operations with higher speed and efficacy. Thus, hydraulic equipment or components are an ideal and reliable option for various industry functions. Companies such as Bosch Rexroth, Daikin, Eaton, and Parker Hannifin offer hydraulic-operated machines, including motors, pumps, cylinders, valves, steering, seals, press machines, lifts, and cylinders according to the application in the respective industry. Companies continuously adopt atomisation for efficient working, and thus advanced versions of hydraulic



machines are witnessing huge demand. This acts as one of the primary drivers of global hydraulic equipment.

Asia-Pacific to lead the market

Asia-Pacific - the leading revenue contributor to the global hydraulic equipment market - has been witnessing high growth, owing to a high population base in countries such as China and India. The region is expected to grow at a CAGR of 4.5 per cent. The consumption of FMCG products has increased significantly in this region over the last few years, which drives market growth. In addition, the rapid development of the manufacturing, construction, mining, agriculture, and transportation industries boosts the demand for hydraulic equipment. Owing to this increased demand, manufacturers have set up manufacturing plants to meet the growing requirement in the region. Key players have adopted various developmental strategies to strengthen their foothold in the market.

North America - the second largest region - is estimated to reach \$ 14.508 billion by 2030, growing at a CAGR of 3.5 per cent during the period of 2022 to 2030. Rapid development has been witnessed in North America's food & beverage, pharmaceutical, and FMCG industries over the past few years. With the increased demand for FMCG products, new manufacturing plants and the expansion of old factories have increased the demand for hydraulic-operated filling and packaging machines. Hydraulic motors that operate conveyors are

MOVING AHEAD IN PNEUMATICS

INNOVATIVE PRODUCT FOR INNOVATIVE SOLUTION



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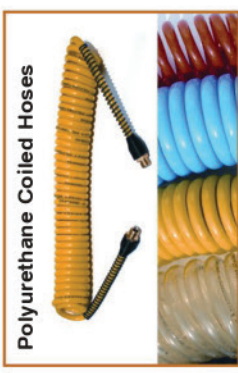
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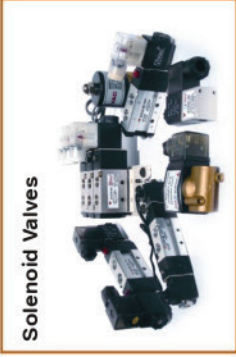
Push-On Fittings



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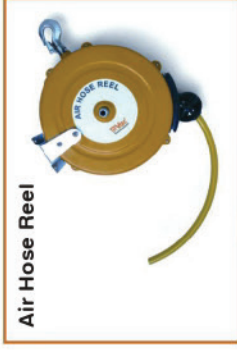
Air Silencers



Air Gun & Coolant Gun



Spring Balancer



Air Hose Reel



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Pune Office:- No. c-34 & 35, 1st Floor, 128/3, Sanghavi Complex, Mohan Nagar, Chinchwad, Pune 411019 Tel: +912027464860 / 32507458

Contact Person: **Jay Mehta**, Mob: +919011096668 email: saivacblr@vacpneumatic.co.in

used in food & beverage while filling the containers such as bags and sacks.

A rapid increase in the requirement for packaged food & beverage, pharmaceutical, and FMCG products is pushing the demand for hydraulic equipment in Europe. In addition, the rise in the number of projects carried out in construction, forestry, mining, agriculture, transportation, and other manufacturing industries has driven the demand for hydraulic equipment in Europe.



Automated mobile robots are only one of the many automated material handling options to consider when determining the best ways to move tools or workpieces.

Industrial segment continues to dominate

Of the two markets of mobile and industrial (based on application), the industrial segment is the highest contributor to the market, with an estimated growth rate of 3.7 per cent CAGR. Hydraulic equipment are widely used in various industries due to their easy controlling, simple operation. Industrial hydraulic equipment are used in various industries such as packaging, food & beverage, rubber, paper, printing, plastic, and press. For example, using dyes, hydraulic press machines are used in sheet metal press workshops to mould the sheets in desired shapes. In addition, sheet metal bodies of cars are shaped using hydraulic press machines.

In material handling sector, hydraulic equipment, including aerial maintenance platforms, hydraulic stackers, floor cranes, and drum lifters & tilters, are used to transport the material from one location to another. Similarly, hydraulic finds application in paper cutting machines, printing machines, rubber molding machines and packaging machines (used in the food & beverage and pharmaceutical industries). These machines use hydraulically operated equipment such as motors, pumps, cylinders, actuators, and pumps.

Mobile hydraulic equipment includes movable equipment operated by hydraulic motors, drivers, pumps, or cylinders to carry out their work. For example, construction, mining, agricultural, marine, and forestry are the industries where movable equipment such as excavators, loaders, dump trucks, tractors, dryers, sprayers, rotary cutters, mini excavators, and wheel loaders are used. A significant increase has been witnessed in construction and mining projects globally; thus propelling demand for mobile hydraulic equipment.

Mining & construction segment is the leading user of the hydraulic equipment and is expected to grow at a CAGR of 3.4 per cent in the next 5-6 years.

Manufacturers are introducing improved solutions, various excavators for specific requirements, and enhanced technology and fuel efficiency to reduce operating costs and increase productivity.

Based on product, the global market is fragmented into pumps, motors, valves, and cylinders. According to Straits Research report, the cylinders segment is the highest contributor to the global hydraulic equipment market and is estimated to grow at a CAGR of 3 per cent from 2022 to 2030. Advanced cylinders give more stability to hydraulic equipment while handling heavy loads.

Electro-mechanical system as an alternative

Electro-mechanical systems are rapidly replacing hydraulic equipment. This is attributed to the fact that electro-mechanical-operated equipment offers numerous advantages over hydraulic equipment. For instance, an electro-mechanical system is cheaper than a hydraulic system when the requirement of ancillary hydraulic equipment is considered. In addition, these systems require less maintenance and repair, as there is a low risk of leakage. Furthermore, electro-mechanical systems only use power while moving the load. In contrast, hydraulic systems have to maintain pressure levels of operating fluids to maintain the position while holding the load, which can cause a delay in responding to the commands given by the operator. This acts as a restraining factor in the hydraulic equipment market.

Growing need for energy-efficiency

Energy consumption by hydraulic equipment is the primary concern, which incurs additional overall costs of purchasing and operating industrial plants and machinery. As the pressure in hydraulic equipment is high, a considerable amount of energy is consumed, which, in turn, increases energy costs. To curb additional costs, energy-efficient hydraulic equipment is deployed. In addition, various new advancements in hydraulic technology have increased its efficiency. For instance, variable speed pump drives in plastics processing machines reduce pressure holding losses during pauses and partial load operation. Similarly, variable pump and valve systems that allow electronic flow matching minimize losses.

Thus, the introduction of advanced energy-efficient hydraulic equipment by manufacturers is anticipated to create a lucrative opportunity for the growth of the global market in the coming years.

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Courtesy: Straits Research

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The new Enerpac SC-Series pump comes with Enerpac Connect app

The SC-Series pump takes cordless convenience to another level while eliminating trip-hazard extension cords, and noise and emission-producing generators.

Enerpac, the leading industrial tools pump manufacturer, has launched the new SC-Series cordless battery pump, a compact lightweight hydraulic pump. The new battery pump allows operators to undertake larger jobs in difficult to access and remote workspaces. With the 'Enerpac Connect' app, SC-Series pump operators can instantly access job-specific usage data for traceability and improved precision, as well as a knowledge base of tool information.

Weighing just 9.2 kg including oil and battery, the SC-Series pump takes cordless convenience to another level while eliminating trip hazard extension cords, noise and emission producing generators. With a maximum operating pressure of 700 bar, the pump's high-performance Enerpac 54 Volt, 4 Ah lithium-ion battery provides substantial runtime for high-cycle, high-pressure applications.

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◀ The Enerpac SC-Series cordless battery lightweight hydraulic pump



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"Enerpac Connect takes the productivity and skills of SC-Series pump operators to another level. It also gives pump owners a comprehensive picture of the tool and its usage, both important factors in job safety and ensuring service delivery. Cordless and compact, we expect the SC-Series to become the 'go-to' pump for many users as they make full use of the Enerpac Connect Mobile App for the latest essential tool information," said Angie Wallace, Global Product Manager, Enerpac.



For more information on the Enerpac SC-Series Cordless Pump, visit www.enerpac.com

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ISSUE HIGHLIGHTS:

ITJ Annual 2024 will suggest steps to be taken to give impetus to the "Mission \$100 billion" target. It will broadly highlight on:

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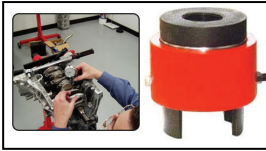


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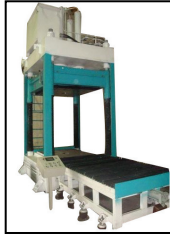
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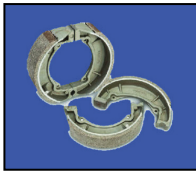
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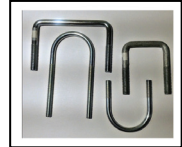
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IPF Annual 2024 highlights on how India can develop a vibrant low-carbon manufacturing industry to gain global competitive edge. It also showcases over 300 products, including some of the innovative new products of 2023.

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:

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Evolving Manufacturing Trends in 2024

Traditional manufacturing methods are being redefined by the rise of smart factories. By 2024, these establishments will have integrated systems, artificial intelligence (AI), and the Internet of Things (IoT) in place to coordinate smooth, self-sufficient operations, says **Frans Van Niekerk, MD, Atlas Copco India.**

The year 2024 brings together breakthroughs in technology, the need for sustainability, and radical changes in production paradigms in the dynamic field of manufacturing. This crucial point in the industry's history indicates a significant shift towards efficiency, innovation, and sustainability. It is clear from examining the trends influencing manufacturing in 2024 that a new approach to production is being indicated by this period.

Rise of smart factories

Traditional manufacturing methods are being redefined by the rise of smart factories. By 2024, these establishments will have integrated systems, artificial intelligence (AI), and the Internet of Things (IoT) in place to coordinate smooth, self-sufficient operations. These factories achieve increased efficiency and decreased downtime by optimising output through the use of adaptive manufacturing processes, real-time data analytics, and predictive maintenance.

Additive manufacturing advancements

In 2024, the field of additive manufacturing—also referred to as 3D printing—undergoes a revolution. The technique advances beyond its earlier constraints, enabling mass production of complex and robust components in addition to prototyping. Its viability across several industries is strengthened by improved printing materials and quicker printing rates, which enable on-demand, localised production and customisation.

Embrace of sustainable practices

In manufacturing, sustainability becomes a non-negotiable focal point. In 2024, companies will place a higher priority on adopting circular economy models, optimising resource utilisation, integrating renewable energy sources, and adopting eco-friendly practices. Manufacturers respond to the growing demand for environmentally conscious products by aligning their operations with sustainable development goals, which include lowering carbon footprints and adopting recyclable materials.



In manufacturing, sustainability becomes a non-negotiable focal point.

Reshoring and localised production

Manufacturing strategies are being reevaluated globally, with a growing focus on localised production and reshoring. Companies reevaluate outsourcing due to factors like supply chain interruptions, geopolitical concerns, and the value placed on agility. Closer manufacturing locations to consumer markets help manufacturers save costs, shorten lead times, and improve their ability to adapt to changing consumer demands.

Human-Machine collaboration

In 2024, human-machine cooperation takes on a new significance. The emphasis is shifting to improving the synergy between humans and machines as automation spreads. Collaborative robotics, virtual reality (VR), and augmented reality (AR) promote safer and more productive work environments. Employees are more proficient in managing, programming, and working with intelligent equipment, which boosts output quality and productivity.

Data security and digital resilience

As digital technology grows more integrated into daily life, cybersecurity and digital resilience become critical issues. By 2024, manufacturers will have made significant investments in strong cybersecurity defences to protect intellectual property, production systems, and

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sensitive data. AI-driven threat detection and response systems combined with a proactive approach to cybersecurity strengthen the sector's defences against changing cyberthreats.

Personalisation and customer-centric manufacturing

The shift in manufacturing towards customer-centric production models places the era of mass customisation front and centre. Businesses can now create customised products at scale thanks to advanced analytics and artificial intelligence (AI), which gives them a detailed understanding of customer preferences. Manufacturing in 2024 responds to particular consumer requests, from personalised apparel to customised electronics, strengthening brand loyalty and creating a competitive advantage.

Biotechnology integration in manufacturing

Traditional industrial methods are disrupted by biotechnology integration in 2024. The combination of biotechnology and manufacturing is revolutionising material supply and production processes, from biofabrication for textiles to bioengineered materials. Bio-based manufacturing methods and sustainable biomaterials emerge as workable substitutes that

minimise environmental effect and depend less on conventional resources.

In 2024, manufacturing will be shaped by a combination of technical advancements, sustainability requirements, and flexible approaches. This revolutionary period is characterised by smart factories, advances in additive manufacturing, sustainability programmes, reshoring activities, and the peaceful coexistence of humans and robots. Adopting these trends helps the sector move towards a more sustainable and customer-focused future while also increasing operational efficiency and productivity. These developments open the door to a reimagined and dynamic industrial landscape in the years to come as manufacturing keeps changing.

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About the author:

Frans Van Niekerk is the Managing Director of Atlas Copco India Holding. He leads the company's operations in India as well as Bangladesh. Niekerk is a South African citizen. His education includes studies in Accounting and Economics from Lyceum Correspondence College, South Africa. He has more over 23 years of experience within the Atlas Copco Group. Most recently, he has lead the Southern Africa Holding as Vice President. Prior to that, he has held a variety of Business Control functions for the Mining and Rock Excavation Technique business area in South Africa, as well as in Southeast Asia, Chile and Sweden.

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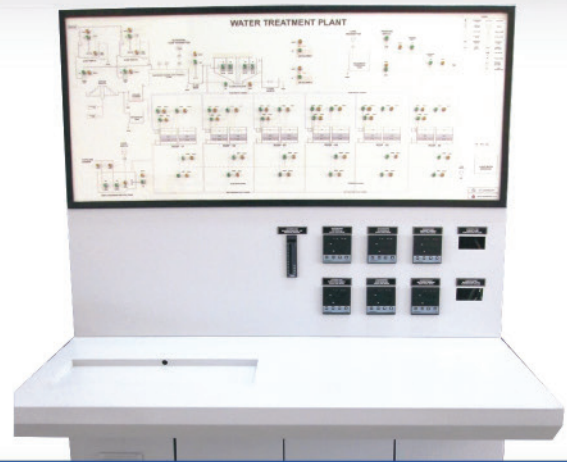
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India optimistic about AI

Contemplating whether AI is a boon or a bane? As its significance grows, questions arise about its lasting impact on humankind. Bosch's Tech Compass Survey sheds light on these queries, highlighting AI's global relevance and India's optimistic outlook.

Boon or bane? Is AI more important now than ever? Will it have a lasting impact on humankind? Possibly, the most burning questions that are lingering in everyone's mind today when it comes to the transformative potential of AI (Artificial Intelligence). Bosch's third annual Tech Compass Survey underlines these views, highlighting the growing relevance of AI as a key driver of change world over.

With 64 per cent of global respondents ranking artificial intelligence as the most influential technology in near future, the report reveals a strong sense of optimism among Indians, 76 per cent of whom personally feel prepared for the upcoming era of AI led interventions. Conducted across Brazil, China, France, Germany, India, the United Kingdom, and the United States, the Bosch Tech Compass survey aims to explore global perspectives on emerging technologies, encompassing people's attitudes, beliefs, expectations, concerns, and more.

"The survey reflects India's increasing acceptance and enthusiasm towards emerging technologies like AI. India is keen on AI-powered solutions across diverse sectors such as sustainability, mobility, manufacturing, and even daily life. At Bosch, we recognise the potential of AI and are committed to implementing it responsibly to deliver a safer experience for everyone," said Guruprasad Mudlapur, President, Bosch Group in India, and Managing Director, Bosch Limited.

81 per cent of Indians, and 71 per cent of global respondents feel that technological progress shall be key to combating climate change. Indians strongly believe in the transformative potential of technology in addressing environmental challenges, underscoring the nation's commitment to leveraging technological solutions for sustainable development.

Enhanced safety emerged as the most resonant sentiment amongst Indians (51 per cent) and global (60 per cent) respondents, when it comes to AI powered integrations in mobility. 48 per cent Indians also expect AI driven solutions to facilitate easier and seamless parking. Among other benefits of AI, global respondents focused on reduced fuel consumption/ greater range (54 per cent) and ADAS features enabling alternative activities while driving (34 per cent).

79 per cent Indians agree on the mandatory labelling



The survey reflects India's increasing acceptance and enthusiasm towards emerging technologies like AI.

of AI content, a belief which echoes strongly across all the geographies surveyed (82 per cent). Bosch is calling for mandatory labeling on any AI-generated content to transparently state its machine origin. This approach fosters transparency, reinforces accuracy, and empowers users to scrutinise and cite the source of AI-generated information.

From 70 per cent Indians trusting AI chatbots over acquaintances for solutions, to 62 per cent showing willingness to see AI as stand-up comedians and 73 per cent agreeing to follow AI recommendations for career path, the survey reflects India's unique interest to integrate AI into daily life experiences.

While Indians expect emerging technologies like 5G (48 per cent) and AI (46 per cent) to have a positive effect on society, there are concerns around the negative impact of humanoid and service robots as well. 56 per cent Indians stressed on the need for education to get prepared for AI and implement it responsibly. The nuanced understanding of complexities around advanced technologies reflects the need for its responsible deployment in future.



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Accelerating EV development with Xcelerator

Siemens Xcelerator portfolio of industrial software is used for styling, mechanical engineering and electric battery pack development for the ION M1-S electric motorbike.

ION Mobility has used Siemens Digital Industries Software's Siemens Xcelerator portfolio of software and services to bring its breakthrough ION M1-S electric motorbike to market, which will help accelerate the electrification of mobility in Southeast Asia.

ION Mobility is an auto-tech company on a mission to create and deliver affordable, desirable, and sustainable mobility for everyone. The state-of-the-art design and precision engineered M1-S motorbike is the culmination of three years of rigorous effort, from a dedicated team of designers, engineers, and technologists across four countries to provide a sustainable urban solution, despite the challenges posed by the pandemic. It offers 150 km range, 4.3 kWh capacity with a less than 3-hours recharge time and a top speed of 105 km/h – all with 26 liters of under the seat storage and the compact agility that is demanded for a city bike.

ION Mobility used Siemens' NX software from the Siemens Xcelerator portfolio for styling, mechanical engineering and electric battery pack development, allowing the team to move from concept, through engineering and into manufacturing readiness. Siemens' NX software and Teamcenter software for product lifecycle management will also form the basis of supplier collaboration as the ION M1-S moves into a production value chain. In addition, ION Mobility has also adopted Siemens' Capital software for wire harness design and manufacturing. ION Mobility is supported by Siemens' sales partner, Dream Technology System Pte Ltd.

