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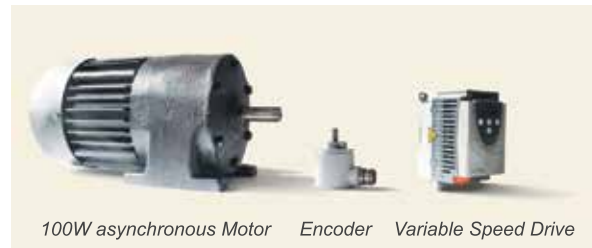
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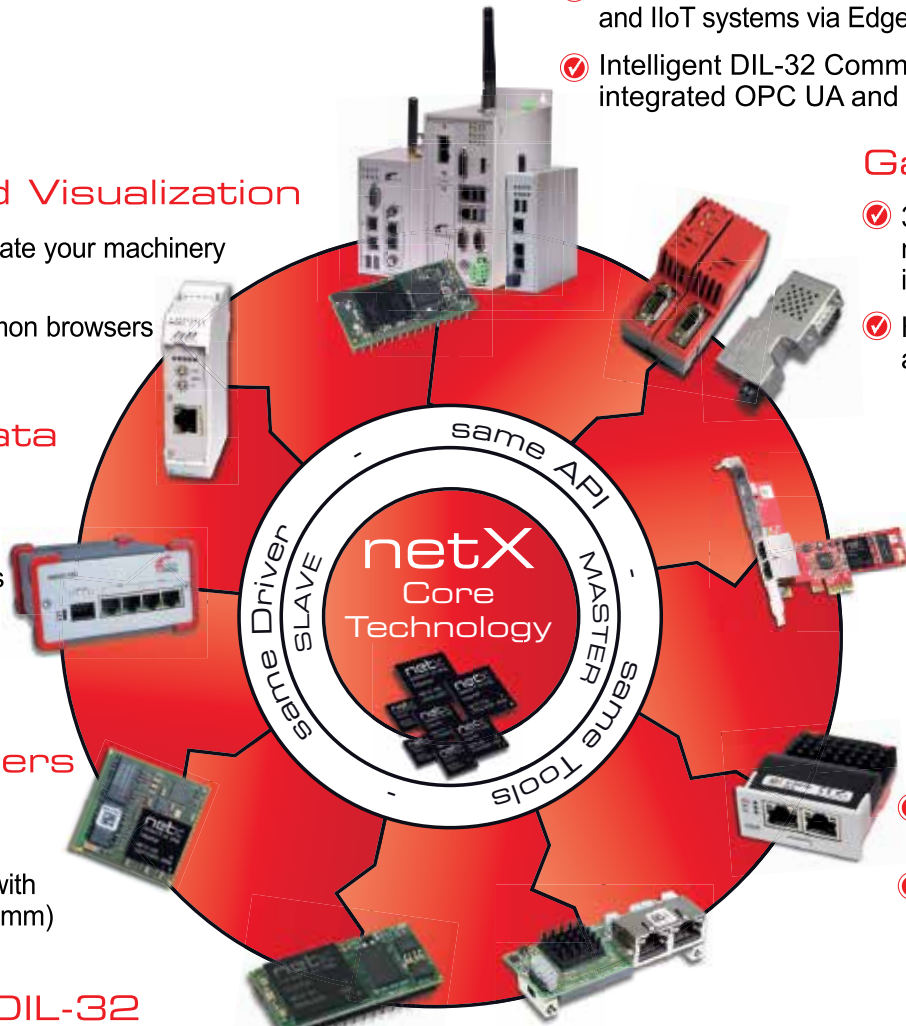
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CEO CORNER



Smart Manufacturing : The future is here

Smart manufacturing begins with smart machinery. Industry 4.0 provides lots of tools for manufacturers who want to reduce their maintenance burdens and costs and prolong the useful lifetime of the machines they depend on to manufacture and distribute their products.

Technology vendors that offer industrial IoT solutions offer suites of connectivity and communication tools for retrofitting older equipment with "smart" capabilities – and heavy equipment manufacturers are designing with connectivity and intelligence from the ground up. But what are the benefits for manufacturers bringing your physical equipment into the digital fold?