Wu Xianyi, Chief Operating Officer, ION Mobility, stated, "Our design team has been working around the clock and across the globe to get the M1-S ready for production. The combination of Siemens' NX, Teamcenter and Capital will allow us to bring together the disciplines of styling, mechanical engineering and wire harness design and to work cohesively as a team to ensure our products not only look amazing but perform as needed by our demanding target customers. All accomplished amidst the global pandemic."

The Southeast Asia region is home to over 200 million combustion engine-powered two-wheelers. There is an increased urgency to shift towards electric motorbikes in the present, with more than 80 percent of



households in Indonesia, Malaysia, Thailand and Vietnam owning motorcycles putting a burden on urban air quality and the environment.

"We are committed to creating great products and seamless user experiences for our customers. Our products combine advanced hardware and software technology with human-centered design to deliver smart electric motorbikes and energy storage solutions that are for everyone to use. Our vision is to lead our region's transition towards a low-carbon economy with electric and electric mobility products for consumers across Southeast Asia. The Siemens Xcelerator portfolio allows us to move rapidly from concept to production-ready product in the timeframe that start-ups require, allowing us to get ahead of the market and define new market categories," said **James Chan**, CEO and Founder, ION Mobility.

Alex Teo, VP & Managing Director, South East Asia, Siemens Digital Industries Software, said, "ION Mobility's work to address Southeast Asia's mobility challenge is testament to how the Siemens Xcelerator portfolio is enabling innovators and pioneers in SMBs to take their ideas from concept to product using the same world-class tools that only much larger organizations previously had access to. We're delighted to see how ION Mobility is bringing the ION M1-S to market and how the accessibility of Siemens Xcelerator is enabling true innovation across so many industries."

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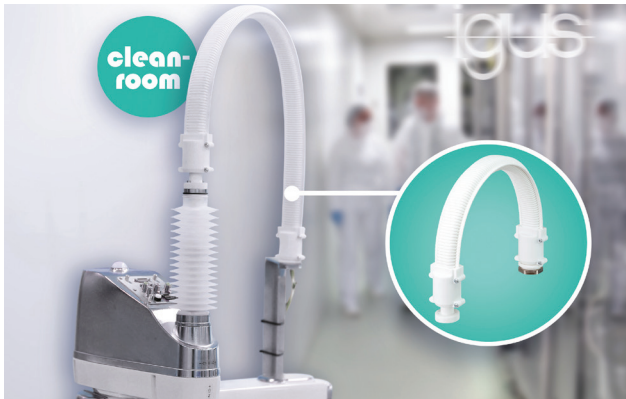


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Energising SCARA robots in cleanrooms

Igus' new Clean SCARA Cable Solution is a cleanroom-compatible energy supply system for high-speed applications.

Igus is launching a new energy supply system for SCARA robots in cleanrooms: the Clean SCARA Cable Solution is made of tribologically optimised high-performance plastics and works almost particle-free according to ISO Class 2 even in high-speed applications. It is also stronger and more user-friendly than classic corrugated hoses.



The Clean SCARA Cable Solution ensures particle-free energy supply, even with highly dynamic movements

In the Hollywood blockbuster *Deep Impact*, a comet 2.5 kilometres in diameter impacts the earth, causing global destruction. Electronics production experiences the same kind of disasters, but these play out in much smaller dimensions. They involve tiny particles, invisible to the naked eye, that ruin electronic components, semiconductors and displays. Therefore, it is important for machines and systems to have as little friction as possible and so as not to contaminate the surrounding air. This isn't easy, especially with SCARA robots, which resemble a human arm that moves rapidly along four axes with cycle times of well under a second. There is always a risk that particles become detached from corrugated hoses and tubes in high-speed applications.

"Finding a way to guide cables and hoses on a SCARA robot in a cleanroom is a science in itself. Fast movements are pure stress for the material, which releases unwelcome abrasion particles," said Matthias Meyer, Head of the triflex and Robotics Business Unit at Igus. For this reason, Igus has added a variant for

cleanrooms to the SCARA Cable Solution energy supply system, which it developed in 2020. "The new Clean SCARA Cable Solution is a cleanroom-compatible energy supply system for high-speed applications - reliable, compact, easy to use and quick to retrofit," said Meyer.

ISO Class 2: Hardly any particles in the surrounding air

The core of the new cleanroom energy supply system is the e-skin soft, a modular energy chain that guides cables and hoses in a sag from the robot's vertical arm to the end effector. Its separable upper and lower shells can be combined to form a closed, dust-proof, water-resistant tube. This ensures that particles from the cables and hoses do not get into the surrounding air from the inside - even during the wildest movements. "To reduce stress on the cables and increase their durability, we have provided a rotating mount for the connections to the fixed and moving ends of the energy supply system. That is what is special about the energy supply system. At the same time, the rotary bearings are designed to be almost particle-free, even during the most dynamic movements," stated Meyer.



With its new energy supply system, Igus offers an alternative to classic corrugated hoses, which has two other advantages in addition to cleanroom compatibility.

The e-chain itself is also especially abrasion-resistant thanks to tribologically optimised high-performance plastic. Its ISO certification by Fraunhofer Institute experts confirms this. The Clean SCARA Cable Solution has ISO Class 2, meaning that it is so abrasion-resistant that a maximum of 100 particles up to a size of 0.1 microns can be found in one cubic meter of air during operation. For comparison, a sheet of paper is 80 microns thick, or 800 times as thick as such a particle.

Clean SCARA Cable Solution as an alternative to classic corrugated hoses

With its new energy supply system, igus offers an alternative to classic corrugated hoses, which has two other advantages in addition to cleanroom compatibility. First: the thin corrugated hoses most often used with the SCARA have hardly any inherent rigidity and are therefore susceptible to kinking. There is no bearing to absorb torsion, so they can tear easily. "Unlike corrugated hoses, the Clean SCARA Cable Solution supports itself and has a unique rotary bearing. This makes it ideal for short unsupported lengths and highly dynamic applications. The oval chain geometry is especially advantageous when lateral forces are applied, since it offers additional strength," said Meyer.

The second advantage over the corrugated hose is

that the zipper principle makes the Clean SCARA Cable Solution easy to open, enabling users to insert cables and hoses quickly. An optional interior separation provides additional protection that corrugated hoses cannot. Upon request, the customer can receive the new energy chain for cleanrooms as a ready-to-connect complete system with chainflex cables." More than 900 highly flexible cables of IPA Class 1 are available.

The Cologne (Germany) based igus GmbH develops and produces motion plastics. These lubrication-free, high-performance polymers improve technology and reduce costs wherever things move. In 2022, igus generated a turnover of Euro 1.15 billion. In recent years, the company has expanded by creating internal startups, e.g. for ball bearings, robot drives, 3D printing, the RBTx platform for Lean Robotics and intelligent "smart plastics" for Industry 4.0.

SME

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Phoenix Contact_ Contactron Speed Starter

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For details, contact Phoenix Contact (India) Pvt Ltd, New Delhi, on Tel: +91 11 7181 0700/800, Email: response@phoenixcontact.co.in, or visit www.phoenixcontact.co.in

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Autosys: An expert you can rely on

Autosys and its leadership team has over 30 years of experience across 500+ projects in a wide variety of sectors and industries.

Autosys executes projects in one of the following two models:

1. Turnkey projects

Autosys Control Systems specialises in turnkey project execution in a wide variety of sectors such as water, waste-water, chemicals, oil, gas and power. In turnkey model, the total project is ordered and invoiced through the books of Autosys.

2. Engineering and project management services

Autosys also offers engineering services and project management services for large-scale projects. This includes pre-bid macro level engineering and post-bid detailed engineering. Project management includes supporting the customer to technically evaluate, short-list and select vendors for supply, installation, commissioning, and integration. Autosys will coordinate with the selected vendors till the project is fully commissioned. In this model, the total project is divided into various packages and each package is ordered by the customer directly on the vendor and invoiced directly to the customer.



Some success stories

Given below are some projects executed by Autosys.

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ECP within ships: Removing micro-organisms and

plant life from sea water and processing them for usage within a ship requires an automated PLC based control and instrumentation system with 250-300 IOs. These systems are supplied as ready to use SKIDs that can be easily installed

Tank management and dosing in hazardous areas:

It is not just the oil & gas industry, even fragrance manufacturers work with 100s of tanks with explosive liquids. These projects use high accuracy (<0.1%) mass flow meters, VFDs and valves controlled and operated from a PLC or DCS. Autosys takes complete responsibility of choosing the right explosion proof instruments and controls and getting the final project EXD certified by the relevant authorities.

Telemetry for state wide drinking water

distribution and irrigation: Imagine data collection and control of water distribution across 600 different locations across the state, all remotely monitored and controlled from a centralised control room. This requires multimodal networks such as VSAT, RF, GSM, integrated with local RTUs, IIOTs and EDGE. The data from all the locations is concentrated in a server and then piped into a SCADA and then to a Web enabled MIS System for visualization, controls, dashboards, billing and reports.

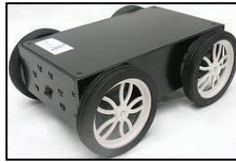
Complete dairy automation: Dairies do come with OEM machines, each with its own island of some automated controls. However, an integrated approach to complete automation, across the whole plant can deliver many benefits on quality as well as operating costs. Critical parameters monitoring ensures that at each stage of the processing, all the critical parameters are independently monitored and recorded for future analysis. This also provides early warnings to reduce rejection and wastage. Complete CIP automation, coordinates and controls the entire CIP process between batches end-to-end, across the entire production line. Boiler automation and energy monitoring across the plant can help you reduce a substantial part of the energy costs. 

For more details on Autosys Control Systems, contact on Email: vjk@koremec.net, or visit: www.koremecgroup.com

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COMPACT ROBOTIC INSPECTION SYSTEM

Robosoft Systems offers a wide range of compact DuctBot robotic inspection systems. DuctBot is a compact robotic inspection system



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with integrated digital video recorder, controlled by PS2 joystick.

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Robosoft Systems, Mumbai

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Email: info@robosoftsystems.co.in

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Email: contact@gridbots.com

BAGGING SYSTEM

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variety of materials.

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Alligator Automations, Pune

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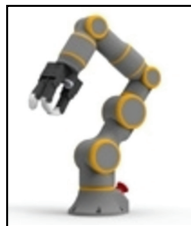
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Email: info@bharathautomation.com

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Contact:

Asimov Robotics Pvt Ltd, Kochi

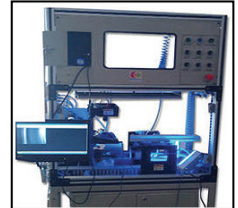
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Renovus Vision Automation Pvt Ltd, Bengaluru

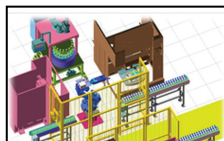
Tel: 080-65317777

Mobile: 09035647777

Email: jhon.khalkho@renovus.in

ROBOT SIMULATION PROGRAMMING

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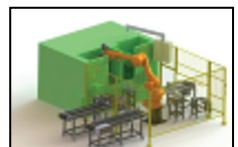
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ROBOTIC MACHINE

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ROBOTIC WELDING SPM

Primo Automation Systems manufactures, supplies and exports robotic welding SPM. This robotic cell comprises of the dual robot dual station concept for reducing the cycle time.



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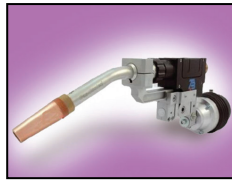


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Primo Automation Systems Pvt. Ltd., Chennai
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ROBOT WELDING TORCHES

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Contact:

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HMI-HUMAN MACHINE INTERFACE

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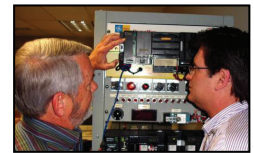


Contact:

Accure Power Technologies (P) Ltd, Bengaluru
Mobile: 09980921423
Email: sales@accurepower.com

FACTORY AUTOMATION SERVICE

Frontline Technologies offered factory automation services. The offered factory automation service is rising fast in popularity; it is imparted in a precise and prompt manner by skilled engineers.



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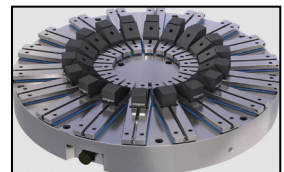


Contact:

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Viksit Bharat@2047 represents the government of India's ambitious vision to transform the nation into a developed entity by the centenary of its independence in 2047. In view of the above, infrastructure will be critical for achieving the goals of Viksit Bharat @2047. **Infrastructure Today Conclave** will explore the following at its two day conference in **July 2024 in Delhi:**

Make in Steel

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- The role of infrastructure in goals set for Viksit Bharat
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“Woodfield Systems eyes more acquisitions to fuel growth.”



Woodfield Systems International (WSI) is a premier design, manufacturing, sales and service organisation providing customised bulk fluid handling and safety access solutions for loading and unloading products in the oil and gas, chemical, petrochemical, cryogenic and aviation sectors. Kartik Gala, Chief Executive Officer and Board Member, WSI, shapes strategic direction and drives the company's business development initiatives. He has spearheaded the WSI's expansion into new markets, and his leadership and commitment to excellence have been instrumental in elevating the brand's visibility and presence globally. In conversation with Rakesh Rao, Executive Editor, he provides an overview of the bulk gas and fluid transfer market and also shares company's plans to tap new business opportunities.

How has been the journey of Woodfield Systems International (WSI) since its inception?

Woodfield Systems International, founded in 2000 as a joint venture with Woodfield Systems Limited, is a leader in the design and manufacture of customised bulk gas and fluid management solutions. We manufacture fluid handling equipment for the oil & gas, petrochemicals, chemicals, and aviation sectors. Our

products include truck loading equipment, metering skids, safety access platforms, and floating suction units. WSI has manufacturing facilities in Maharashtra, an assembly facility in Seville (Spain), and operations in the USA, Mexico, and UAE. We export our products to over 46 countries worldwide.

Recently, WSI completed the acquisition of Woodfield Systems UK. How will this



development help in boosting manufacturing and innovation capability of WSI?

WSI recently completed the acquisition of Woodfield Systems UK, a British engineering and manufacturing business with a legacy spanning a century. This acquisition enables us to leverage Woodfield Systems UK's technical mastery and extensive industry expertise, while expanding WSI's product portfolio beyond land-based fluid handling equipment. Notably, WSI will now be the sole manufacturer of 100 per cent indigenous Marine Loading Arms (MLAs) for the shipping industry in India. We endeavor to not only serve the domestic market but also become a global exporter of this solution. Overall, the unified engineering & manufacturing capabilities of WSI and Woodfield Systems UK will enable us to deliver paradigm-changing innovations in the years ahead.

How was 2022-23 for WSI? What are your expectations for FY2023-24 and beyond?

In the fiscal year 2022-23, Woodfield Systems International (WSI) witnessed significant progress and achievements. The company experienced robust growth and expansion during this period. Across various metrics, including revenue, market presence, and operational efficiency, FY 22-23 marked a milestone year for WSI.

Looking ahead to FY 2023-24 and beyond, WSI remains poised for continued success and sustainable growth. Building upon the momentum gained in the previous fiscal year, the company is confident in its ability to sustain a remarkable trajectory. With ambitious yet attainable goals, WSI aims to achieve a remarkable 40 per cent year-over-year growth rate.

Several strategic initiatives and investments have been planned to facilitate this growth trajectory. These include expanding market reach, enhancing product innovation, investing in research and development, and optimising operational processes. Additionally, WSI is committed to fostering strong partnerships and collaborations to capitalise on emerging opportunities and market trends.

Furthermore, WSI is focused on maintaining its reputation for delivering high-quality products and services while ensuring customer satisfaction remains a top priority. By prioritising customer-centricity and continuously adapting to evolving market dynamics, WSI aims to solidify its position as a leading player in its industry.

Beyond FY 2023-24, WSI remains committed to long-term sustainability and value creation. The company will continue to pursue growth opportunities while upholding its core values of integrity, innovation, and excellence. Through strategic planning, prudent management, and a dedicated workforce, WSI is

confident in its ability to achieve sustained success and deliver value to its stakeholders for years to come.

How has the bulk gas and fluid transfer market changed over the last 5 years? What was the contribution of factors like changes in environmental regulations, supply chain disruption, etc in this change?

The past five years have witnessed a growing emphasis on safety standards around the world, including in India. This focus coincides with a projected rise in global energy demand, highlighting the critical role of efficient port infrastructure in facilitating energy trade. As a result, countries, including India, are prioritising infrastructure development to ensure a secure and reliable energy supply chain. Recent geopolitical events and disruptions such as the COVID-19 pandemic have further emphasised the need for self-sufficiency and preparedness in the sector.

India is aggressively promoting green hydrogen. What kinds of business opportunities it will present to WSI?

The increased push towards green hydrogen use certainly expands the market for our solutions. WSI is well-positioned to provide the necessary equipment for the transportation and measurement of liquid hydrogen, serving both port and truck terminal applications. Our unwavering commitment to the safety of people and environment at all times certainly bolsters WSI's appeal among prospective customers.

What steps are been taken to increase manufacturing capabilities by using the latest technologies and new materials?

WSI is expanding its manufacturing footprint with the establishment of a fourth facility, boasting nearly quadruple the capacity of our existing operations. This strategic move underscores the company's commitment to efficiency and precision. WSI continues to leverage cutting-edge technologies such as robotic welding and advanced turn mill centers to expedite production while maintaining adherence to the highest quality standards.

What are your growth plans for the future?

WSI anticipates significant growth, with projected year-over-year sales increases of 40 per cent. To support this ambitious expansion, we plan to invest \$ 100 million in the business over the next decade, while also considering further acquisitions in North America and the EU. Furthermore, in alignment with the spirit of Atmanirbhar Bharat, we endeavour to cement India's standing as a global manufacturing and engineering powerhouse.



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CEAT: Manufacturing Excellence!

The company – the only tyre manufacturer in the world to receive Lighthouse certification for its plant – embarked on its Industry 4.0 journey in 2020, and have been able to improve operational efficiencies through digital technologies, says Rakesh Rao, Executive Editor.

The year 2024 brings together breakthroughs in technology, the need for sustainability, and radical changes in production paradigms in the dynamic field of manufacturing. This crucial point in the industry's history indicates a significant shift towards efficiency, innovation, and sustainability. It is clear from examining the trends influencing manufacturing in 2024 that a new approach to production is being indicated by this period.

In January 2023, CEAT Ltd became a part of the prestigious Global Lighthouse Network when its Halol tyre manufacturing facility was designated by the World Economic Forum (WEF) as an Advanced Fourth Industrial Revolution (4IR) Lighthouse. With this, CEAT became the first tyre company globally to be recognised for adopting advanced 4IR technologies to digitally transform operations. “We have received Lighthouse designation for our Halol plant. Lighthouse Certification is conferred upon an individual factory or unit which have scaled Industry 4.0 use cases across its shop floor. It signifies the fact that the plant has implemented advanced 4IR technology and developed use cases which have delivered business benefits and have improved the plant operational KPI (key performance indicator). We are the first tyre brand in the world to receive this prestigious honour from the World Economic Forum,” says **Jayasankar Kuruppall**, Senior Vice President, Manufacturing, CEAT, with pride.

CEAT, the flagship company of RPG Enterprises, has been a consistent performer all these years. In FY23, the company recorded revenue of Rs 11,263 crores - up by

“At an overall level, modernisation and the implementation of AI solutions helped us improve our manufacturing operation cost by nearly 15 per cent.



Jayasankar Kuruppall, Sr VP, Manufacturing, CEAT

20.9 per cent compared to Rs 9313 in FY22. The company, which has a workforce of close to 10,000 employees, exports to more than 110 countries in America, Europe, Middle East and South East Asia. CEAT, one of India's



CEAT claims to be the first tyre company in India to integrate female operators onto its shop floors

leading tyre manufacturers, produces more than 41 million high-performance tyres, and caters to various segments like 2-3 wheelers, passenger and utility vehicles, commercial vehicles and off-highway vehicles.

Ceat has six manufacturing facilities located at Bhandup, Nashik, Halol, Nagpur, Ambarnath, and Chennai. Bhandup and Nashik plants specialise in crafting high-quality truck tyres, LCV tyres utilising bias technology, and off road tyres, including those for farm vehicles. The Halol facility is dedicated to the production of truck bus radial tyres and passenger car radial tyres. In Nagpur, the company focuses on crafting top-of-the-line 2-wheeler tyres, while produces passenger car radial tyres and motorcycle radial tyres in Chennai. The Ambarnath plant is dedicated to the production of off-road tyres.

“Three of our state-of-the-art facilities - Nagpur, Ambarnath, and Chennai - have been established within the last seven years. This expansion marks a significant stride in our journey towards meeting the evolving demands of the market and exceeding expectations. Catering to a diverse clientele spanning domestic aftermarket, original equipment manufacturers, and

Digital push for growth

Some of the technological initiatives adopted by the company include;

- Machine learning (ML) algorithms to optimise cycle time by dynamically modifying machine parameters in closed loop
- IoT sensors to improve machine reliability using predictive analytics
- Machine to machine connectivity to ensure seamless flow of data between equipments to ensure faster decision making
- Advance cartesian robots and automated guided vehicles (AGVs) on the shop floor to ensure smooth movement of materials across the shop floor
- VR for training the operators

international markets, we continuously enhance our capacities year after year. Not only are we expanding our footprint, but we are also pioneering change in the industry's landscape. We proudly lead the way as the first tyre company in the nation to integrate female operators onto our shop floors. With a commendable gender diversity ratio of 20 per cent in our new factories, we are championing inclusivity and equality in the workplace," states Kuruppal.

Maximising productivity

The company meticulously measures the plant operations against KPIs such as lead time for new product releases, specific energy consumption, yield, productivity, and overall factory cost. Modernisation has also helped in scaling up productivity and efficiency at its production sites. "Modernisation has definitely accrued business benefits for Ceat at the factory units and this has been one of its core criteria when selecting and implementing digital solutions," says Kuruppal.

CEAT has been able to improve the plant throughput by nearly 20 per cent at one of its plants, through the implementation of AI solution in the critical mixing operation. He elaborates, "The usage of IoT sensors and advance analytics have enabled us to reduce our air and steam consumption, leading to over 15 per cent reduction in the overall energy requirements of the factory. With the implementation of anomaly detection models, we started to witness declining trends in the operational material waste which had reached its saturation limits. We were also able to reduce our scrap levels by more than 45 per cent. At an overall level, modernisation and the implementation of AI solutions helped us improve our manufacturing operation cost by nearly 15 per cent."

All the new technologies implemented at CEAT plants have been driven by business needs and have added value to the process and improved the overall plant manufacturing cost. "We installed IoT based sensors on plant machinery; this along with predictive

analytical solution has enabled us to get advance warning on premature equipment failure. We have implemented deep learning and ML based solutions along with visual analytics to identify and sort tyres based on the SKU type. We are working on a digital twin solution on shop floors to create the overall process model to simulate and optimise the plant operation. We have setup a VR platform to train our operators and have used AR for remote commissioning of equipment with people based across geographies," explains Kuruppal.



Today, renewables account for 35-40% of CEAT's total energy requirement

In the recent years, the industry has witnessed lot of uncertainties (from customer as well as supplier side). So how is CEAT able to manage production efficiency in this highly volatile market? He answers, "We are future focused and always work on a 5-year rolling plan. This forms the basis for our planning on manufacturing capabilities and capacities, raw material supply, new product development and competency of our team."

Charting sustainable growth

With the government's thrust on infrastructure and India becoming an automotive hub, all major tyre companies have been expanding their capacities in India and this is expected to continue going forward. While CEAT is also enhancing its manufacturing capability, it is doing so with low carbon footprint. "Our sustainability vision is to halve our carbon footprint by 2030 and all our initiatives are in line with this vision. In manufacturing, our efforts are mostly on energy consumption reduction, water consumption reduction and usage of renewable energy. We have reduced our dependence on the usage of non-renewable energy sources by increasing renewable energy consumption derived from biomass and solar energy, implementing many energy saving initiatives by retrofitting, improving the efficiency of boilers, use of inexpensive and cleaner fuels such as piped gas. Today, 35-40 per cent of our total energy is through renewable energy resources," concludes Kuruppal.

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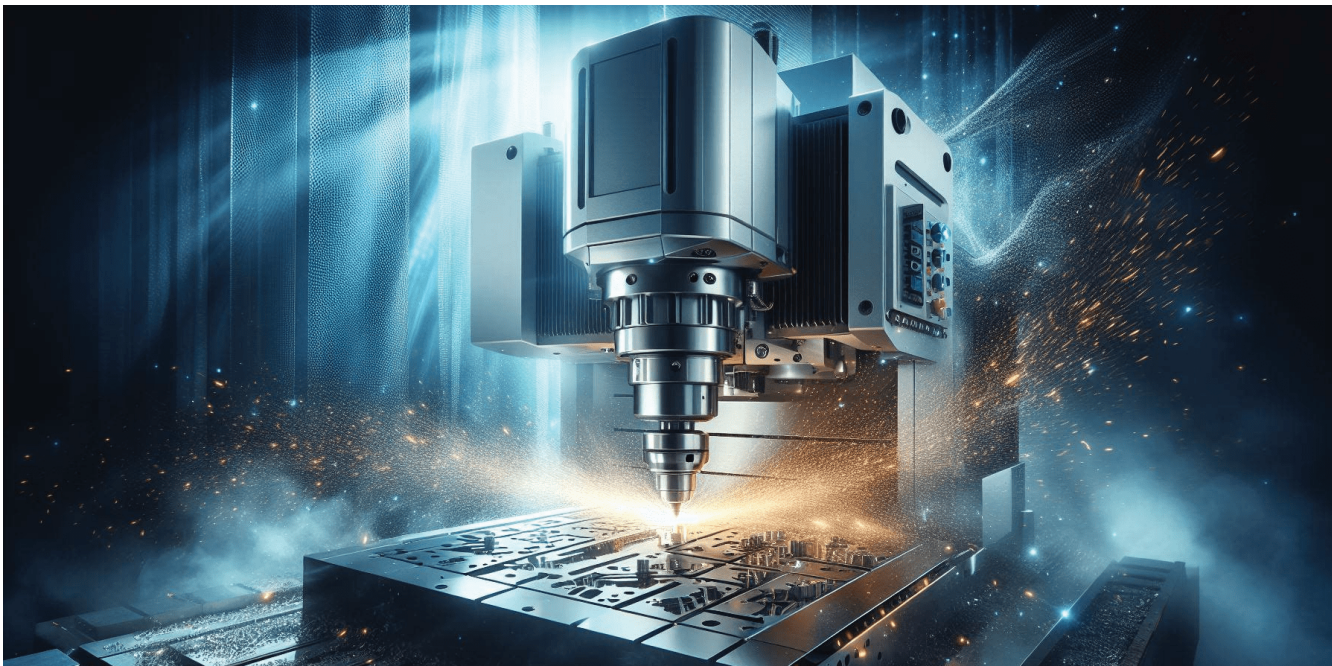
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Automation: The Future of Industrial Cutting

Automated cutting machinery has opened more opportunities for handling complex work in less time and with fewer or no workers, says **Emily Newton**.



Products ranging from the sliced ham in the grocery store's refrigerated area to the metal range hood over a kitchen stovetop require industrial cutting equipment during manufacture. Automated cutting machinery has opened more opportunities for handling complex work in less time and with fewer or no workers. Industrial workers who use products in this category can anticipate numerous benefits.

Facilitating the movement of tools and workpieces

Bringing automated cutting machinery into an industrial facility is an excellent way for people to accelerate their workflows, reduce accident rates and more. However, processes can still become cumbersome when people move the cutting tools or workpieces around a facility to go through various steps. Fortunately, automation can reduce those challenges.

The employees of a Korean cutting tool manufacturer used to rely on three-stage steel carts to move items from one side of the factory to the other. However, this approach put workers at risk of fatigue and injuries.

Leaders improved the process by exploring how automated mobile robots (AMRs) could integrate with the existing industrial setup.

They bought two AMRs from a South Korean manufacturer offering models capable of carrying payloads of more than 1,100 pounds. Once the cutting tool manufacturer had used the AMRs for about eight months, executives noticed benefits such as a more productive and streamlined material movement process. Additionally, although material mishandling previously caused quality shortcomings, the AMRs reduced the rate of such mishaps.

AMRs are only one of the many automated material handling options to consider when determining the best ways to move tools or workpieces. Conveyor belts are among the most basic, while automated storage and retrieval systems can take up substantial parts of massive facilities. When decision-makers consider things such as part size and volume, they can use those details to determine the most appropriate material-handling options for their automation plans.

Allowing businesses to meet higher demands

Production bandsaws provide the accurate and high-volume cutting performance industrial users require to satisfy their customers. Adding automation to the equation can make companies even more competitive when faced with rising demands.

In one example, a structural steel and tool steel stockholder and processor with clients in numerous European countries uses 35 automated bandsaws to increase its capacity for cutting large workpieces. Since the company only has a few competitors providing that service, leaders saw an excellent opportunity to meet a known marketplace need and cope with increasing demands from new and existing customers.

The automated bandsaws cut pieces — the largest of which are several meters long and wide — lengthwise and crosswise. Additionally, employees can alter the cutting infeed to align with their productivity goals or the client's requirements. Several years ago, company executives purchased a compact, automated storage system that holds up to 5,000 tonnes of bar stock. That system interfaces seamlessly with the bandsaws and connects to the company's enterprise resource planning system.

Executives view the automated bandsaws as excellent investments because they allow the company to offer high-quality, precise work. Customers typically want large, heavy billets and plates of various grades, dimensions and geometries. The automated equipment provides the necessary versatility and excellent outcomes to support customer growth.

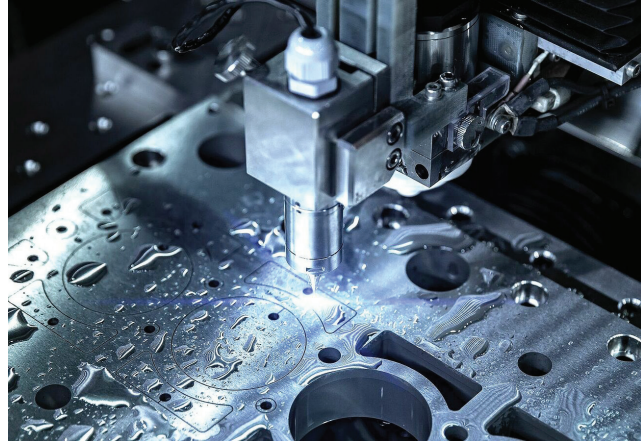


Automated mobile robots are only one of the many automated material handling options to consider when determining the best ways to move tools or workpieces.

Shortening cutting tool programming time frames

Some cutting tools — such as computer numerical control systems — require programming to deliver the expected results. However, some people are investigating how to apply advanced technologies to make automated cutting machinery work better than ever.

One specialty software title uses AI to suggest machining strategies for 3-axis parts. It takes only seconds to do the job, but manual creation requires hours or days. More specifically, some users can use AI to program cutting machinery in 80 per cent less time,



saving them hundreds of hours of production time annually.

Additionally, this tool empowers junior workers to program machines and create more complex parts with little or no oversight from more senior colleagues. An executive at one company within the defense industry that uses the software said it made the manufacturing process more streamlined and effective by capturing and automating the institutional knowledge held by the company's manufacturing workforce.

Are you ready to try automated cutting machinery?

These are some of the many ways industrial cutting machinery can improve industrial processes and help workers get more done while enjoying reduced chances of strain and injury. Leaders can position their companies for the best outcomes by narrowing down the biggest challenges and determining how automation could help.

They should also encourage employees to feel upbeat about what's ahead, explaining why now is an excellent time to begin automating workflows and what team members can expect during the transition and beyond. People may need additional training or safety accessories to use the automated cutting machinery well. It'll also likely take some time for them to ease into doing things differently, so executives must remember that good results will happen gradually.

Setting specific goals and tracking key metrics throughout this process will help everyone stay motivated while focusing on what's going well and identifying areas for improvement. Automation is not a magic solution to all problems, but it can optimise activities and provide lasting positive outcomes for the companies that try it.

SME

About the author:

Emily Newton is a tech and industrial journalist and the Editor-in-Chief of Revolutionized magazine.

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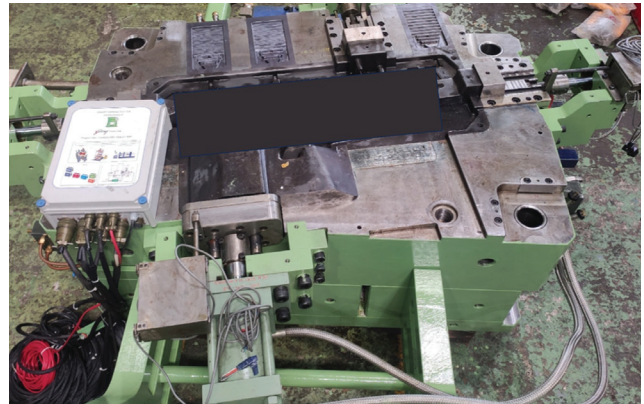
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Godrej Tooling: Unveiling Smart Solutions!

The company's new technology, Smart Connected Die casting Die, improves foundry efficiency with increase in die life by 10 per cent and reduction in per piece cost by another 10 per cent.

Godrej Tooling, a business unit of Godrej & Boyce, has introduced the Smart Connected Die casting Die, a patented technology that revolutionises the monitoring of real-time die parameters. This innovative solution aims to reduce breakdowns by alerting non-conformance and predicting failures in die casting production. This milestone in Indian die casting offers an indigenous solution that boosts efficiency. With a 10 per cent increase in die life, a 10 per cent cost reduction per piece, and fewer rejections, it signals a significant industry advancement.

Traditional die casting monitoring methods have long been constrained by their reliance solely on machine-side parameters, overlooking critical die-related factors essential for ensuring consistent part quality. Recognising this gap, Godrej Tooling developed the Smart Connected Die casting Die. The system captures temperature and pressure parameters within the die, crucial for maintaining consistent quality. Historically,



Smart Connected Die casting Die aims to reduce breakdowns by alerting non-conformance and predicting failures in die casting production.

“By seamlessly integrating real-time monitoring, proactive alerts, and cloud-based accessibility, we are not just optimising die casting processes, but rather fundamentally reshaping how manufacturers approach production.”



Pankaj Abhyankar, Sr VP & Business Head, Godrej Tooling

production continued with faulty parts until there were manual inspections or critical breakdowns. This new technology addresses the issue by offering real-time insights and ‘traceability’ into die performance, enabling early detection of problems, resulting in reduced downtime, enhanced efficiency, and heightened productivity for manufacturers.

This innovative solution is poised to benefit a wide range of industries where consistent part quality and production efficiency are paramount. This has been built entirely indigenously, with critical parts designed to perform in challenging foundry conditions having gone

through multiple iterations. It is providing an answer to the need of foundries to become Industry 4.0 enabled.

Pankaj Abhyankar, Senior Vice President & Business Head, Godrej Tooling, said, “By seamlessly integrating real-time monitoring, proactive alerts, and cloud-based accessibility, we are not just optimising die casting processes, but rather fundamentally reshaping how manufacturers approach production. Alongside improving individual components, this will empower entire industries to embrace smarter, more adaptive methodologies that prioritise quality, reliability, and sustainability. As we continue to bridge the gap between traditional manufacturing and cutting-edge technology, the potential for transformative change across the manufacturing landscape is limitless.”

This technology provides instant insights into die thermal conditions and machine parameters for each shot, ensuring that deviations are identified and promptly addressed. It enables remote access to production conditions through cloud connectivity and boasts data analysis capabilities for efficient root cause analysis. The Smart Connected Die Casting Die collects process parameters directly from the machine or dedicated sensors on the die casting equipment and side cores for each shot. This data is then uploaded to the Cloud server via Wi-Fi or SIM card at specified intervals.

SME



Leap Towards a Cleaner Future!

Hengst Filtration opened a filtration plant in Bengaluru to manufacture a diverse range of products across multiple verticals, exemplifying the German firm's long-term growth strategy for India, says Karthik Muthuveeran, Assistant Editor.

Hengst Filtration, one of the leading filtration companies from Germany, has unveiled its cutting-edge facility in Yelahanka, Bengaluru. This strategic move aims to address the surging demand for filtration systems in automotive, hydraulics, healthcare, and industrial sectors within the country. With an initial investment of Rs 17 crore allocated towards machinery, IT infrastructure, and warehousing, Hengst Filtration is laying the groundwork for its operations in India. Recognising India's pivotal role as both a key market and a potential export destination, the company is poised to seize the abundant opportunities present.

Esteemed dignitaries and valued customers, including Rajinder Singh Sachdeva, Chief Operating Officer, VE Commercial Vehicles; B Srinivas, Executive Vice President, Product Strategy & Purchasing, VE Commercial Vehicles; and Rajesh Nath, Managing Director, VDMA India Services, graced the inauguration event, underscoring the significance of this expansion.

Speaking on the sidelines of the inaugural event, **Christopher Heine**, Group CEO, Hengst Filtration, said, "India represents a significant growth opportunity for Hengst Filtration. The country's expanding economy, coupled with its growing demand for filtration systems across industries, makes it an ideal fit for our expansion plans. We are confident that our innovative solutions that bundle filtration for industry and the environment will be well-received by our Indian customers."