When machines can communicate with one another, they can synchronize and optimize their activities with greater precision, ratcheting production and throughput up and down depending on conditions at the docks, on the machine shop floor and elsewhere. Using sensors to collect data about machine health allows engineers to plan maintenance intervals around production schedules and get the longest life possible out of interchangeable parts before replacing them. In short, the IoT takes preventive maintenance and makes it truly predictive.

Providing machines with the ability to gather intelligence for themselves is not about squeezing humans out of the equation. It is true that some lower-paying jobs might not be around for much longer, but on the other hand, manufacturing companies need to bring on a lot more personnel with analytics, automation, data science and robotics experience in the coming years. The workforce is not violently contracting as automation doomsayers have claimed, but the makeup of the workforce in industrialized countries is definitely changing, with higher-paying jobs coming into higher demand.

The impact to the global supply chain could be huge. Manufacturers should begin planning for a future with far less need to transport finished and partly assembled merchandise all over the world. Techniques to 3D-print products from multiple materials, or with electronics embedded inside, are maturing rapidly as well, which will allow 3D printers to assemble a truly huge variety of products. As technology continues to advance across the world, manufacturers are adopting the smart factory concept. That's the claim of many tech and industry experts who believe that optimising the manufacturing process to create an integrated and collaborative process will bring about the world's next industrial revolution.

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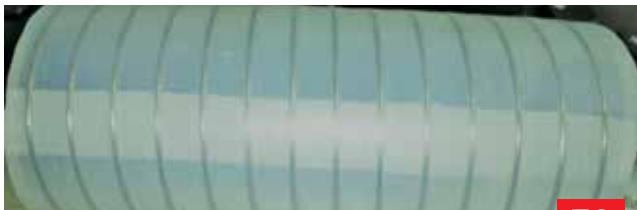


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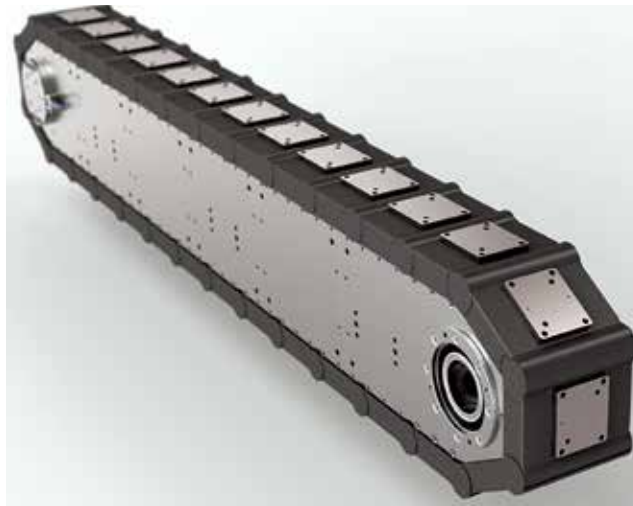
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Bettinelli's High Precision Link Conveyors: A range in constant evolution

Cam Driven Systems (CDS), a division of the Bettinelli S.p.A. group, has come up with the widest range of positioners, rotary tables and cam mechanisms for the automation processes. CDS Precision Link Conveyors TSL, TL and TXL provide the industry's highest accuracy and repeatability for automated assembly and manufacturing machinery platforms combined with the highest dynamic performance available on the market. The precision link conveyor TL series has been designed to meet the requirements of high productivity and reliability of modern automation, combined with excellent precision and speed, with a high degree of versatility to offer customers the most suitable solution. They are used on machines that require stability, precision, high speeds and low maintenance. They are different in terms of body width, allowing great flexibility and a more



accurate choice during the designing phase.

The need of the market and customer orientation, added to the desire of CDS to expand and improve its product range has brought new innovations to the TL series:

TSL 200 : In TL 200, the depth of the body has been reduced, with the same stroke, with a consequent reduction of the gearwheel diameter and a better ratio with the driver unit and a better positional accuracy.

This makes the machine far more compact and it is a great advantage to the machine builder.

Plastic Protections:

In the TL range, the plastic protections have been studied to be applied on pallets in order to guarantee an anti-intrusion covering for the components being processed. These covers are printed in 3D.

Special Links Chain:

Together with the plastic protections a new links chain has been developed.

The latter is equipped with special seals to reduce the accumulation of powders or abrasive material during the process and increase the protection of leads and bushes.

In a nutshell, following are the salient features of these conveyors:

- Versatile and compact modular-component design
- Precision machined cast iron chemical-nickel plated links
- Precision chordal compensation cams
- Cam Driven for fixed indexing motion or servo driven for flexible positioning

The competitive price and fast lead time together with CDS quality and reliability make this series very attractive for the market, says Rupesh Papparaju, Director, Bettinelli Automation Components Pvt. Ltd., based in Pune.

For more information, Web: www.bettinelli.in

Pyroguard expands to meet growing demand in India

Pyroguard, the world-renowned manufacturer of fire-rated safety glass, has increased its capabilities in India with the expansion of its team. As part of its growth strategy, Pyroguard now employs three dedicated salespeople in the

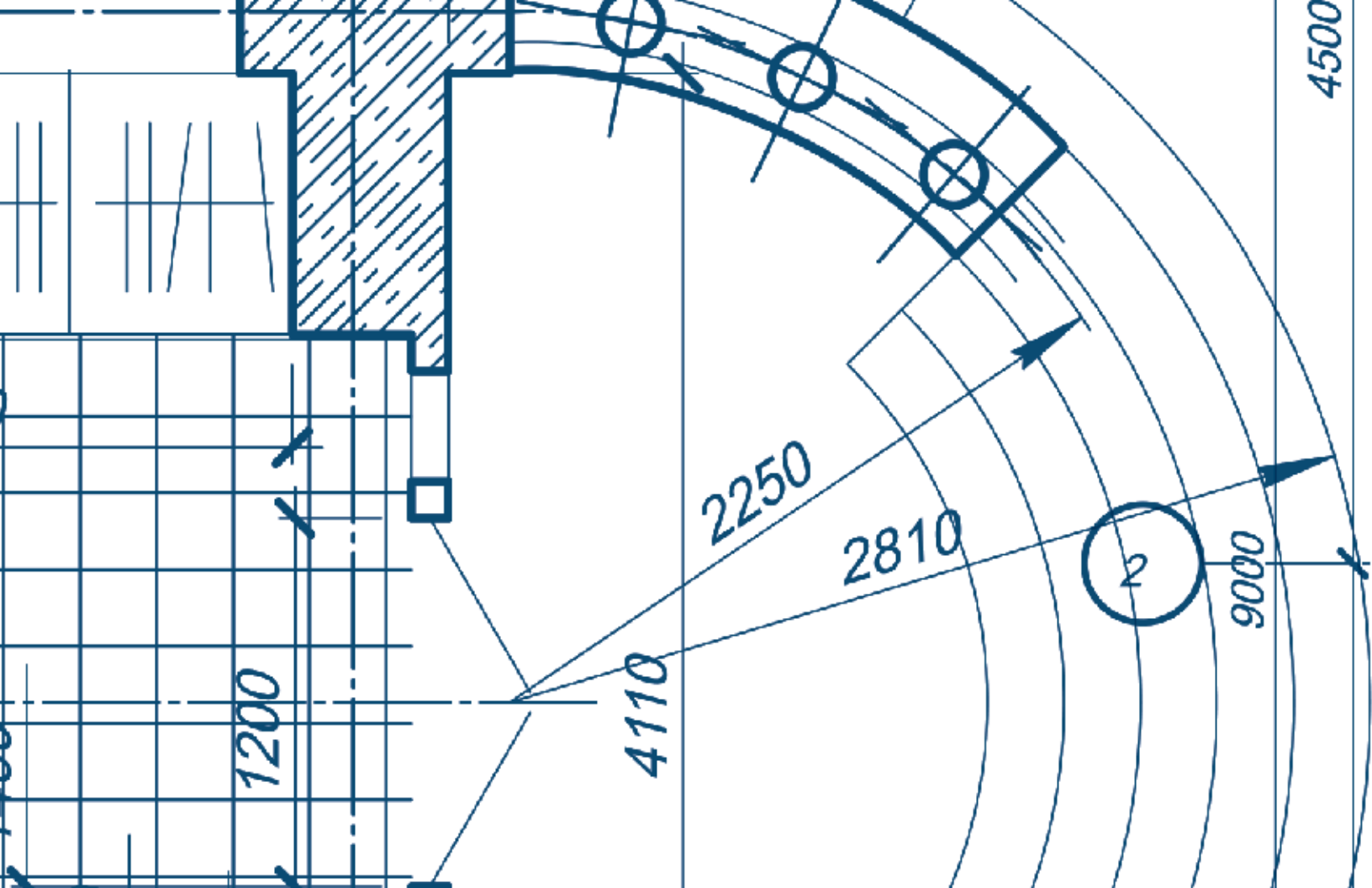
area, providing customers with direct support on each of their projects. Utilizing their expertise in the sector, the team works closely with individual customers to fulfil the precise requirements of their projects, delivering on time