Sandip Mehta, Managing Director, Hengst India said, "We are excited about our latest and most significant expansion into this pivotal market, poised to contribute to reducing emissions in the production environment and enhancing air quality for the people of India. Our substantial investments, totalling around Rs 17 crore, underscore our unwavering dedication to India's progress. From automotive to medical technology, our mission is unequivocal: to mitigate emissions, safeguard machinery, and elevate air quality. Each of our products acts as a catalyst for positive change, fostering a cleaner, greener planet. With our diverse portfolio deeply intertwined with India's thriving sectors, we're fully dedicated to nurturing its trajectory



Rajinder Singh Sachdeva, COO, VE Commercial Vehicles, inaugurating Hengst Filtration's Yelahanka facility

of growth. The inauguration of our new facility at Yelahanka symbolises our steadfast commitment to establishing a robust foothold in the Indian market."

"India boasts exceptional manufacturing prowess and a skilled workforce, which will not only enable us to cater to the domestic market but also to expand into international markets. We anticipate making a significant impact through our partnerships in India and leveraging the nation's potential for global outreach", Sandip further added.

Spanning across 36,000 sq ft, the Yelahanka facility will manufacture a diverse range of products across multiple verticals, exemplifying Hengst's long-term growth strategy for India. This plant stands as a beacon of sustainability, constructed using reusable plastics to reduce carbon emissions, thus positioning it as a forward-looking factory.

Hengst Filtration prioritises sustainability through its filtration solutions, which contribute to environmental protection, resource efficiency, and improved quality of life. By purifying air and liquids, these solutions reduce pollutant emissions and enhance indoor air quality. Optimised for minimal air resistance, Hengst filters lower energy consumption and extend

“Hengst sees India as a critical part of its global strategy”

An exclusive interview with Christopher Heine, Group CEO, Hengst Filtration, and Sandip Mehta, Managing Director, Hengst India.

How does the Bengaluru plant align with Hengst’s global standards?

Sandip Mehta (SM): The new plant in Bengaluru has been set up with Hengst’s global processes in manufacturing, logistics, and quality standards, marking a significant step in their expansion journey. This plant integrates Hengst’s global processes in manufacturing, logistics, and other areas. The aim is to extend our legacy and introduce cutting-edge filtration solutions to the Indian market and beyond, contributing positively to the environment and supporting India’s development story.

What role does Hengst play in industries beyond mobility, such as energy and heavy industry?

Christopher Heine (CH): Hengst supplies filtration solutions for energy production, including windmills and gas turbines, and for heavy industries like cement and steel production. Their high-efficiency filters support clean industrial processes and contribute to reducing air pollution.

How does Hengst contribute to mobility and environmental sustainability?

CH: Hengst offers a range of products for the mobility sector, including oil and fuel filter modules that



L-R: Sandip Mehta and Christopher Heine

enhance engine efficiency and reduce CO₂ emissions. Our products support cleaner mobility solutions, including fuel cells for green hydrogen, and air filtration systems for vehicles and ships, contributing to the decarbonisation of transportation.

How does Hengst filtration technology benefit the healthcare and medical sectors?

CH: In healthcare, Hengst develops filters for surgical environments, ensuring clean air and protecting both patients and medical staff from harmful particles and gases during procedures. Their med-tech segment focuses on innovative solutions for maintaining high purity standards in medical facilities.

What are the future directions for Hengst in terms of technology and innovation in filtration?

SM: Hengst is focused on advancing filtration technology across various sectors, including the mobility sector’s shift towards decarbonisation, healthcare innovations, and addressing the challenges of climate neutrality and urbanisation. Our aim is to develop solutions that meet the increasing demands for clean air, water, and environmental sustainability.

How does Hengst view its role and opportunities in India, considering its expansion into Bengaluru?

SM: Hengst sees India as a critical part of its global strategy, with the Bengaluru plant being its first fully owned subsidiary in the country. The expansion aligns with India’s growth story and its needs for advanced filtration solutions in various sectors, from industrial and automotive to healthcare and environmental protection.

The company already sources components from India for global use and plans to expand its export activities. India’s manufacturing competitiveness makes it an ideal hub for producing and exporting various products, particularly in mobility and other sectors Hengst operates in. This strategy reflects Hengst’s intention to utilise India not just as a market, but as a key global manufacturing base.

equipment lifespan. The company is committed to achieving zero emissions from fossil fuel combustion and sourcing 100 per cent renewable electricity by 2030, aligning with its environmental responsibility goals.

As a family-owned company, Hengst Filtration stands for innovative filtration solutions in filtration and fluid

management worldwide. With our products we work towards the goal of making the planet a cleaner place. Hengst Filtration is a family company founded in 1958 in Münster, Germany. With more than 3,500 employees at 23 locations worldwide, it develops innovative solutions in filtration and fluid management.

SME



Low voltage AC drives: Evolving!

The low voltage AC drive market is currently undergoing a profound shift. **Brianna Jackson, Research Analyst, Interact Analysis**, explores several innovations in the market, namely multi-axis drives, integrated motor drives, and wide-bandgap semiconductors, as well as their potential impact on the market.

The low voltage AC drive market is currently undergoing a profound shift. Traditionally, drives have been treated and marketed as a standalone component, however current demands from machine builders and end-users have necessitated viewing drives more holistically as part of a whole system solution. More specifically, demand for more modular, compact machinery has increased innovation within the drives market, leading to the development of space-saving solutions. This insight will explore several innovations in the low voltage AC drive market, namely multi-axis drives, integrated motor drives, and wide-bandgap semiconductors, as well as



The previous emphasis on designing machines for optimal efficiency to achieve high throughput has shifted towards designing flexible machines

their potential impact on the market.

Compact multi-axis drives revolutionise machine design

The concept of multi-axis has historically been a defining characteristic of servo drives and was not commonly associated with low voltage motor drives. However, recently released offerings from Delta Electronics and Inovance have changed that. At SPS 2022, Inovance unveiled the MD-800 compact multi-axis drive, while in August of the following year, Delta Electronics announced the release of the MX300.

These drives enable one drive unit to control multiple motors. According to Delta Electronics, a single rectifier module can support up to 6 inverter modules and control up to 15 axes. This represents significant space savings when compared with traditional one drive to one motor

setups. Delta Electronics and Inovance state that utilising these compact multi-axis drives can save 50 per cent of space within a cabinet, facilitating easier installation. As a result, this product type allows for a much higher level of flexibility in machine design.

We observed a similar trend in our inaugural study on ultra-low voltage (<60v) drives. The previous emphasis on designing machines for optimal efficiency to achieve high throughput has shifted towards designing flexible machines. Our analysis indicates that the compact multidrive product type might be poised to become a competitor of decentralised and motor-mounted drives in applications and processes requiring additional flexibility.

High-efficiency motors fuels integration trend

In the same vein of enabling greater machine flexibility, the integration of drives and motors has long been discussed in the low voltage AC drives market. While this trend has been prevalent at low power ranges with electronically-commutated (EC) motors (not within the scope of our current research), some players are making strides towards integrating higher-powered motors and drives.

Rockwell Automation and Infinitum recently announced a joint venture to develop a new class of



Source: Delta Electronics

high-efficiency, integrated low voltage drive and motor technology. Their collaboration, which pairs Rockwell's PowerFlex drive technology with Infinitum's ultra-high-efficiency air core motor system, aims to build a product that saves energy and cuts costs for industrial customers while helping them to become more sustainable. The integrated motor system is expected to be 50 per cent of the size and weight of a traditional motor system, effectively reducing the drive's footprint.

Historically, the main challenge for integrating motors and drives at higher power ranges has been excessive heat generation. Recently, however, wide-bandgap semiconductors have been cited as a promising solution to this issue.

Challenges and opportunities for wide-bandgap semiconductors

Characterised by a large energy gap between their valence and conduction bands, wide-bandgap semiconductors offer several advantages over their traditional counterparts. The ability of these semiconductors to operate at higher temperatures, voltages, and frequencies makes them ideal for applications in power electronics, such as electric vehicles, renewable energy systems, and high-frequency communication devices.

With the rapid adoption of electric vehicles increasing demand for wide-bandgap semiconductors, there is a much greater supply of wide-bandgap semiconductors available than ever before. However, despite an expanding supply, wide-bandgap semiconductors are still not price competitive compared to their traditional counterparts. Silicon-carbide mosfets can cost up to 3x the price of standard silicon ones. As a result, implementation of wide-bandgap semiconductors within drives is still sparse.

However, as supply increases, we expect pricing to trend downward over time, making wide-bandgap semiconductors a more attractive prospect for drive vendors. Moreover, we have observed drive vendors moving toward in-house production of power-semis. With its acquisition of Semikron in 2022, Danfoss has



Source: Inovance

become a manufacturer of power semis and produces SiC-based semis. Additionally, according to McKinsey and Company, Mitsubishi Electric currently produces SiC power semis. It is estimated to have 2 per cent of the current market for SiC, although all of its supply is allocated for internal use. If this type of in-house production continues, it is likely to see the use of wide-bandgap semis expand more quickly across the market.



Historically, the main challenge for integrating motors and drives at higher power ranges has been excessive heat generation. Recently, however, wide-bandgap semiconductors have been cited as a promising solution to this issue.

Final thoughts

Multi-axis drives, integrated motor drives, and wide-bandgap semiconductors are three examples of innovative solutions that are transforming the market. These solutions offer significant space-saving benefits, higher levels of flexibility in machine design, and better energy efficiency. While the scalability of wide-bandgap semiconductors remains a challenge, the long term trend points to increased adoption within motor drives as a means to facilitate development of more modular, compact machinery.

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About the author:

Brianna Jackson is the Research Analyst at Interact Analysis (IA). A biologist and chemist by training, Brianna joins Interact Analysis as a Research Analyst in the Industrial Automation team. She brings a keen interest in sustainability and medical technology to the IA table, deepening our expertise in these areas.



Navigating the Automation Wave

The panel discussion, hosted by FM Logistic, explained the strategic imperatives for the adoption of automation in warehousing.

In the ever-evolving landscape of industries, propelled by technological advancements and shifting market dynamics, the quest to bolster productivity and efficiency stands as a paramount imperative. Recently, a panel convened during the inauguration of FM Logistic's cutting-edge warehouse in Bhiwandi, Maharashtra to explore the intricate web of challenges and opportunities presented by automation within the context of Indian enterprises. This discussion illuminated a spectrum of perspectives shaping the transformative trajectory of automation. **FM Logistic India**, a prominent French contract logistics entity, marked the inauguration of its third state-of-the-art multi-client facility (MCF) in Bhiwandi, India's largest logistics hub, amidst the presence of esteemed customers and partners. This endeavour underscores the firm's steadfast dedication to furnishing world-class sustainable omni-channel solutions across diverse industries.

Gautam Dembla, Chairman, FM Logistic India, underscored the heightened demand for swift product delivery propelled by the nation's economic expansion and infrastructural investments. As the moderator, Dembla articulated, "Consumers now anticipate service levels akin to those offered by e-commerce platforms, thereby posing a challenge for enterprises to efficiently meet these burgeoning demands. Governmental initiatives fostering value-added services like co-packing have revolutionised warehouse capabilities, prompting a reevaluation of how automation can optimise operations to cater to evolving customer requisites."

Florence Petit, Country Head of Supply Chain Management, Legrand, echoed these sentiments, elucidating the hurdles such as heavy reliance on manual labour and frequent errors in tasks like unit picking. The transition to new facilities exacerbates these challenges, impinging upon operational efficiency and customer contentment. Automation emerges as a panacea to enhance precision and efficiency, especially in tasks prone to delays and revenue losses like loading and unloading.

Sandeep Bansal, Chief Business Officer, Falcon Autotech, delineated four pivotal trends influencing the adoption of automation: escalating labour costs, burgeoning rents, heightened consumer expectations, and competitive pressures. Strategic integration of automation becomes imperative to fortify operational



Panel discussion illuminated a spectrum of perspectives shaping the transformative trajectory of warehouse automation

resilience and fulfill customer exigencies, with divergent stances prevailing among companies contingent upon their maturity as automation stakeholders.

Vinayak Bhat, General Manager, Bastian Solutions, underscored the indispensability of automation in FMCG (Fast-Moving Consumer Goods) operations to sustain efficiency amidst labour scarcities and fluctuating consumer behaviours. He remarked, "Commencing with modest, manageable automation endeavours instills confidence and paves the way for broader adoption, enabling enterprises to accrue enduring benefits while liberating manpower for value-added endeavours."

Balaji Reddipalli, Group Head of Supply Chain, Borosil, echoed this sentiment, underscoring the gradual embracement of automation by Indian enterprises. A patient and incremental approach to implementation emerges as the linchpin for successful adoption, allowing organisations to systematically address specific pain points and augment value while balancing cost considerations.

Loic Delaitre, Group Automation Director, FM Logistic, accentuated the significance of devising comprehensive strategies and aligning automation ventures with customer visions and long-term objectives. Automation ought to be perceived as augmenting processes rather than supplanting human effort, with an emphasis on problem-solving and value addition to the business.

The transition towards automation within Indian enterprises is propelled by the imperative to bolster efficiency, meet evolving customer expectations, and sustain competitiveness. Commencing with manageable projects and embracing incremental implementation assumes paramount importance in charting a course towards long-term operational excellence and business expansion within an ever-evolving market terrain.



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Tesla Coming to India?

While the new Electric Vehicle (EV) policy aims to promote EV manufacturing in India, there could be some risk to a few of the upcoming high-end SUV models and imported luxury vehicles, says Rakesh Rao, Executive Editor.



On March 15, 2024, the Government of India (GoI) announced a new Electric Vehicle (EV) policy reducing import duties on four-wheeled EVs from 70-100 per cent to just 15 per cent provided the foreign firm invests a minimum of \$ 500 million in EV manufacturing in India. As per the new EV policy, there will be a 3-year timeline for setting up manufacturing facilities in India, and to start commercial production of electric vehicles. A localisation level, i.e. domestic value addition (DVA), of 25 per cent by the third year and 50 per cent by the fifth year will have to be achieved.

“A holistic view has been taken by the Government of India in the best interests of the country. The Indian automobile industry and members of SIAM will adapt to this new policy and remain committed to bring new, innovative & aspirational products and work towards developing a robust EV ecosystem in the country,” said **Vinod Aggarwal**, President, Society of Indian Automobile Manufacturers (SIAM), and MD & CEO, VE Commercial Vehicles Ltd (VECV).



“This policy acts as a gateway for large-scale investments from global EV giants like Tesla, making India an EV manufacturing hub globally and providing the much-needed impetus for the local players to enhance their manufacturing capacities.”

Raman Bhatia, Founder & MD, Servotech Power Systems

Highlights of new EV policy

- Duty of **15%** on imported EVs, if minimum **\$ 500 mn** invested in India
- **15%** duty only on EPVs above \$ **35,000**
- Envisages **25% & 50%** domestic value addition over **3** and **5** years, respectively
- Import of a maximum of **40,000** EVs to be permitted at concessional duty

According to **Raman Bhatia**, Founder & Managing Director, Servotech Power Systems Ltd, the new electric vehicle policy will make India a global powerhouse for EV manufacturing. “It is a boon for India’s booming economy and acts as a major push forward in the nation’s aspirations for clean transportation. Keeping a strong focus on prioritising domestic manufacturing and encouraging competition and growth, this policy will provide enough chances and harbour enough space to facilitate increasing the adoption of EVs across the nation and aligns with the Make in India initiative promoting local production and job creation.



“We highly value the Govt's new EV scheme as it aims to drive large investments in manufacturing, create competencies and upskilling, set up a robust supply chain and offer consumers world-class, zero tailpipe emission vehicles.

Pham Sanh Chau, CEO, VinFast India

Duty waiver for big EV car makers

As per the new EV policy, the customs duty of 15 per cent, similar to completely knockdown (CKD) units, will be applicable on imported electric vehicle of minimum CIF value of \$ 35,000 and above for a total period of 5 years subject to the manufacturer setting up manufacturing facilities in India within a 3-year period. Import of EVs below \$ 35,000 would continue to attract import duty in excess of 70 per cent.

The duty foregone on the total number of EV allowed for import would be limited to the investment made or Rs 6484 crore (equal to incentive under PLI scheme) whichever is lower. A maximum of 40,000 EVs at the rate of not more than 8,000 per year would be permissible if the investment is of \$ 800 million or more. The carryover of unutilised annual import limits would be permitted.

In CY23, 42,000 luxury cars were sold in India. Hence, the permission to import a maximum of 8,000 premium EVs per annum at a concessional rate (under the new EV policy) will lead to a market penetration of around 20 per cent.

Considering that India sold 42,000 luxury cars in CY23, the plan to import a maximum of 8,000 premium EVs per annum at a concessional rate will lead to a market penetration of around 20%.

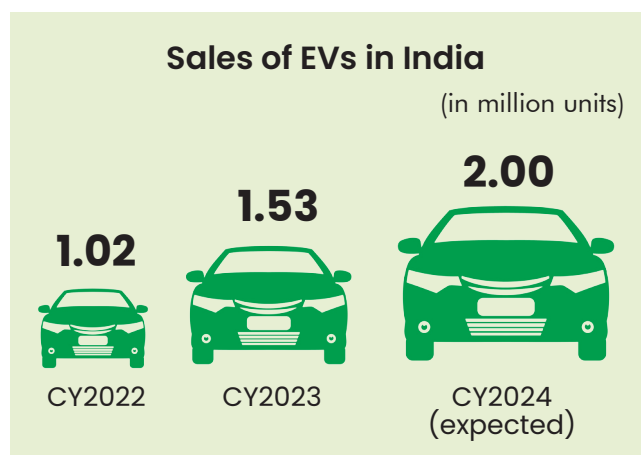
The investment commitment made by the company will have to be backed up by a bank guarantee in lieu of the custom duty foregone. The Bank guarantee will be

invoked in case of non-achievement of DVA and minimum investment criteria defined under the scheme guidelines.