and to specification.

Having successfully manufactured and supplied fire-rated glass solutions to a number of major developments in India since 2012, including Taj Vivanta, Dwarka Delhi; DIL Head Office, Thane,

Mumbai; and Maulana Azad Hospital, Delhi – Pyroguard is a trusted partner across the country.

“Pyroguard has been manufacturing fire-rated glass solutions for more than 25 years, and we're proud to offer our cus-



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tomers in India an unrivalled level of expertise as a result,” said Ritesh Chhadwa, Sales Manager at Pyroguard. “While our operations span the globe, we pride ourselves on our local service, ensuring each of our customers receives the very best

support on their projects so they can install solutions which meet their unique requirements.”

“Our local team is central to delivering this high level of service. With recent investment, we’ve been able to expand our team in India even further

to provide our customers with a consistent level of support. Coupled with our local partner network, our unique approach makes for a seamless supply of bespoke, fully-tested and certified fire-rated glazing systems, making our business stronger than ever in

India,” Chhadwa added.

Pyroguard has dedicated manufacturing facilities in the UK and France and an established international sales team which delivers technical knowledge and local support.

For more information
<http://www.pyroguard.eu>

JSPL targets above 12k Cr EBIDTA and less than 30K Cr Debt : Naveen Jindal

- Company succeeded to reduce debt worth more than Rs. 4k crores last fiscal
- Cut in corporate tax is a big boost for manufacturing, will create more employment opportunities
- 1.26 Lakh ton Rails Supplied, RVNL has also ordered Rails for Rs. 750 Crores .
- Appreciable that the Government is going to encourage coal gasification.
- Availability of Coal, Iron Ore and other raw materials still a concern but Govt. efforts are in the right direction

JSPL has set target to reduce its net debt by more than Rs. 10,000 crores to below Rs. 30 thousand crores and take EBITDA (Earnings Before Interest, Tax, Depreciation & Amortization) to more than Rs. 12 thousand crores on a consolidated yearly basis over the next two years.

Mr. Naveen Jindal, Chairman, JSPL disclosed his plan at company’s 40th AGM in Hisar on 27 September 2019. Congratulating team JSPL for the turnaround Mr. Jindal said, ‘though there is slowdown, our company is comfortably placed in the market with our value added and niche products. The company would be more aggressive in marketing its products and would continue to look to divest the non-core assets, to reduce debt to the target level.’

“The company has successfully reduced its

net debt by more than Rs. 4000 crores in the last fiscal and will continue to work towards doubling the EBITDA in next 2-3 years,” he added.

JSPL Chairman appreciated the efforts by the govt to focus on Coal Gasification, a clean coal technology. JSPL has a coal Gasification based DRI plant at Angul and with increase in steel demand, we shall restart production from it. He also said, “JSPL is ready to support the govt in this endeavour. India is having the 3rd largest coal reserves; and we believe that our country can change the energy scenario world over with such innovative clean coal and environment friendly technologies.”

Detailing the contribution of JSPL to the nation in last 30 years, he said that the company has done a cumulative turnover to the tune of Rs 3 lakh crores with in-

vestments of over Rs 80,000 crores, generated livelihood for over 1 lakh families and paid more than Rs. 39,000 crore as taxes apart from benefitting lakhs of families with its CSR activities.