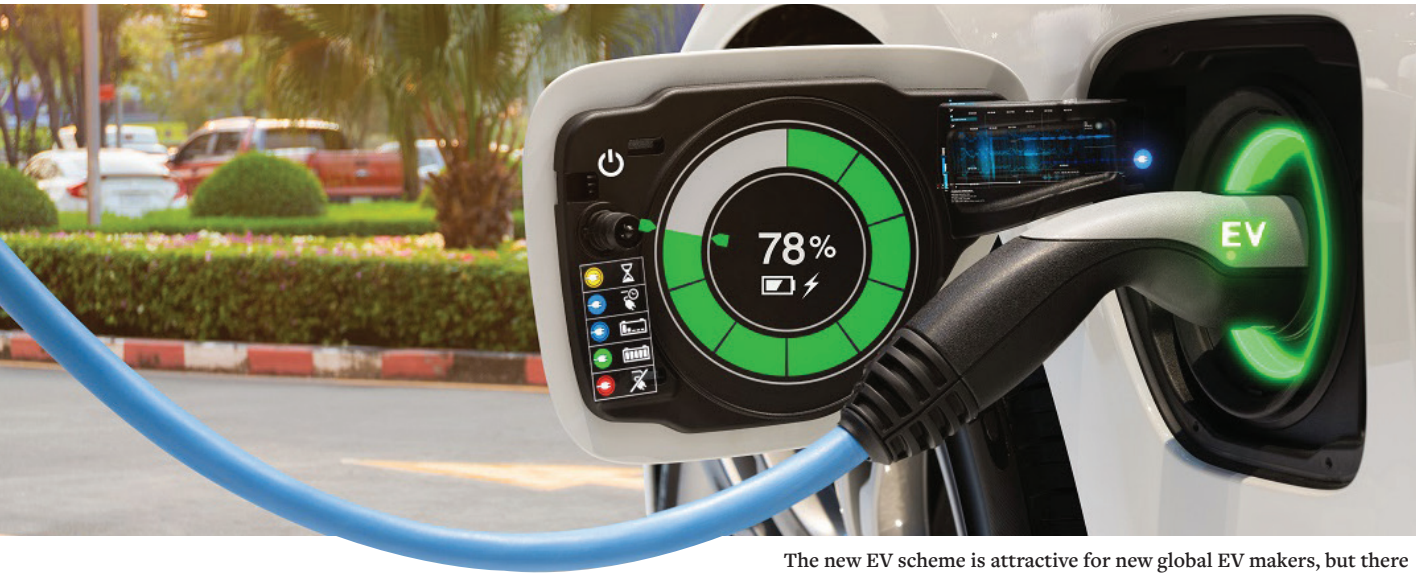
“This policy acts as a gateway for large-scale investments from global EV giants like Tesla, making India an EV manufacturing hub globally and providing the much-needed impetus for the local players to enhance their manufacturing capacities and adapt high-tech EV technologies. This healthy rivalry will drive innovation, reduce production costs, and ultimately benefit Indian consumers with a broader range of high-quality, affordable EVs,” said Raman Bhatia.

According to Emkay Global Financial Services, the EV policy aims to promote development of EV ecosystem/ local manufacturing in India, while reasonably protecting the Indian OEMs largely operating below the \$ 35,000 price point. Nevertheless, there could be some risk to a few of the upcoming models of M&M and Tata Motors at the upper end of the SUV market. It could also potentially impact sales of luxury vehicles (German brands) with increased entry of mid-to-premium EVs at competitive pricing.

While disruption risk (due to electrification) is abating in two-wheeler (2W) segment with stagnating penetration levels and consolidation, passenger vehicles (PVs) are entering a phase of uncertainty around growth (slowing growth), and emerging disruption risks (with potential entry of newer players like Tesla, Vinfast, BYD etc). “Electric 2W adoption is stagnating at about 5 per cent levels (despite increase in discounts recently), with consolidation in favour of larger/established players accelerating (over 80 per cent share now). However, in PVs, competition on the electric front is set to intensify as - apart from launches by domestic majors - international players are also potentially looking to set up facilities. We believe, the PV industry is entering a phase of uncertainty around growth as well as



Source: CareEdge



“While increased affordability could accelerate EV adoption, the GTRI report warns against a potential overreliance on cheap imports, particularly from China. The report argues that true progress hinges on indigenous development.”

Dinesh Arjun, Co-founder and CEO, Raptee

disruption,” stated Emkay Global Financial Services in a statement.

“We highly value the Indian Government’s new EV scheme as it aims to drive large investments in manufacturing, create competencies and upskilling, set up a robust supply chain and offer consumers world-class, zero tailpipe emission vehicles. With a long-term growth commitment in India, we have pledged an expenditure of \$500 million, which includes the electric vehicle manufacturing facility in Tamil Nadu. This forward-looking policy help us introduce a wide variety of smart, green, premium-quality SUVs, at the inclusive prices, along with outstanding aftersales policies,” commented **Pham Sanh Chau**, CEO, VinFast India. In February this year, VinFast, Vietnam’s leading electric vehicle manufacturer, began construction work for its first integrated EV manufacturing facility in Tamil Nadu.

Lower tariff: A boon or a bane?

Global Trade Research Initiative (GTRI) views the recent tariff cuts on electric vehicles with a cautious optimism. India’s decision to permit Chinese car manufacturers in the country and reduce import tariffs on EVs will directly or indirectly benefit Chinese

The new EV scheme is attractive for new global EV makers, but there is a marginal disadvantage to incumbents who have invested in EV manufacturing capacity in India.

companies, particularly as they are major suppliers of EV batteries, stated GTRI in a report.

“While increased affordability could accelerate EV adoption, the report warns against a potential overreliance on cheap imports, particularly from China. The report argues that true progress hinges on indigenous development. Imagine an India where electric vehicles are not just assembled, but meticulously designed and engineered from the ground up. This approach allows us to build EVs specifically tailored to Indian roads and driving conditions. Consider the sturdiness needed for uneven terrains, the efficient battery range required for longer commutes, and the innovative features that cater to diverse customer preferences,” observed **Dinesh Arjun**, Co-founder and CEO, Raptee.

The GTRI report emphasizes that indigenous development is not just about building electric vehicles; it’s about building a self-reliant India. “By prioritising homegrown innovation, we can transform from an importer to a leader in the global EV landscape. This not only ensures long-term economic security but also positions India as a key player in shaping the futuristic automotive industry,” he added.

Experts believe that the new EV scheme is attractive for new global EV makers, but there is a marginal disadvantage to incumbents who have invested in EV manufacturing capacity in India. In 2023, Tesla reportedly held talks with the GoI to set EV manufacturing hub in India provided the Elon Musk-owned firm got some duty concessions on imported EV in the initial phase. The new EV provides exactly this. Now, let’s wait & see if Tesla invests in EV plant in India or not.

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Decoding the attempt of a liquidity boost to MSEs

Recently, certain amendments were introduced through the Finance Act 2023 (FA 2023) to enhance financial liquidity for Micro and Small Enterprises (MSEs) by indirectly compelling their customers to pay their dues on time. This amendment comes up like a double-edged sword, opine Aishwarya Jaju and Rushabh Bhandari of Ernst and Young LLP India.



Micro, Small and Medium Enterprises (MSMEs) play a major role, particularly in rural and underdeveloped areas in contributing to job creation and economic development. MSMEs have moved up the value chain, from manufacturing simple goods to now, producing sophisticated products and providing a wide range of services. They have been the backbone to 'Make in India' and 'Atmanirbhar Bharat' initiatives.

Background

To highlight the significance of MSME in our economy, Finance Minister Nirmala Sitharaman also addressed the sector in her interim budget speech stating it as priority for the Government to ensure timely and adequate finances, relevant technologies and appropriate training for the Micro, Small and Medium Enterprises (MSME) to grow and also compete globally. She further added that orienting the regulatory environment to facilitate their growth will be an important element of this mix.

The Indian Government has taken constant efforts and multiple measures to uplift MSMEs. Few of such instances include the amendment brought to the Companies Act, 2013 that required a separate disclosure in the Financial Statements specifically for dues outstanding to MSMEs; introduction of MSME

Samadhaan, Udyog Adhaar etc. With the same vision, certain amendments have been introduced through the Finance Act 2023 (FA 2023). These amendments aim to enhance financial liquidity for Micro and Small Enterprises (MSE) by indirectly compelling their customers to pay their dues on time.

What is the amendment?

Section 43B of the Income Tax Act, 1962 (the Act) provides for certain expenses to be allowed as deduction in computing the total income only on actual payment. Finance Act 2023 has amended the provisions of the Act to include payments to MSE vendors within the ambit of Section 43B through the insertion of clause (h) that specifically covers any sum payable by the taxpayer to a micro or small enterprise. The amendment is introduced to ensure timely payments to such enterprises within the deadline stipulated by the Micro, Small and Medium Enterprises Development (MSMED) Act, 2006. The expenses paid beyond the time limit specified under the MSMED Act, will be allowed as a deductible expense only upon their actual payment.

The clause stipulates that any sum owed to MSEs for goods supplied or services rendered may be deducted in the same year only if it is paid within the deadline stipulated by the MSMED Act, 2006.

Illustration: Let's take a case where the date of invoice is March 2, 2024 and there is no agreement between the buyer and seller. There can be two scenarios of the actual payment date:

- Actual payment date is March 30, 2024
- Actual payment date is April 11, 2024

In case 'a', the expenditure will be allowed as a deduction in financial year (FY) 2023-24, whereas in case 'b', it will be allowed in FY 2024-25. Thus, a delay in payment beyond the financial year will directly reduce the allowable deduction for the taxpayer for that year, thus, penalising the taxpayer for a late payment.

The amendment will be effective from 1 April 2024 and thus, will apply to assessment year ('AY') 2024-25 and subsequent AYs. This implies that any expenses relating to such outstanding payments to MSEs in financial year 2023-24 will be ineligible for a deduction.

The government has been constantly receiving requests from varied industries to curb the time limit gradually. However, there are no indications of any such updates or relief by the government.

Table 1: Criteria for categorising MSMEs

Classification	Micro	Small	Medium
Investment in plant and machinery or equipment	Not more than Rs 1 crore	Not more than Rs 10 crore	Not more than Rs 50 crore
Annual Turnover	Not more than Rs 5 crore	Not more than Rs 50 crore	Not more than Rs 250 crore

How do you identify an MSE?

One of the key concerns of the industry is identification of MSEs, in absence of definition of the same under the Act.

Section 7 of MSMED Act read with Notification No. F. No. 2/1(5)/2019- P&G/Policy (Pt-IV) dated 1 June 2020 issued by the Ministry of Micro, Small and Medium Enterprises prescribes the following thresholds for categorising the MSMEs (Table 1).

Thus, any business engaged in the manufacture or production of goods, or engaged in providing or rendering of any service or services will qualify as an MSME only if the business meets the above plant and machinery and turnover conditions. For instance, if a medium enterprise with an investment in plant and machinery of Rs 44 crore clocks an annual turnover of Rs 265 crore, the enterprise would no more be classified as an MSME. An important point to note here is that any export turnover generated by the enterprise would not be included in the annual turnover limit, thus providing a slight relief.

MSMEs today have an option to get registered via an online process established by the Indian government. The primary objective of this is to provide a streamlined process for MSMEs to avail various incentives offered by the government. But currently, there is no clarity on whether an MSE needs to have such a registration to fall

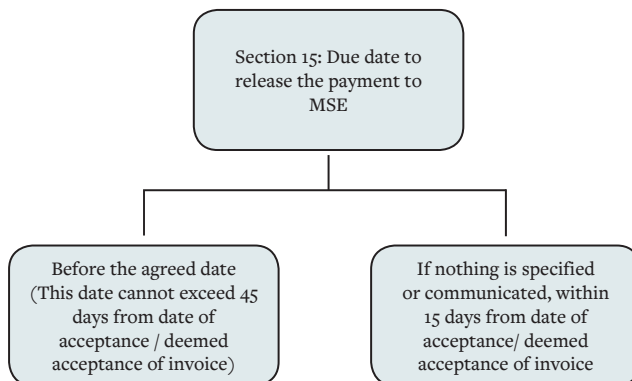


Figure 1: Specification of section 15 of the MSMED Act

under provisions of section 43B(h) or just needs to meet the threshold.

Impact of missed timelines as per MSMED Act

Section 15 of the MSMED Act specifies (see Figure 1) that in case of a written agreement specifying payment terms, the payment has to be done within the time agreed in the agreement. This timeline, however, cannot exceed 45 days from the day of acceptance / deemed acceptance of goods / services. In case there is no written agreement, the payment is to be done within 15 days. In cases where the timelines for release of payments to MSE vendors are not adhered to, the expenditure linked to such payments will be disallowed via clause (h) of Section 43B. This will increase the taxable income of the taxpayer, leading to a higher income liability for that year.

It may be noted that under the MSMED Act, in cases where the payment is not made within specified 15 days or the agreed period up to a maximum of 45 days, interest is payable at 3 times the rate notified by RBI. Further, this interest is not allowed as a deductible expense for computing the taxable income under section 37 of the Act. Thus, the amendment brought in by FA 2023, is over and above the current provisions under various laws, to boost the liquidity.

Amendment: A boon or bane to the Industry?

The general credit terms in industry, particularly the MSE sector is around 90 to 120 days. The attempt to slash this down to 15/45 days has sent a big jolt to the industry. While the bigger players may be able to adhere to these conditions, the smaller market players with less liquidity and access to cheap finance have found themselves in a very difficult situation as they themselves do not receive the payment from their vendors in time. This would lead to a very stressful working capital management to the CFOs of such firms.

This amendment comes up like a double-edged sword: The benefit, of course, is that MSE entrepreneurs have a better liquid position through the release of sticky working capital. This will directly help in catering to higher demands and generating better top-lines. The downside would be that many medium and smaller players are not in a position to adhere to the timelines and are looking at huge disallowances in their tax computations, resulting in higher tax outflow.

There are mixed views amongst the industry on the amendment with majority of them, specially the smaller players expecting a relief from the government in terms

of either delay in implementation or update in the stringent timelines being suggested.

The reform is highly likely to cause a short-term discomfort or disruption, but in long run, the benefits of liquidity boost to ensure the welfare of all stakeholders are expected.

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(Views expressed above are personal)

About the Author:

Aishwarya Jaju is a Senior (Tax and Regulatory), Indirect Tax, at Ernst and Young LLP India. Rushabh Bhandari is a Manager (Global Compliance and Reporting), Direct Tax, at Ernst and Young LLP India.

Communication Feature

Why choose Avians sectional overhead doors for industrial spaces

Avians sectional overhead doors have gained popularity as the preferred choice for industrial spaces, and for good reasons. These doors offer a range of benefits that make them stand out in demanding industrial environments.

Durability and longevity: Avians sectional overhead doors are built to last, designed to withstand heavy usage, harsh weather, and potential impacts. Their high-quality materials ensure longevity, providing a reliable solution for industrial entrances.

Wind load resistance: In regions prone to strong winds and severe weather conditions, wind load resistance is crucial. Avians sectional overhead doors are engineered to withstand high wind loads, providing peace of mind during storms and adverse weather events.

Enhanced security: Security is crucial in industrial facilities, and these doors excel in this aspect. They feature robust locking systems, making unauthorized access challenging and protecting valuable assets.

Insulation and energy efficiency: These doors can be insulated, regulating indoor temperatures and reducing energy costs. This environmentally friendly feature is vital for temperature-sensitive products and cost-effective operations.

Customisation options: Avians sectional overhead doors offer design flexibility, with various materials, finishes, and window configurations. This adaptability ensures a perfect fit for diverse industrial settings.

Smooth operation: Their precise and reliable operation minimises downtime, ensuring



uninterrupted workflow in high-traffic areas.

Low maintenance: Minimal maintenance requirements keep costs and downtime at bay, making them ideal for busy industrial spaces.

Compliance with industry standards: These doors typically comply with safety and quality standards, ensuring a safer working environment for employees.

Noise reduction: Avians sectional overhead doors help reduce noise transmission, creating a quieter, more comfortable workspace.

In summary, Avians sectional overhead doors are the go-to choice for industrial spaces due to their durability, security, insulation, customisation options, reliable operation, low maintenance, compliance with industry standards, and noise reduction. By opting for these doors, industrial businesses can enhance security, energy efficiency, and operational efficiency while ensuring a safer and more productive working environment. Consider Avians sectional overhead doors as a reliable and long-term solution for the industrial space's entry and access needs.

For details, contact Avians, Pune, on Mob: +91 83903 00400, Email: sales@avians.co.in, or visit www.avians.co.in

(Communication provided by the management of the company)



Making Procurement Green!

Adopting the right procurement strategy is critical for businesses seeking to reduce their carbon footprint and embrace sustainability, says **Rahul Garg, Founder and CEO of Moglix.**

In the global pursuit of sustainability, every industry plays a vital role in fostering a greener future. Among these, procurement emerges as a crucial link in reducing our carbon footprint. Serving as the intermediary between suppliers and consumers, procurement possesses the ability to shape the environmental impact of the entire supply chain. According to a survey conducted by the Stanford Business School in early 2023, it was revealed that 51 per cent of global businesses have already adopted sustainable procurement policies and practices, contributing to the resilience of their value chains. From sourcing eco-friendly materials to implementing sustainable procedures, procurement professionals hold significant sway in effecting meaningful change.



Prioritising sustainability in procurement is a win-win-win situation

Sustainability: Every process counts

The concept of sustainability has permeated various industries, driven by mounting pressure from consumers, investors, and regulatory bodies. From manufacturing to retail, organisations are re-evaluating their operations to minimise environmental harm and maximise social responsibility. The impact of this sustainability push transcends specific departments. From energy-efficient factories to responsible waste management, each stage contributes to an industry's carbon footprint. Procurement, however, deserves particular attention. According to McKinsey, the environmental impact of purchased goods and services can account for 80 per cent of a company's total footprint. Sustainable procurement activities, encompassing the sourcing of raw materials, transportation, and supplier engagement, can significantly reduce a company's carbon footprint.

A triple bottom line win

Prioritising sustainability in procurement isn't just about ticking a green box; it's a strategic decision with far-reaching benefits that touch every aspect of a business.

- **Environmental:** By consciously choosing suppliers with lower carbon footprints, companies contribute to a healthier planet for future generations. This includes reducing greenhouse gas emissions throughout the supply chain, from raw material extraction to transportation and product disposal.

- **Social:** Responsible sourcing practices go beyond mere compliance. They ensure ethical labor conditions, fair treatment of workers, and respect for human rights throughout the supply chain. This fosters positive social impact and builds brand trust with consumers who increasingly value ethical practices.
- **Economic:** Sustainability might seem like a cost burden at first, but the long-term benefits far outweigh the initial investment. Companies can achieve significant cost savings through resource efficiency. Reducing waste in packaging, transportation, and production processes translates to real financial gains.

Prioritising sustainability in procurement is a win-win-win situation. It benefits the environment, empowers communities, and strengthens a company's bottom line. It's a strategic investment in a future where people, planet, and profit can thrive together.

IKEA is one of the leading lights in this sustainability push. The company was born in the forests of Southern Sweden, but understands the importance of conserving one of mankind's greatest assets. The company provides information publicly regarding where it grows the wood it uses, how much wood it uses, as well as the types of wood and their suppliers. In FY23, approximately 17 per cent of total wood used in IKEA products was recycled wood. This number is expected to increase further year-on-year.

Aligning procurement with sustainability

The path to sustainability in procurement isn't a one-size-fits-all journey. It requires a strategic shift in mindset, moving beyond solely price-driven decisions and incorporating environmental and social considerations into every step.

- **Supplier selection beyond price tags:** Businesses must prioritise suppliers committed to sustainability practices. Look for certifications like LEED or B Corp, or conduct thorough assessments to evaluate aspects like renewable energy usage, resource efficiency, and waste management.
- **Product life cycle analysis:** Considering just the initial cost of a product is a dated practice. Companies should conduct a product life cycle analysis to assess its environmental impact across its entire journey, from raw material extraction and production to transportation, use, and disposal. Choose products with lower carbon footprints, minimising emissions and resource consumption throughout the lifecycle.
- **Waste reduction:** Industries should look to minimise waste at every stage. By keeping materials in circulation and minimising waste generation, organisations can significantly reduce their carbon footprint.
- **Collaboration is key:** Sustainability isn't a solo act. It's critical to collaborate with suppliers, industry peers, and NGOs to share best practices, develop innovative solutions, and leverage collective knowledge. This collaborative approach fosters a supportive ecosystem where everyone can contribute to a more sustainable future.