Appreciating the Government’s plan for investing Rs 100 lakh crore in infrastructure sector, he said, ‘JSPL is delivering rails well before stipulated time. We have supplied more than 1.26 lakh tons of rails so far and are supplying more. RVNL has also ordered for rails worth Rs. 750 crores and our team is looking to fulfil the commitment before deadline. We can meet the Rail needs of India and there would never be any need for imports.’

Focusing on Government’s priority for housing for all, Mr. Jindal said, JSPL innovative products including Jindal Panther 550D TMT Rebar and prefabricated structures could help

in not only building faster but with greater strength too, which could prove to be a game changer for sustainable housing.

Mr. Jindal said, availability of coal, iron ore and other material are still a concern but the efforts of the govt to ensure raw material to every sector are appreciable. Talking about the recent corporate tax cuts, Mr. Jindal complemented the efforts of the Government to bolster manufacturing sector and believes this could generate more employment.

He thanked all the stakeholders, employees, banks, customers, suppliers, State Governments and Government of India for their support.

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8800900548 or
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BFW inaugurates new Tech Center at Aurangabad

BFW recently launched a new Technology Center at Aurangabad. The Tech Center was inaugurated by Rishi Bagla, a renowned industrialist and Chairman, OMR Bagla Group and director of Aurangabad Electricals, amongst a gathering of scores of entrepreneurs from Aurangabad.

The managing director of BFW, Ravi Raghavan and senior leadership team of BFW was also present on the momentous occasion. There was live demonstration of star performance machines, cutting edge application engineering and



smart Automation solutions to enhance productivity, quality and to serve global competitiveness.

Setting up of the Technology Center is a step

forward by BFW in being close to the customers and industries in the Aurangabad and to provide turnkey process engineering solutions, prove out &

application support, ready availability of spares, training and developments.

For more information
<http://www.bfwindia.com/>

Bosch Power Tools launches cordless experiential mobile vans

Bosch Power Tools India is set to amplify its consumer experience by enabling users to get hands on experience of the cordless range through mobile van demonstration vehicles. An extension of the recently launched user campaign 'Cordless Matlab Bosch'. Bosch Power Tools will campaign across multi-cities starting 9th of September across for six months.

Adding to the 40 cities

covered by the previous 'Cordless Matlab Bosch' demo zones through channel partner outlets, Bosch Power Tools plans to expand its outreach to 50 more cities in India by the end of the month with the product experiential mobile vans campaign. The Bosch Power Tools experiential mobile van will commence its campaign in Kolkata, Delhi, Cochin, Ahmedabad, Pune, Hydera-



bad, Chennai, Bangalore, Ludhiana and Lucknow. These experiential mobile vans will not only engage and educate consumers on the availability and benefits of quality cordless power tools in the market but also improve accessibility and availability of the range by reaching across cities through the

experiential vehicles.

Part of the mobile van experiential, customers can avail a hands-on demonstration of Bosch Power Tool's lithium-ion battery-powered screwdriver, the Bosch Go, with push and go functionality is 4x more convenient than its competitors available in the market. The cordless





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range on showcase will also include power drill drivers, high power impact wrenches, robust hammer drills, high-speed impact drills, ABR enabled impact drivers, flexible drill drivers and the GSR 120-LI, a 12V cordless drill driver, re-introduced with an exclusive jacket packaging designed for India.

Commenting on the launch of the mobile van campaign, Panish PK, Regional Business Director - India and SAARC – Bosch Power Tools said, “Some of these cordless tools for professionals are optimized with ProCore18V batteries for maximum performance and efficiency, making cordless tools

better than corded tools for the first time in the history of machine and toolmaking. Design and quality being key, the cordless range will offer all the conveniences of going cordless without added bulkiness or weight, encouraging every workman in the country to go cordless, thereby spearheading the vision of

our campaign – ‘Cordless matlab Bosch’.”

The products are also available immediately on Amazon and Flipkart. ‘Bosch Power Tools cordless range will be available at dealer stores across India.