Technology: A catalyst for sustainability

Technological advancements offer unprecedented opportunities to enhance sustainability within procurement processes. Digital platforms, data analytics, and blockchain technology enable companies to trace product origins, assess environmental impact, and optimise supply chain efficiency. These tools empower organisations to make informed decisions, collaborate with environmentally responsible suppliers, and monitor compliance with sustainability standards.

Global consumer goods giant, Unilever, leverages a digital platform called Ecovadis to assess and manage the sustainability performance of its suppliers. The company's aim is to reduce the carbon footprint of its products, through radical product innovation and deep partnerships. Unilever reports that their greenhouse gas emissions per consumer use have decreased by 19 per cent since 2010 and 5 per cent since 2021, with an eventual aim of achieving net zero products.

Impact of regulations on procurement

Regulations are helping shape the procurement landscape into a force for good. Stringent regulations like Europe's Carbon Border Adjustment Mechanism (CBAM) are acting as catalysts for change, forcing companies to re-evaluate their sourcing strategies.

CBAM imposes carbon tariffs on imported goods based on the emissions embedded in their production. This means companies sourcing from countries with lax environmental regulations will face higher costs, incentivising them to choose suppliers with lower carbon footprints. This not only levels the playing field for European producers but also pushes global supply chains towards greener practices.

Regulations like extended producer responsibility (EPR) schemes are holding manufacturers accountable for the lifecycle of their products, demanding sustainable design and end-of-life solutions. Additionally, stricter waste management regulations and carbon emission caps are forcing companies to optimise their production processes and source materials responsibly.

These regulations aren't burdens; they're opportunities. By proactively adapting their procurement strategies to comply with regulations, companies can gain a competitive edge. They can build resilient supply chains, attract environmentally conscious consumers, and future-proof their businesses.

Summing up

As industries increasingly recognise the interconnectedness of environmental stewardship and long-term prosperity, it becomes imperative to prioritise sustainability in procurement. Adopting the right procurement strategy is critical for businesses seeking to reduce their carbon footprint and embrace sustainability. Embracing innovative technologies, aligning strategies with sustainability goals, and complying with regulations are crucial steps on this journey. It is incumbent upon businesses to seize the opportunity today, championing sustainability as a catalyst for positive change and a cornerstone of responsible corporate citizenship, helping build a world where industry thrives in harmony with the environment.

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About the author:

Rahul Garg, the visionary Founder and CEO of Moglix, is a first-generation entrepreneur who revolutionised B2B distribution in 2015 with a tech-driven approach. Under his leadership, Moglix has emerged as one of Asia's premier companies, specialising in phygital transformation for procurement and supply chain processes. With a stellar background at Google Asia

and academic achievements from IIT Kanpur and ISB Hyderabad, Rahul holds 16 US patents and is currently enhancing his skills at Harvard Business School.



“The government is making concerted efforts to grow defence exports.”

India was the world’s largest defence importer from 2018–2022, accounting for about 11 per cent of all global defence imports. However, the recent trend shows the situation is changing with India’s import dependency decreasing significantly. In this interview with Rakesh Rao, Executive Editor, **Cdr Gautam Nanda, Associate Partner – Aerospace & Defence, KPMG India**, gives a brief of overview of the Indian Defence and Aerospace (D&A) industry and also highlights key challenges that the industry need to address.

What is the size of the D&A industry? What is the import dependency of the D&A sector in India? Has it come down in the last 5 years?

The output of the Indian D&A sector in FY 2022-23 was Rs 1,08,684 crore. This includes the overall production in the Defence Public Sector Undertakings (DPSUs), other PSUs and Joint Ventures (JVs) and the private sector companies within this space. The private sector accounts for about Rs 21,083 crore of the above-mentioned value and its share as part of the overall industry is growing at a healthy rate. In terms of import dependence, India was the world’s largest defence importer from 2018-2022, accounting for about 11 per cent of all global defence imports. This is primarily because of some of the major platforms inducted recently into the Indian armed forces.

The recent trend however shows this situation changing and India’s import dependence is decreasing significantly. In the past 5 years (2018-2022), the overall imports by India stand at approximately Rs 128,218 crore, this is down from Rs 143,581 crore in the prior 5-year period (2013-2017). A look at some of the major announced and ongoing programs as well as the policies in place for procurement show that there is a big push for ‘Make in India’, and most procurements henceforth will need to have a sizeable part of its value manufactured in India.

Any significant announcements for the D&A sector in the interim budget?

The overall capital allocation has increased from Rs 161,290 crore in 2023-24 to Rs 172,000 crore in 2024-25, an increase of over Rs 10,710 crore (6.6 per cent).

In the interim budget 2024, the capital budget has not been split up between the various services but has been



presented as a consolidated value. This may change and we may get a service wise breakdown when the consolidated budget is released later in the year. Allocation towards aircraft and aeroengines from all the services has been hiked from Rs 28,221 crore in 2023-24 to Rs 40,777 crore in 2024-25 - an increase of more than Rs 12,556 crore.

What are the challenges faced by OEMs (and component manufacturers) in the defence & aerospace manufacturing space? What are probable solutions to solve some of these challenges?

The capital acquisition budget of the armed forces, which is used for the procurement of new military hardware, systems and platforms, forms only 25-29 per cent of the overall budget of the armed forces. This limits the funding available to the services, and therefore the potential target market for the OEMs and other industry players.

Furthermore, while the Indian defence budget is large, India alone is not a large enough market for any OEM or component supplier to sustain their business and take advantages of the cost arbitrage that economies of scale bring. The demand from the Indian armed forces are cyclical in nature which results in a large portion of the capacity being underutilised or in cases of low production capacity, the delivery timelines are extremely long.



One of the major emerging trends within the industry is the adoption of Industry 4.0 solutions to enable and empower the manufacturing of complex defence equipment such as engines, sensors, armaments and self-protection equipment.

An effective solution to this problem would be to focus on exports and use the additional global demand to bring in economies of scale and ensure production facilities are effectively utilised. The government understands this and has therefore made concerted efforts to grow defence exports, Indian defence exports which stood at Rs 1,521 crore in FY 2016-17, have grown to Rs 16,000 crore in FY 2022-23 and are on track to grow further in FY 2023-24.

While this growth is extremely encouraging and healthy, it is also critical to ensure that the exports also include high value-added products and platforms and are not limited to low value-added components or raw materials. To ensure this, the products need to match global benchmarks of quality, reliability and capability and therefore effort needs to be put into the design, development and research capabilities within the Indian industry from both the government as well as the private sector.

Are SMEs benefiting from the Make in India initiatives for D&A manufacturing on the ground?

Yes, there is a significantly noticeable effect of the Make in India initiatives within the Indian industry. The major global OEMs within the defence industry realise that in order to tap the lucrative and growing Indian defence market, they need to partner with Indian players. The requirement of a minimum of 40-60 per cent Indigenous Content (IC) within most of the procurement categories of the Defence Acquisition Procedure (DAP) 2020 means that any OEM looking to sell any products to India needs to source a significant part of the same from India. This results in the Indian

SMEs and MSMEs becoming part of the OEMs supply chain where Indian suppliers absorb the practices, processes and technologies of the global OEMs to deliver quality products at competitive prices.

Furthermore, the establishment of the Defence Industrial Corridors (DICs) has resulted in the development of nodes of industrial areas where major defence production activities can take place. These industries leverage common infrastructure, security apparatus and result in an ecosystem of MSMEs and SMEs as their suppliers in those regions.

How self-equipped is India in modern day defence technologies like Drone, AI & Robotics, hypersonic weapons, etc?

Modern technology trends such as AI, drones, hypersonic weapons etc., are extremely complicated systems and require a complex ecosystem and supply chain to become effective. While India has undeniable expertise in terms of manufacturing of drones, or final assembly and integration of complex missile systems, we still need to develop some critical capabilities in terms of design and research for technologies needed for these systems.



Modern technology trends such as AI, drones, hypersonic weapons etc., are extremely complicated systems and require a complex ecosystem and supply chain to become effective.

What are some of the emerging trends in D&A manufacturing?

One of the major emerging trends within the industry is the adoption of Industry 4.0 solutions to enable and empower the manufacturing of complex defence equipment such as engines, sensors, armaments and self-protection equipment.

Furthermore, the need to standardise equipment, tolerances, calibers etc. has emerged as a major requirement for most countries. This standardisation of equipment, communication protocols and other items is being deeply emphasised by armed forces across the world as it would help in collaboration with partners. The defence industry needs to be sensitive to this need wherein common standards will be critical for the industry to leverage existing capabilities and for growth.

Gandhi Automations' sectional overhead doors for quality & safety

The Mumbai-based company's sectional overhead doors provide heat insulation and soundproofing thus improving the working conditions on the premises and saving energy.



Avians sectional overhead doors have gained popularity as the preferred choice for industrial spaces, and for good reasons. These doors offer a range of benefits that make them stand out in demanding industrial environments.

India's leading entrance automation & loading bay equipment company, Gandhi Automations Pvt Ltd offers sectional overhead doors & dock shelters 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 where required.

Max Vista: Max Vista sectional overhead doors are ideal for industrial and commercial buildings. The doors are made with a combination of aluminum panels and transparent acrylic, 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 Automations' 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.



Some of the key features of these products are:

- Reliable and low- noise operation
- Extreme robustness
- Safe operation in compliance with safety requirements
- Design-oriented surfaces and optimum light solutions
- Minimal bulk for more space indoors and outdoors
- Easy and practical to open and operate
- Energy savings and more comfort
- Bright indoor environment and attractive design
- Pre-painted, galvanised steel, sandwich panel of thickness 40 mm
- The gaskets made of a special non ageing rubber that seal the perimeter of the door opening
- They produce a perfect seal, preventing water, air and dust infiltration
- Minimal bulk for more space indoors and outdoors
- Easy and practical to open and operate
- Energy savings and more comfort
- Bright indoor environment and attractive design
- Sectional overhead doors can be customised as gas tight ripening room doors

Safe & eco-friendly dock shelters

Gandhi Automations' dock shelters are installed mainly to seal the gap between the building and the vehicle in such a way that when the sectional overhead door is opened goods and personnel are protected against the harsh weather conditions outside. Dock shelters provide a seal between the internal and external environments, thus assisting in the reduction of energy consumption. The savings in energy costs are considerable.

Retractable dock shelters: The retractable PVC front panels dock shelter is commonly used. With its simplicity and efficiency, it grants for a constant payback of the investment. These are available for dock level installation or for ground level installation for the protection of doors without dock. The front panels are made of high resistance black PVC reinforced with

a double weaving of polyester that works like a spring in order to seal the vehicles of different shapes. The flaps are flexible and have very high wear and tear resistance. Designed to retract under the shock of any possible wrong maneuvers of the docking vehicles and extend when the vehicle drives away.

Cushion dock shelters: Due to its high insulation factor, the cushion dock shelter is the ideal solution for controlled temperatures. The three cushions are made of elastic polyurethane foam, covered with PVC coated polyester fabric, supporting the vehicle pressures and perfectly sealing the three sides, including the space between opened rear doors and sides of the vehicle. The two vertical cushions have continuous overlapped anti-friction limpets allowing for the up and down heavy friction of the vehicle on its suspensions, during the loading. It is available with fixed or adjustable horizontal top cushion, adjustable to the different vehicle heights.

Inflatable dock shelters: The Inflatable dock shelter is the best solution for insulating and improving the working environment. It can be rapidly inflated with a fan and it creates a perfect insulation between the vehicle and the loading bay, sheltering from cold, rain, wind also dust and humidity. The inflatable dock shelter is made of polyester fabric, PVC covered, a material resisting to hot temperatures and bad weather conditions. Inflatable dock shelters provide the most versatile seal available to service the widest variety of truck and trailer configurations. Contrary to other types of dock shelters the vehicle does not push towards the shelter instead the shelter is inflated around the vehicle.

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For details, contact Gandhi Automations Pvt Ltd, Mumbai, on Tel: +91 22 6672 0200, 6672 0300, Email: sales@geapl.co.in, or visit: www.geapl.co.in

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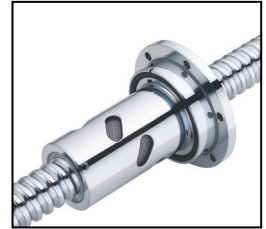
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- Whenever there is a ground fault in one phase, the voltage in other two phases will rise and generate a sensing voltage which is continuously monitored in the relay. The Relay contacts are self reset type and indications are latched.
- Its applications include: Neutral Displacement Relay is used for protection of motors, generators and capacitor banks.



About the Company: JVS Electronics Pvt Ltd is an exporter, manufacturer and supplier of audio indicating instruments, visual indicating

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instruments, electrical indicating instruments, etc.

Contact:

JVS Electronics Pvt Ltd, Bangalore
Mobile: 09448288863
Email: bangalore@jvselectronics.in

CLAMPING RINGS

Schunk Intec India Pvt Ltd, offers a wide range of clamping rings.

Features:

- Very easy joining process at a repeat accuracy of < 0.005 mm. Standard clamping rings for clamping and micron-precise positioning at a repeat accuracy of < 0.005 mm.
- Clamping ring with ground short taper on the entire inner ring for fastening and micron precise positioning with a repeat accuracy < 0.005 mm.
- Positioning ring with two ground surfaces for exact alignment and directional positioning of the clamping pallet.
- Retainer ring with centering clearance for additional clamping of the clamping pallet without alignment function.



About the Company: Schunk Intec India is engaged in products distribution and supply of industrial automation systems, automation work holding, tool holding, heat shrink tool holder, etc.

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Contact:

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

VENTURI INDUSTRIAL WET SCRUBBER

Veekay Blower System offers a wide range of venturi industrial wet scrubber.

Features:

- Venturi Scrubbers are particulate scrubbers that are highly efficient at removing particulate matter (i.e., PM 2.5) emissions from industrial exhaust generated from batch and continuous-type process applications.
- Venturi Scrubbers have several advantages compared to filters and other dust collection equipment; not only is the overall size of the equipment often small, but they can handle particle-laden gas streams that are high temperatures or contain moisture.
- Other advantages relate to ease of maintenance and choice of construction options; aside from having a system fan and recirculation pump.

About the Company: Veekay Blower is committed to deliver the world class technology for Industrial fans and equipment.

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Contact:

Veekay Blower System, Mumbai
Mobile: 09867015072
Email: info@veekayblower.com
veekayblower@gmail.com



WASTE HEAT RECOVERY BOILERS

Sitson India Pvt Ltd offers a wide range of waste heat recovery boilers.

Features:

- Sitson waste heat recovery boilers are used to recover waste heat from exhaust gas of spong iron kiln, DG Sets and exhaust gas from gas turbine. The steam generated by WHRB can be used for process heating or generating power in a steam turbine.
- Single drum construction for reduced thermal stress during start - up & shutdown; special drum internal that promote circulation & ensure high steam purity. Fast Start up and shut down.
- Suitable to economiser steaming for better off - design operation; fully drain - able super heater for higher reliability Effective soot blowing system.

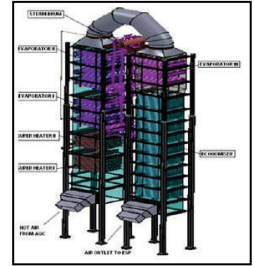
About the Company: Sitson india Pvt Ltd is an ISO-9001 Company, incorporated in 1978 to provide specialized engineering services in the field of boilers and power generation.

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Contact:

Sitson India Pvt Ltd, Dist-Thane
Tel: 02512871283, 02512871282
Email: sitson@sitsonindia.com



COIL TYPE BOILERS - VRS SERIES

Maxima Boilers Private Limited offers a wide range of coil type boilers - VRS Series.

Features:

- The VRS Series by Maxima are coil type steam boilers, suitable for capacities of up to 1000 kg/hr. This series is designed as per the forced circulation, once through water tube principle.
- Its features including: Sturdy, robust design and convenient operation; designed for all liquid and gaseous fuels; automatic operation based on fluctuating steam demand; no specialist required to install and operate; fully automatic control systems give accurate steam, the perfect economical solution for small steam requirements.

About the Company: Since 1986, Maxima Boilers has been a recognized boiler manufacturer in India, with an established reputation & presence in the industry.

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Contact:

Maxima Boilers Private Limited, Mumbai
Tel: 022-25646815
Email: sales@maximaboiler.com



DUAL PLATE CHECK VALVE

Flowjet Valves Pvt Ltd offers a wide range of dual plate check valve.

Features:

- The dual plate type check valve is a type of check valve that allows flow exclusively in one direction.
- The disc in a check valve, also known as a swivelling disc, swings onto the seat to stop backflow and off the seat to let flow through. This is accomplished with the use of a hinge or trunnion. If you don't use the premium dual plate check valve we provide, you won't succeed.

About the Company: Flowjet Valves vision is to achieve a leadership position in our industry vertical, to supply high quality products and solutions in an environmentally sustainable manner so as to fulfill our customer needs.

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Contact:

Flowjet Valves Pvt Ltd, Ahmedabad
Mobile: 09978608334
Email: info@flowjetvalve.com



VIBRATORY FURNACE CHARGER

Elektromag-Joest Vibration Pvt Ltd offers a wide range of vibratory furnace charger.

Features:

- This vibratory furnace chargers are a cost effective method of increasing productivity and quality of melt.
- With constant improvement in technology, furnaces require rapid and uniform charging to keep pace with the melting power of the system for which the Furnace chargers are the optimum solution. .
- Due to controlled feed, the hot metal splashing is avoided and the charger can be operated from a framed plate by the operator without actually being near to the furnace.

About the Company: Elektromag-Joest Vibration Pvt. Ltd., is a leading manufacture of Vibrating equipments for foundry, steel, mining, quarrying, chemical, food, recycling, etc.

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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.

Features:

- This Elektromag drag chains enable the conveyance of flexible cables/hoses, etc to movable units with maximum reliability.
- Its advantages of Elektromag cable drag chains is avoidance of mechanical strain on the cables/hoses.
- No tensile stress or compression, no frictional wear as there is no relative movement between the cables/hoses and the cable drag chain, no bending below an established radius, no crushing, buckling or forming of loops or torsion strain.

About the Company: Established in the year 1958, Elektromag is engaged in manufacturing of metallic/plastic cable drag chains and supplying to various steel plant, machine tools, cement, foundries, etc.

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Contact:

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



QUICK RELEASE COUPLERS - STRAIGHT THROUGH

Vijay Air Control offers a wide range of quick release couplers - straight through.

Features:

- This valveless construction drastically saves pressure loss and achieves high flow rate.
- It is suitable for high viscosity fluids (such as grease).
- Available in various standard body materials, sizes and end configurations to cope with diversified applications and operating situations.