*For more information
www.bosch-press.com*

CUI expands capacitive incremental encoder line

CUI's Motion Group announced the addition of a new series to its innovative AMT incremental encoder family designed to support larger motor shaft sizes from 9 mm to 15.875 mm (5/8 inch). The AMT13 series, based on CUI's proprietary capacitive ASIC technology, is expected to bring high level of durability, accuracy, and immunity to environmental particulates. Ideally suited



for a variety of robotics, industrial, and automation applications, the series offers 22 programmable resolutions from 48 to 4096 PPR, CMOS voltage or differential line driver outputs, and low current consumption of 16 mA

at 5 V. Available in radial or axial orientations, the AMT13 incremental encoder is housed in a compact 42.3 x 42.3 x 13.5 mm package and carries a wide -40 to +125°C operating temperature range. Its digital nature and compatibility with CUI's AMT Viewpoint™ software makes the AMT13 encoder highly customizable with the ability to easily configure the resolution and set

the zero position.

The AMT13-V kit affords users further flexibility in their design with the inclusion of 9 different sleeve bore options from 9 mm to 5/8 in and simple mounting tools to assist in the easy installation process onto a motor.

The AMT13 series is available immediately with prices starting at \$29.49 per unit at 50 pieces through distribution.

FABTECH 2019: Transfluid to present engine manifold with two blade cutting

transfluid is all set to present a precise engine manifold with two blade cutting at FABTECH 2019, which will be



The tubes are initially bended in sequence and then cut with blades.

held in Chicago between November 11 to 14. A t bend system developed by transfluid enables the processing of tubes of up to 60 mm with a bending radius of 1 x D. Most of the tubes produced in this case have two or three bends, with the cut made straight after the last bend or between two bends. No additional follow-up cuts are required. The bending machine for this solution

features a centre-line booster and three bending planes, plus the plane where the cutting tool is used.

transfluid is sought after worldwide as a partner for manufacturing tube bending machines and tube processing machines. transfluid has been developing its technologies for tube machining since 1988, so that it can provide



customer-oriented, tailor-made solutions – for plant and machine construction, the automotive and energy industries, shipbuilding and medical device manufacturers.

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FARO® launches innovative 3D solutions for AEC industry

FARO previewed an innovative set of 3D solutions specifically developed for AEC professionals at INTERGEO 2019 in Stuttgart, Germany. Both solutions were formally announced and made available for quoting and delivery in the fourth quarter of 2019.

FARO Indoor Mobile Scanner

As 3D Laser Scanning becomes more ubiquitous across various industries, there is an ever increasing need to make the scanning process and data processing more efficient. Conventionally, this has been addressed with a variety of mobile mapping solutions. However, these solutions typically have limitations in terms of accuracy and data fidelity. The FARO

Indoor Mobile Scanning solution enables kinematic 3D scans to be completed up to 7X faster than a series of traditional, fixed point scans over comparable areas. Thus, projects that took days can be executed in just a few hours. Additionally, as the Mobile Scanner includes fixed scan capability as a standard feature, users can simply switch to high-fidelity scan mode in real time for seamless integration with mobile scan data.

The Indoor Mobile Scanner solution combines several leading technologies, including FARO's patented Focus Laser Scanner technology, which have been optimized to operate in concert. Current owners of Focus Laser Scanners or ScanPlan™ products

will have a simple upgrade path to the Indoor Mobile Scanning solution, which protects their original purchase investment.

FARO As-Built™ Modeler

FARO As-Built Modeler Software enables AEC professionals to leverage the smoothest Scan to BIM workflow in the industry to date. As-Built Modeler is specifically designed to minimize the effort and time required to create as-built documentation, which is the main task across AEC professionals in the building, facility and infrastructure design phases. This comprehensive and innovative platform automates many cumbersome processing steps that must be performed manually today. Powerful tools allow

the easy creation of CAD objects that can be directly imported in any CAD system independent of the specific CAD software, dramatically simplifying the modelling workflow for FARO users across the AEC industry.

"FARO is committed to supporting our customers with the digital transition of the AEC industry by better connecting the real world with the virtual world," stated Andreas Gerster, Vice President Construction BIM. "As a result, we will continue to deliver high value solutions that enable AEC professionals to make informed decisions that increase productivity and reduce waste."

For more information
www.faro.com/in

EMO: GEFERTEC showcases new-generation machines and applications for 3D metal printing

GEFERTEC presented a number of applications developed in cooperation with industry partners



The GEFERTEC Application Center has several different arc machines in operation.

for different customers at this year's EMO which was held from 16 to 21 September in Hannover.

The company showcased examples from the aerospace, rail, natural gas and petroleum, toolmaking, and mining industries. An arc405 made by EMAG was used for a live metal printing demonstration at the trade show. Metal components measuring up to 0.06 m³ with a maximum mass of 200 kg can be produced on the 5-axis machine.

The arc405 is the first result of a joint venture between GEFERTEC

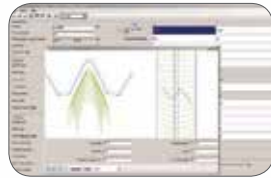
and the EMAG GROUP. As a minority shareholder, EMAG was responsible in the future for mass production of the 3DMP® machinery. This will enable GEFERTEC to meet growing market demands and ensure shorter delivery times.

EMAG was also at the trade show to demonstrate the wide range of applications using 3DMP® manufactured components. The subsequent processing of printed components in the EMAG world was also shown.

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Grundfos India appoints Saravanan Panneer Selvam as General Manager

Grundfos, a global leader in advanced pump solutions and water technology, announced the appointment of Saravanan Panneer Selvam as the General Manager of Grundfos India, with effect from September 1st, 2019. Saravanan will report to Ranganath N. K., Area Managing Director, INDO Region, Grundfos and will be responsible for the company's business and operations in India, Bangladesh, Bhutan, Maldives and Nepal. Saravanan has more than 20 years of experience

in the pump industry. He joined Grundfos India in April 1998 and has held various positions in the company through the years. In late 2012, Saravanan took on a role oversees as Segment Manager - Industry segment in Grundfos South Africa, before taking up the role of Deputy General Manager for Grundfos Ghana in May 2013 with the responsibility for the West Africa area. After establishing Grundfos Ghana, Saravanan returned to Grundfos India in July 2015, to strengthen

the organization as Sales Director with the full responsibility of the whole sales organization in the company.



Commenting on Saravanan's appointment, Ranganath N.K., said, "Saravanan has been an integral part of Grundfos' journey in the country over the last two decades. Given his experience and sales acumen, we are happy to have him take on the role of General Manager to ensure Grundfos

India's future growth in this region." Before joining Grundfos India, Saravanan worked with steam boiler companies like IAEC Industries in Chennai and Al-Saghyir Steam Boilers in the Kingdom of Saudi Arabia. He has an engineering degree in Mechanical and Production from the Annamalai University in Chidambaram, India (1991).

For more information <http://www.grundfos.in/>

HARTING to help streamline wind power industry

The wind power industry is streamlining its global manufacturing and installation processes to boost efficiency. Costs are also set to be further reduced as systems grow even bigger. The industry is relying on technical optimisation along the value chain and over full lifetime of installations as a way to keep investment and operating costs as low as possible and maximise profitability. HARTING will be showcasing new products and solutions at the HUSUM Wind trade Ffair (September 10-13, 2019) that support this trend towards cost reduction.

The new Han industrial connectors allow for rear mounting of interfaces in switch cabinets in wind turbine (WTs). With this

option, all connection-related works can be done from within the switch cabinet. In addition, many installation steps can be upstreamed into assembly, saving expensive man-hours of technicians. The rear mounting option is available for both the Han B metal and Han B plastic housings. This allows the customer to improve the manufacturing process of the wind turbine.

HARTING will also showcase its new compact Han 1A connector series. The new industrial connector is made of high-performance plastic, is lightweight and requires little space. Han 1A is suitable for IP20 connections in switch cabinets

as well as outdoor requirements. Due to its modularity and a variety of different deployment scenarios, it is particularly suitable for sensors, small drives and lighting.

Increasing digitisation, in combination with larger

wind turbines, is helping the wind-power industry with steadily increasing data volumes. Consequently,

the smooth and fast transmission of this data is absolutely essential for many wind farm operators.