About the Company: Vijay Air Control is a one large workplace where work is done and then put on the market in the form of products and services. This work must be benefit if it is to hold its own in the face of competition. Only company based on sound economic, technical and organisation principles and which is in a position to have a say in future developments is a match for the challenges presented by the market and competition.

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Contact:

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



PV SERIES VARIABLE DELIVERY PUMP

HTM Hydraulics Pvt Ltd offers a wide range of PV series variable delivery pump.

Features:

- These pumps supply infinitely variable flow controlled by the linear movement of a volume stem control. On hydraulic variable delivery pumps, the output is regulated by an external low-pressure control signal supplied to a control port in the cover.
- Variable delivery PV 6000 series pumps are used on drill rigs to power the drill rotation, drill pressure, mast movement and propulsion.
- They are proven to be rugged and reliable even when subjected to shock, vibration and long duty cycles.

About the Company: HTM Group has been in the field of hydraulics since 1995. Their expertise in the industry makes us one of the leading competitive companies in the field of trading, marketing & servicing and straining for customers in India and abroad. HTM group has headquarters in Bangalore, India.

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Contact:

*HTM Hydraulics Pvt Ltd, Bangalore
Tel: 080-41572101 Mobile: 09741165877
Email: info@htmhydraulics.co.in,
sales@htmhydraulics.co.in*



TWIN SPINDLE CNC CHUCKER - MW8oG

Meiban Engineering Technologies Pvt Ltd offers a wide range of twin spindle CNC chucker - MW8oG.

Features:

- Muratec MW8oG is a compact twin spindle turning machine with Gang tooling (Linear) concept.
- Machine offers high precision with direct spindle drive and construction. MW8o is suitable for Hard part turning with short cycle times.
- This small machine comes with a 6" chuck and can accommodate up to 4 gang tools.
- MW8o has a Spindle power of 7.5kw and speeds up to 6000 RPM are available. It can turn parts up to 80mm diameter and length of up to 50mm.
- Linear Tooling eliminates turret Indexing time for significant cycle time reduction.
- Loader is available with swivel or horizontal types.
- With standard Loading/unloading time as low as 3 secs, MW8o is an optimal solution for high-speed turning and for simple parts such as small bearings, rings, gears and hard part turning.
- Most widely used applications are: Bearing Outer and inner, Differential Pinion and side gear, compressor wheel etc.
- Machine can be supplied with either single or twin gantry loaders. Muratec is a global leader in providing fully integrated built-in automation for a variety of applications.



About the Company: Meiban Engineering Technologies Pvt Ltd is a solution provider in the field of automation and turn key projects for manufacturing automobile and sheet metal components. In the metal cutting division, Meiban Engg serves with high end automated twin spindle chucks for manufacturing Automotive components, hydraulic components and bearing components. Meiban Engg has started the localisation of Muratec turning machines on both machine and application side. Meiban Engg prides itself in being the end to end supplier for both sheet metal and turned parts from simple to sophisticated automation solutions. Meiban will seek to achieve operational excellence in every task we undertake to fulfil the company's short & long-term goals by providing our customers with sustainable, reliable and smart manufacturing solutions.

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Contact:

Meiban Engineering Technologies Pvt Ltd, Bangalore
Tel: 080-26860600
Email: office@meibanengg.com

D C CHOKE

Miracle Electronic Devices Pvt Ltd offers a wide range of D C choke.

Features:

- A DC choke, also known as a DC reactor or DC inductor, is an electrical component used to limit or control the flow of direct current (DC) in an electrical circuit.
- Voltage Stabilization: In some cases, DC chokes are used to stabilize the voltage levels in a circuit.
- Current Limitation: DC chokes can be used to limit the amount of current flowing through a circuit.
- Harmonic Mitigation: In AC/DC conversion systems, such as variable frequency drives (VFDs), DC chokes are used to reduce harmonics in the current waveform. Harmonics can cause overheating and other issues in electrical systems, so DC chokes are employed to mitigate these effects.
- Inrush Current Limiting: When electrical equipment is turned on, there can be a surge of current called inrush current.
- DC Motor Control: DC chokes are used in DC motor control systems to smooth out the current supplied to the motor, reduce electromagnetic interference (EMI), and improve overall performance.
- Power Factor Correction: DC chokes can be used in power factor correction circuits to improve the power factor of electrical systems.
- Energy Storage Systems: In some energy storage systems like super capacitors, DC chokes are used to control the charging and discharging processes, preventing rapid current surges and ensuring safe and controlled energy storage.
- Power Electronics: In power electronic applications, DC chokes can be used in inverters, converters, and other devices to control and stabilize the flow of DC power, reducing electrical noise and improving the efficiency of these systems.
- Solar and Wind Power Systems: DC chokes are used in renewable energy systems to filter and stabilize the DC power generated by solar panels or wind turbines before it is fed into the grid or used in battery storage systems.



About the Company: Miracle Electronics is a renowned Transformer manufacturer in India, engaged in manufacturing Power transformers, Toroidal transformers, EI transformers, SMPS transformers, Medical Isolation Transformers.

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Contact:

Miracle Electronic Devices Pvt Ltd, Bangalore
Tel: 080-28362750
Email: sales@miracle.net.in

METERING CHAMBER

Excel Power Switchgear Pvt Ltd offers a wide range of metering chamber.

Features:

- Metering chamber is equipped on top of the breaker chamber and encased separately from the high voltage section.
- Based on customer's specification, protective relays, meters, control switches, indicating lamps and other pilot devices are flush mounted on the hinged and lockable front door.
- Sufficient space is available inside the chamber to arrange all the secondary control equipment, fuses, MCB's, auxiliary relays, terminal blocks, etc.



About the Company: Excel Power Switchgear, a high tech manufacturing unit established in 1998, is engaged in R&D, production, and manufacturing of low & medium voltage switchgear. Since then, Our company has displayed a rapid growth in the switchgear industry by attaching primary importance to customer oriented approach and by producing quality products. Our present turnover being 20 million INR, is expected to raise to the amount of 50 million INR just within the next two years.

Contact:

Excel Power Switchgear Pvt Ltd, Chennai
Tel: 044-22254870
Email: sales@excelpower.co.in

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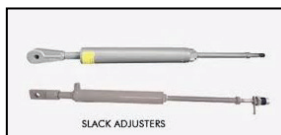


SLACK ADJUSTER IRSA 600/750

V R Global Private Limited offers a wide range of slack adjuster IRSA 600/750.

Features:

- Slack adjusters are used to manually maintain proper brake chamber stroke and lining-to-drum clearance during normal operation. Slack adjusters are available in a variety of arm configurations, lengths, torque ratings and spline types.
- Since it is a part of Air Brake System of Wagons, it plays an important role in functioning of the brake system of wagons. The product is a critical item formed with assembly of 40 odd items made to perfection.



About the Company: V R Global Private Limited is a leading company in the steel superstructure fabrication and erection industry.

Contact:

V R Global Private Limited, Kolkata
Mobile: 09830856000
Email: vrglobalpvtltd@gmail.com

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KUSAM-MECO® VOLTAGE TESTER MODEL-KM 66 / KM 69

Kusam Electrical Industries Ltd offers a wide range of Kusam-Meco voltage tester model- KM 66 / KM 69.

Features:

- Kusam-Meco has 2 voltage testers in their vast range of digital test & measuring Instruments.
- The Testers have highest safety 'UL/ETL' approval. Model KM 69 is with display & Model KM 66 is without display. KM-69 displays DC voltage from 0.1 V-1000 V, AC voltage from 0.1 V-1000 V in 8 steps.
- The sensing is TRMS. It also has AC Detection Shaker & RCD leakage-path. RST (RYB) Phase Sequence rotation and Detection.
- It has backlight display & flash light for easy viewing in dark. It is rated for IP 65 protection. It has Low Battery Warning & Auto Power off function.



About the Company: Established in 1983, Kusam-Meco, an ISO 9001:2008 certified company, introduced and pioneered the use of digital multimeters and clamp meters in Indian industry.

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Contact:

Kusam Electrical Industries Ltd,
Mumbai
Tel: 022-27754546, 27750662, 27750292
Email: sales@kusam-meco.co.in

EARTH LEAKAGE RELAY - JRC 173

JVS Electronics Pvt Ltd offers a wide range of earth leakage relay (setting range 0.5 to 8.0A) JRC 173.

Features:

- The relay measures the earth leakage current from the CBCT and if it exceeds the threshold, it extends a trip signal after the operating time.
- Its application include: The relay used for protection of LV/MV distribution systems requiring very high sensitivity for earth faults.
- Its features include: solid state reliability; built in test facility; very low primary current sensing; core balance current transformer; supplied along with the unit.

About the Company: JVS Electronics Pvt Ltd is an exporter, manufacturer and supplier of audio indicating instruments, visual indicating instruments, electrical indicating instruments, etc.

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Contact:

JVS Electronics Pvt Ltd, Bangalore
Mobile: 09448288863
Email: bangalore@jvselectronics.in

PRECISION TWIN MACHINE VICE

B R Precisions offers a wide range of precision twin machine vice.

Features:

- Twin machine vices are capable of clamping two pieces simultaneously with one single movement of the handle keeping the total length constants.
- This makes it ideal for machining series of work pieces in machining centers. The exterior clamping system towards the center makes the elevated forces in the clamp area to be compensated dynamically thus avoiding deformations.
- Grinding of all surfaces, Possible working positions supported on the base on the side or vertically on the head. Suitable for working in horizontal and vertical machining centers Squareness and parallelism accuracy at 0.02 Microns.

About the Company: B R Precisions is dedicated to the manufacturing of clamping solutions; our main products are high pressure and precision vices.

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Contact:

B R Precisions, Bangalore
Mobile: 09845208854, 09449648171
Email: brvices@rediffmail.com,
brprecisions@gmail.com



EMPTY LOAD DEVICE BOX

V R Global Private Limited offers a wide range of empty load device box.

Features:

- The load-empty device consists of two horizontal levers (one live and the other one dead) and is connected by means of empty and load tie rods.
- When the handle is kept in empty position, the empty tie rod is connected to the system and in turn, provides low leverage ratio, thereby gives lesser brake force.
- Empty/load devices directly sense whether a car is loaded or empty and proportions the brake cylinder accordingly.

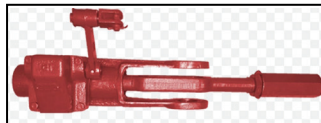
About the Company: V R Global Private Limited is a leading company in the steel superstructure fabrication and erection industry.

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Contact:

V R Global Private Limited, Kolkata
Mobile: 09830856000
Email: vrglobalpvtltd@gmail.com



ANAEROBIC ADHESIVES

Parson Adhesives India Private Limited offers a wide range of anaerobic adhesives.

Features:

- These high performance adhesives are being used to a wide variety of industries such as automotive, railway, marine, electronics, sporting goods, oil & gas, sign & display, medical devices, furniture, construction, plastic fabrication, metal fabrication and general assembly.
- Parson products are well established in more than 54 countries around the world backed by highly accredited certifications such as SGS, DVGW, NSF, ABS, ISO, SKZ, UL etc. Parson supply these high performance adhesives to many of the leading companies in the world.
- Parson also manufactures following industrial and structural adhesives: Parfix cyanoacrylate adhesives; Parlite UV curable adhesives; Parseal impregnation sealant; partite acrylic and methacrylate adhesives; Parbond epoxy and polyurethane adhesives; Parcon silicone sealant.
- Sonlok 3290 is a fast curing, penetrating, medium strength anaerobic thread locking compound for bonding and sealing threads, and retaining of cylindrical parts.
- Sonlok 3290 is highly resistance to heat, vibrations, water, gases, oils, hydrocarbons and many chemicals and Penetrates threads by capillary action. Medium strength thread locker; Ideal for sealing hairline cracks, small nuts and bolts; Seals and welds porous metal parts. Localize heating and hand tools are needed for disassembly. Prevents corrosion and leakage; Secure setscrews and other assemblies after settings are completed; Fasteners on vibrating machines or moving components; Meets Military specifications: MIL-S-46163A Type III Grade R; MIL-S-22473E Letter Grade AA.

About the Company: Parson Adhesives India Private Limited is a Business Unit of Parson Adhesives, Inc. USA. Parson Adhesives is one of the leading manufacturers of wide range of high quality anaerobic adhesives for variety of Industrial engineering applications. SONLOK range of anaerobic adhesives are currently used by many of the large companies in USA, Germany, France, Italy, UK, Turkey, Brazil, Mexico, China and Taiwan.

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Contact:

Parson Adhesives India Private Limited,
Vadodara
Tel: 0265-2972191
Mobile: 09428511765, 09408354185
Email: sales@parsonadhesives.in



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Industrial Automation



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Process Equipment for Chemical, Food & Pharma



Construction Equipment & Components



Gears, Bearings & Motion Control Products



Test & Measuring Instruments



Oils, Lubricants & Filtration Systems



Packaging & Printing Equipment



Castings & Forgings



Batteries & UPS Systems



Plastic & Rubber Processing Machines



Pumps & Valves



Industrial Safety & Security Systems



Motors & Drives



Hydraulics & Pneumatics



Pollution Control & Water Treatment Equipment



Cables & Wires

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CASTING COMPONENTS

Micro Melt offers a wide range of auto parts casting components. The auto components manufactured at its unit are highly suitable for several industrial sectors, mainly automobiles.



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Experienced and skilled professionals are on board to do research on latest market.

Contact:

Micro Melt Pvt Ltd, Veraval
Mobile: 09825415355
Email: info@micromelt.com

HIGH QUALITY DIE SETS

Fibro India Precision Products offers a wide range of high quality die sets. These high quality die sets are manufactured from premium grade raw materials on high-end machines. A flawless range of die sets is offered to meet the diverse requirements.



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Contact:

Fibro India Precision Products Pvt Ltd,
Pune
Tel: 02135-670900
Email: info@fibro-india.com

TOOLING SOLUTIONS

Delta Small Tools & Engineering offers a wide range of customised tooling solutions. The range includes chill vents, 2D/3D core pins, sleeves, sliders for die casting



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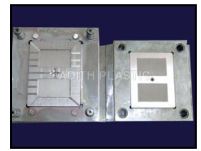
dies/moulds, precision punches.

Contact:

Delta Small Tools & Engineering Pvt Ltd,
Pune
Mobile: 09890449225
Email: deltatools@hotmail.com

INDUSTRIAL MOULDS

Adith Plastic offers moulds for industrial electronic parts. These moulds for industrial electronic parts are of highest quality and manufactured in a wide range. They are designed and manufactured by professionals using best quality raw materials.



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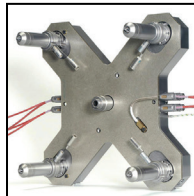


Contact:

Adith Plastic, Mumbai
Tel: 022-65330980 Mobile: 09821230980,
Email: adithplastics@gmail.com

INJECTION MOULDS

Innovative Moulds & Dies offers a wide range of hot runner injection moulds. The products' applications range from micro-sized nozzles to very large automotive parts and shipping containers.



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Contact:

Innovative Moulds & Dies, Chennai
Tel: 044-42852146 Mobile: 09840914445
Email: info@innovamoulds.in

SAND CASTINGS

B K Tech Enterprise Inc offers sand castings. This product is available in a wide range to meet a wide variety of applications. It is extensively used for conventional moulding and metal casting processes.



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Contact:

B K Tech Enterprise Inc, Rajkot
Mobile: 096628-61959
Email: sales@bktechenterprise.com,
bktechenterprise@rediffmail.com

CASTINGS

Gravity Cast offers stainless steel castings. High grade raw materials are used like cast steel, SS 316, SS 304, SS 410, bronze (g.M), pH, and WCB. The products are available in different



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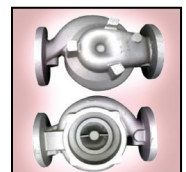
specifications as per the requirements of customers.

Contact:

Gravity Cast Pvt Ltd, Rajkot
Tel: 02827-253037 Mobile: 09375324868
Email: info@gravitycastindia.com

PUMP CASTINGS

Supercast Industries offers a wide range of pump castings in aluminium. The aluminium pump castings are available in a superior quality range, with high strength, rust resistance, ruggedness and durability. They are checked for quality on various parameters.



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Contact:

Supercast Industries, Mumbai
Mobile: 096650-94970, 09326474970
Email: response@supercastind.com

CASTING SLEEVES

Manek Investment Cast offers a wide range of centrifugal casting sleeves. These are designed and manufactured using top class raw materials and cutting edge technology under the



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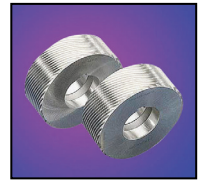
guidance of skilled professionals.

Contact:

Manek Investment Cast Pvt Ltd, Rajkot
Mobile: 07567047001, 09586326808
Email: manekcasting2011@gmail.com
manekcasting@yahoo.com

CUTTING DIES

Tool Masters India offers a superior range of thread cutting dies. These thread cutting dies are extensively used in precision thread rolling of fasteners, auto-parts and other components. The



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entire range of thread cutting dies is made using cold work tools steel.

Contact:

Tool Masters India, Patiala
Mobile: 09815941718, 09876300890
Email: toolmasters@gmail.com

STEEL BARS

Sunil Forging & Steel Industries offers forged steel bars. This range of forged steel bars provide dimensional accuracy and corrosion resistance. The precision designed stainless steel round bars are designed with the latest



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technology.

Contact:

Sunil Forging & Steel Industries, Navi Mumbai
Mobile: 09920329981
Email: info@sunilforgings.com

PLASTIC MOULDS

Vikas Industries provides a comprehensive array of plastic moulds. These products are widely used in the designing of PVC blocks. They are precisely fabricated by professionals



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using best grade components and innovative technology.

Contact:

Vikas Industries, Mumbai
Mobile: 09821036215, 09821666215
Email: response@vikasindus.com

HAND WASH

Crozier Hygiene Company manufactures a wide range of hand wash aqua. This hand wash provides extra care with up to 2-hour protection between washes. These products are known for long lasting protection of hands; cleans effectively removing dirt and germs.



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Contact:

Crozier Hygiene Company, Udaipur
Mobile: 09782200789, 09887157509,
Email: id-crozierhygiene@gmail.com
info@crozier.co.in

PROMINENT DISPOSABLE GLOVES

Plasti Surge Industries Pvt Ltd is a manufacturer of a wide range of disposable gloves. It is reputed as one of the prominent disposable gloves



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manufacturers, suppliers and exporters from India.

Contact:

Plasti Surge Industries Pvt Ltd, Amravati
Tel: 0721-2521295, 2521296, 3332321
Email: sales@psidispo.com

HAND SANITIZER

Kavit Polybind Private Limited offers a wide range of hand sanitizer traveling pack. This pack offered comes in quality constitution form and provides for effective killing of disease-causing germs up to 99.99%.



Scan the QR Code for instant product enquiry



Contact:

Kavit Polybind Private Limited, Ahmedabad
Mobile: 08046040742
Email: tapanshah69@gmail.com

DISINFECTANT CONCENTRATE

Alpha Products manufactures and supplies a wide range of Alpharex multipurpose disinfectant concentrate. It is dual action, cleaning and disinfection deodorizer. Water soluble; bio-degradable and eco-friendly, aldehyde free.



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Contact:

Alpha Products, Vasai (E)
Mobile: 09921700210, 09821172335
Email: info@alphaproducts.net.in

HAND GLOVES

Balaji Enterprises is a manufacturer of a wide range of black knitted hand gloves. They are among the most prominent manufacturers and suppliers of an extensive range of



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black knitted hand gloves.

Contact:

Balaji Enterprises, Pune

Mobile: 08048710129

Email: sales@bajajenterprises.net

CLEANER AND DISINFECTANT

KCH India (P) limited engages to offer a wide range of Germguard™- scented cleaner and disinfectant. This is one step cleaner disinfectant, deodorized



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and fungicide. It controls gram positive and gram-negative bacteria.

Contact:

KCH India (P) Limited, Chennai

Mobile: 09884531737

Email: cpkch@vsnl.net

FLOOR CLEANER

Ratnesh Raj Chemicals engages as a manufacturer of a wide range of cleanex floor cleaner. Cleanex floor cleaner is a high-performance liquid detergent available in a concentrate. It is a highly effective



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degreaser and grime remover that is suitable for floors.

Contact:

Ratnesh Raj Chemicals, Surat

Mobile: 09227777848

Email: rrc@realcleaner.com

SANTIZER - ALCOHOL BASED

AV&T Solutions Private Limited offers a wide range of alcohol based sanitizer.



This techno plus is 3 in 1 all purpose special detergent for stores, bathrooms and toilets and prevents the growth of

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bacteria and microbes with a special smell.

Contact:

AV&T Solutions Private Limited, Mumbai

Mobile: 08048763273

Email: info@avnt.co.in

BRICK MAKING MACHINE

Mortek Machinery manufactures and supplies electric brick making machine. These machines are applauded in the market due to their perfect finish. These machines are developed from



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quality approved material.

Contact:

Mortek Machinery Pvt Ltd, Ahmedabad

Mobile: 07624011874, 09427011874

Email: mail.mortek@gmail.com

CIRCUIT BREAKER PANELS

BVM Technologies Pvt Ltd offers a wide range of indoor vacuum circuit breaker panels They bring forth indoor vacuum circuit breaker panels that offer exceptional performance to interrupt the power in case of short circuit and power overload.



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Contact:

BVM Technologies Pvt Ltd, Ghaziabad

Tel: 0120-4560135

Mobile: 09810920116, 09810990135

Email: info@bvmtechnologies.com

ABRASION TESTER

Asian Test Equipments offers a wide range of DIN abrasion tester. This Din abrasion tester is designed to determine abrasion resistance index of natural and synthetic rubber in accordance with the above principle.



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Contact:

Asian Test Equipments, Ghaziabad

Mobile: 09756936321

Fax: 0120-2833028

Email: asiantest2007@yahoo.com,

sales@asiantestequipment.com

STRENGTH TESTER

Globe Enterprises offers a wide range of tensile strength tester. The offered testers are designed by domain experts with the application of innovative technology and high grade materials.



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Contact:

Globe Enterprises, Ghaziabad

Tel: 0120-2855583

Mobile: 09810513727, 09810513799

Email: info@globetestingequipment.

com, globehazhiabad@rediffmail.com

PRESSURE GAUGE

Atlas Industrial Stores offers a wide range of utility pressure gauge. This pressure gauge is perfectly suited in industrial and process applications. This gauge is developed to be used in valve positioned, air filters and regulators.



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Contact:

Atlas Industrial Stores, Kolkata
Tel: 033-22432416, 39855755
Mobile: 09903060627
Email: aiscalcutta@gmail.com

AUTOMATIC VISCOMETER

AVI Scientific (India) offers a wide range of digital automatic viscometer. It's having advantage of high accuracy, stable digital display. It is easy to operate and good anti-interference. It is widely used in the measurement of viscosity of various kinds of fluids.



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Contact:

AVI Scientific (India), Mumbai
Tel: 022-25477638
Email: md@aviscientific.com

PAINTING BOOTH

Dipole Surface Finishing Solutions offers a wide range of liquid painting booth. These conveyerised liquid painting booths are made of best quality raw material.



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Contact:

Dipole Surface Finishing Solutions, New Delhi
Mobile: 09990051511
Email: dipoleindia@gmail.com, info@dipoleindia.com

FLOW METERS

Nevco Engineers offers electromagnetic flow meters. Magflux® flow meters combine high accuracy, stability and low maintenance, without moving parts, straight through flow sensor and self-cleaning electrodes.



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Contact:

Nevco Engineers Pvt Ltd, New Delhi
Mobile: 09873246469, 09999210649
Email: delhi@nevco.co.in

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Contact:

Sant Engineering Industries, New Delhi
Mobile: 09717263888, 09868107361
Email: santengginds@indiatimes.com

TWO PIPES PVC CONDUIT PIPE EXTRUDER

Hindustan Plastic And Machine Corporation offers two pipes PVC conduit pipe extruder. PVC conduit pipe extruder (two pipes) offered finds use in processes involving electrical piping.



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Contact:

Hindustan Plastic And Machine Corporation, New Delhi
Mobile: 09891061200
Email: enquiry@hindustanplastics.com

INBUILT HEAT EXCHANGER

Economode Food Equipment (India) Private Limited offers rectangular fryer with inbuilt heat exchanger. Economode introduces a new revolution in frying technology for chips, dals, vatana and other products.



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Contact:

Economode Food Equipment (India) Private Limited, Thane
Mobile: 09324068741, 08452004001
Email: enquiry@economodefood.com

SEALING MACHINE

Joy Pack India Private Limited is leading manufacturers of semi automatic L-type sealing machine. The "L" type sealing machine is designed for shrinking and packing, operations for various products.



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Contact:

Joy Pack India Private Limited, New Delhi
Mobile: 09810023485, 09312235318 |
Email: info@joypackindia.com
joypackipl@gmail.com

STANDARD BRAKE MOTORS

Eltek Motor (India) Pvt Ltd offers a wide range of standard brake motors. The brake motor is similar to a standard motor, except that brake unit is fitted on the dace of non-drive end shield.



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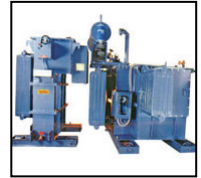


Contact:

Eltek Motor (India) Pvt Ltd, Palghar
Mobile: 07410041044, 07410041045
Email: info@eltekmotor.com, sales@eltekmotor.com

HT AUTOMATIC VOLTAGE REGULATOR

Icon Engineers offers transformers with HT automatic voltage regulator. The incoming supply from the grid sometimes fluctuates widely and after the installation of standard distribution.



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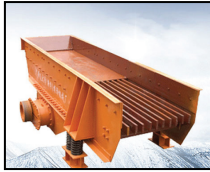


Contact:

Icon Engineers Pvt Ltd, Kolkata
Tel: 033-24548160
Mobile: 09831016416
Email: icon@cal2.vsnl.net.in

GRIZZLY FEEDER

Buildmate Projects offers a wide range of vibrating grizzly feeder. Designed for the toughest applications, high capacity and able to process abrasive material in awide range of primary feeding applications.



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Contact:

Buildmate Projects Pvt Ltd, Hyderabad
Mobile: 07675989911, 09849019012
Email: mvr@buildmate.in, marketing@buildmate.in

WELDING WIRES

Modi Arc Electrodes Company offers a wide range of welding wires - MIG wire carbon steel, Excel MAG 1. This is double deoxidised copper coated Mn-Si wire suited for gas metal arc welding in all positions.



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Contact:

Modi Arc Electrodes Company, New Delhi
Mobile: 08393889192
Email: infodelhi.modiarc@groupmkm.in

MIG MAG WELDING MACHINE

Mansoori Weldarc India manufactures, exports and supplies a high quality range of Mig Mag welding machines. This machine is manufactured using optimum quality material and sophisticated technology.



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Contact:

Mansoori Weldarc India Pvt Ltd, Faridabad
Mobile: 09313103366, 09811100410
Email: afzal@weldarcindia.com

WELDING MACHINE - PROFILE

Eewa Engineering Co offers a wide range of profile welding machines. The offered range is designed by skilled professionals employing fine quality components.



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Contact:

Eewa Engineering Co Pvt Ltd, Ahmedabad
Mobile: 09879538559, 09998848278
Email: contact@eewaengineering.com

MOSFET BASE WELDING MACHINE - DC TIG

Welding Aids offers DC TIG (inverter base) mosfet base welding machine. This is soft switch technology, highly efficient with low power consumption.



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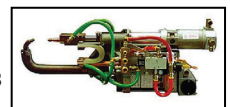


Contact:

Welding Aids, Delhi
Tel: 011-23214114, 23212453
Mobile: 09811062635, 09811945400
Email: weldingaids@gmail.com

PNEUMATIC WELDING GUNS

Shreeji Weld Industries manufactures a range of spot servo pneumatic welding guns. The offered pneumatic gun is manufactured using the best grade raw materials and latest technology in compliance with international quality standards.e.



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Contact:

Shreeji Weld Industries, Mumbai
Mobile: 09323275103, 09224572471
Email: shreejiweld@gmail.com

COMPRESSORS

Indmark Ltd offers a wide range of single stage compressors. The oversized high-grade cast iron crankcase has convenient oil level indicator, oil filling and drain plugs;



and deep finned cast iron cylinder and heads provide cool operation.

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Contact:

*Indmark Ltd, Mumbai
Mobile: 09833948750
Email: info@indmark.net*

DRUM MIXER

Esquire Machines Pvt Ltd offers a wide range of batching plant drum mixer. The product range encompasses reverse drum type electrical and diesel machine, concrete mixer (10/7 mechanical hopper and 10/7 hydraulic hopper) and concrete mixer as well as bar bending and bar cutting machine, and weigh batches.



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Contact:

*Esquire Machines Pvt Ltd, Vadodara
Mobile: 07069727357, 08758895096
Email: getintouch@esquiremachines.com*

BATCHING MACHINE

Creative Enterprises offers a wide range of inline feed batching machine. With rich knowledge in this industry, they are engaged in providing our



clients a broad array of inline feed batching machine.

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Contact:

*Creative Enterprises, Jaipur
Mobile: 09352174343, 09829601578
Email: construetbetter@yahoo.com*

CONCRETE MIXER

Rajat Equipments Pvt Ltd offers a wide range of reversible concrete mixer. Owing to our vast manufacturing facilities, they are manufacturing, supplying and distributing reversible concrete mixer.



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Contact:

*Rajat Equipments Pvt Ltd, Raipur
Tel: 0771-4053384, 4052641
Mobile: 09826421900, 09926936300
Email: info@rajat-group.com*

PULVERIZER MACHINE

Precious Mineral Processing Systems Pvt Ltd offers a wide range of impact pulverizer machine. A heavy duty machine to pulverize medium hard rocks, minerals, and chemicals high fineness is possible from 100 mesh to 350 mesh and in some cases up to 500 mesh. The screen less classifier is used, the possibility of chocking or jamming is ruled out.



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Contact:

*Precious Mineral Processing Systems Pvt Ltd, Ahmedabad
Mobile: 09974088696
Email: info@preciousfabcast.com*

CUTTER MACHINE

Jamshedji Constro Equip Pvt Ltd offers a wide range of concrete cutter machine. The entire range is fabricated using high-grade raw material and fitted with precision engineered components.



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Contact:

*Jamshedji Constro Equip Pvt Ltd, Pune
Tel: 020-27130682, 27130332
Mobile: 09172222137, 09850153305
Email: info@jamshedji.com*

INDUSTRIAL CHAIN CONVEYORS

Dynamic Industrials is offers a wide range of industrial chain conveyors. Chain conveyors are a mechanism where one or more moulded plastic or metallic chains run parallel to each other.



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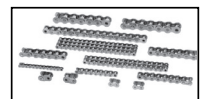


Contact:

*Dynamic Industrials, Noida
Mobile: 09311123839, 09899095305
Fax: 011-26345348
Email: mohitg@dynamicindustrials.com*

INDUSTRIAL ROLLER CHAINS

Dynamic Trading Company is a supplier and trader of a wide range of industrial roller chains. A well-designed chain drive transmits mechanical power from one shaft to another efficiently. These SKF chains are manufactured in state-of-the-art facilities, using tight quality controls.



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Contact:

*Dynamic Trading Company, Chennai
Mobile: 09840257767, 09840013057
Email: dtcche@dynamictrading.co.in*

Event	Date & Venue	Contact
PUNE MACHINE TOOL - 2024	April 25-28, 2024 Autocluster Exhibition Centre Chinchwad, Pune	K AND D Communication Limited, Ahmedabad Mobile: 09909041613 Email: info@kdclglobal.com
PROWAVE EXPO – CHENNAI	April 26-28, 2024 Chennai Trade Center Poonamali High Road, Chennai	Sai Solutions K.K.Nagar, Chennai Email: operations@saisolutions.info
INDIAN STAINLESS STEEL HOUSEWARE SHOW - BANGALORE	May 06 – 08, 2024 KTPO Trade Center, Bangalore	Steel Market Info Chopasani Road, Jodhpur Email: event@steelmarketinfo.com
PALM EXPO – MUMBAI	May 30- June 01, 2024 Bombay Exhibition Centre (BEC) NESCO, Mumbai	Hyve Group PLC United Kingdom of Great Britain and Northern Ireland Email: mosbuild@hyve.group
LOGMAT - CHENNAI	May 31- June 02, 2024 Chennai Trade Center Poonamali High Road, Chennai	Smart Expos & Fairs India Pvt Ltd, Chennai Tel: 044-22501987 Email: info@smartexpos.in
FASTENER FAIR INDIA - NEW DELHI	July 26-28, 2024 Pragati Maidan Exhibition Center New Delhi	RX India, Gurugram Email: Chandan.Kumar@rxglobal.com
AUTOROBOT - COIMBATORE	August 01-03, 2024 Codissia Trade Fair Complex Coimbatore	Midaas Touch Events & Trade Fairs LLP Ramapuram, Chennai Email: vivek@midaastouch.in
ELEKTROTEC - COIMBATORE	August 09-12, 2024 Codissia Trade Fair Complex, Coimbatore	Codissia Huzur Road, Coimbatore Tel: 0422-2221582 Email: info@codissia.com
ADEX INDIA BOND EXPO - GREATER NOIDA	September 19-21, 2024 India Expo Centre & Mart Greater Noida	ADEX India India Expo Center & Mart Greater Noida Tel: +91 8177053335 Email: sales@theadexindia.com
INTERNATIONAL		
CHINA GUANGZHOU INTERNATIONAL FORGING IN- DUSTRY EXHIBITION GUANGZHOU	May 11-13. 2024 China Import & Export Fair Canton Fair Complex, Guangzhou, Guangdong, China	Julang Exhibition Co. Ltd 510623 Guangzhou, China Tel: +86 (0)20 38620792 Email: julang@julang.com.cn
TECHSPO CHICAGO TECHNOLOGY EXPO CHICAGO	May 22-23. 2024, Soldier Field Stadion, Chicago, Illinois, USA	TECHSPO, LLC 10036 New York City, USA Tel: +1 (800) 805-5385 Email: info@techspo.co
INTERNATIONAL METAL TECH- NOLOGY - TAIWAN IMT TAIPEI	October 16-18, 2024 Taipei Nangang Exhibition Center, Taipei, Taiwan	Kaigo Co., Ltd. Taipei, Taiwan Tel: +886-2-2595-4212 Email: info@kaigo.com.tw

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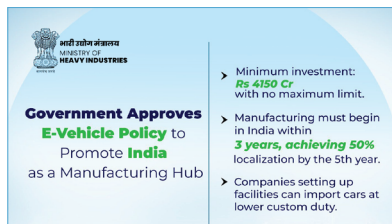
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Ministry of Heavy Industries



Government approves scheme to make India an e-vehicle manufacturing hub, attracting global investments. Benefits: boosts Make in India, fosters competition, cuts oil imports, lowers trade deficit, reduces air pollution.



Electronic Industries Association of India-ELCINA



13th Strategic Electronics Summit - Defense & Aerospace. A well-recognised platform launched to pursue the objective of encouraging domestic value addition and self-reliance in Strategic Electronics which highlights the immense scope for industry from public and private sectors to work together to serve the Defense and Security & Surveillance Sector. 17-18 July 2024 | Hotel Lalit Ashok, Bengaluru.



India Semiconductor Mission



Reinforcing Hon'ble PM Narendra Modi's vision, @GoI approves three projects for Semiconductor Fab & OSAT facilities worth over Rs. 1.25 lakh crore.



National High Speed Rail Corporation



Anemometers for monitoring wind speed will be installed at 14 key locations across Gujarat and Maharashtra for India's first hashtag#BulletTrain project.



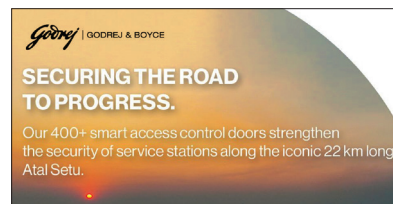
NTPC Limited



NTPC Group achieves highest ever 400 Billion Units generation in FY 2023-24.



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Our Security Solutions division has played a crucial role in securing India's longest sea bridge - the Mumbai Trans Harbour Link. We've manufactured and installed over 400 doors with smart access control for Atal Setu's service stations, across its length, to ensure that only authorised personnel have access to restricted areas. These doors prevent any unauthorised entry from the sea and potential threats via this route.



A Bharat Bhushan Babu MoD spokesperson



MoD signed contract with AVNL for 693 Armament Upgrades of Infantry Combat Vehicle BMP2 to BMP2M. AVNL, in collaboration with @DRDO_India & @BEL_CorpCom Chennai, developed indigenous solutions for Night Fighting Capabilities & FCS integration.



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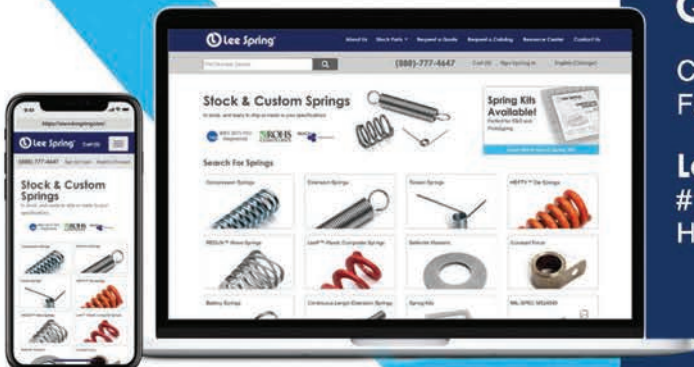
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