To meet this trend, HARTING is focusing on the new fibre-optic rotary transmitter with bidirectional data transmission. The transmitter meets the requirements for even faster

exchange of large data packets between the nacelle and the rotating hub. The wear-free and maintenance-free system offers end-to-end fibre-optic networking of the entire system – from the tower base over the nacelle to the hub.

To support this system, HARTING developed the MICA (Modular Industry Computing Architecture). MICA makes it possible to store, evaluate, and process data directly in the application environment and can be configured with individual hardware, freely available software and suitable interfaces – in a manner that entirely meets customers' individual requirements.

HARTING has been involved in wind energy for over 35 years.



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Honeywell powers Aurangabad & Faridabad smart city projects

Honeywell recently announced that it is working with the Aurangabad Industrial Township Ltd. (AURIC) and Faridabad Smart City Ltd. to run cities more effectively. It aims to improve citizens' living standards through smart building technologies and services that seamlessly connect an array of city services, including emergency response, traffic management, road congestion, crowd monitoring, pedestrian safety, and crime prevention.

The Aurangabad Industrial City and Faridabad smart city project were inaugurated this weekend by Narendra Modi, Honorable Prime Minister of India. The Smart Cities Mission

aims to use technology to improve the quality of life of residents as well as drive economic growth in 100 cities across India.

Akshay Bellare, President of Honeywell India, said, "Honeywell is proud to support the 100 Smart Cities initiative. Our Internet of Things-enabled technologies use real-time data to make the cities of AURIC and Faridabad safer and more sustainable. We look forward to continuing to partner with federal, state and local authorities to develop Smart Cities in India and globally."

Smarter, connected technologies from Honeywell can be used to improve quality of life for citizens. For example, in AURIC,

Honeywell established an optical fiber cable network that covers 8.45 sq. km. to support the installation of closed-circuit television (CCTV) cameras, Wi-Fi access points and a centralized state-of-the-art command and control system that will integrate various functions of city management including power, water, security, telecommunications, and other utilities. The project will also include a traffic management system, environmental sensors, solar panels, multi-service digital kiosks, and a solid waste management system.

For the Faridabad project, Honeywell supplied, installed, tested and commissioned a command

and control system, and is supplying a CCTV surveillance system, automatic number plate recognition cameras, a facial recognition system, a red-light violation detection system, an adaptive traffic control system, IoT sensors for smart parking and smart roads, and cybersecurity.

Honeywell has been making cities safe, energy efficient and sustainable for 30 years. It is uniquely positioned with the broadest technology solutions portfolio to support India's 100 Smart Cities mission.

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*For more information
www.honeywell.com*

Indradev Babu appointed as IMTMA's President

The Indian Machine Tool Manufacturers' Association (IMTMA) held its 73rd Annual General Meeting (AGM) at the Bangalore International Exhibition Centre (BIEC). Indradev Babu, Managing Director, UCAM Private Limited was elected as the new President of IMTMA.

Indradev Babu will succeed P. Ramadas, Managing Director, Ace Manufacturing Systems Limited as IMTMA's President. Ravi Raghavan, Managing Director, Bharat Fritz Werner Limited was elected as



From left to right Ravi Raghavan Indradev Babu and V Anbu

the new Vice President of IMTMA. The new Executive Committee of IMTMA for the year 2019-2020 was also formed.

Earlier, in a special

session at the AGM, Kamal Bali, President and Managing Director, Volvo Group India Private Limited, spoke about the current economic downturn as

well as the opportunities in store for the auto sector. He said that the slowdown that we see in the auto sector is cyclical and the industry should continue its efforts digitalization, innovation and providing solutions that are economically and environmentally viable.

Elaborating further he said that industry should move from the earlier definition of VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) towards a new definition of VUCA, i.e. (Vision, Understanding, Clarity, and Agility).

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Wire and Tube 2020 to bring together industry experts and showcase latest innovation

The new edition of two leading international events Wire - International Wire and Cable Trade Fair, and Tube - International Tube and Pipe Trade Fair, is scheduled to held in Düsseldorf from 30 Mar to 3 April 2020.

International Wire and Cable Trade Fair

Wire 2020 is expected to attract 42,000 international trade visitors from over 80 countries and more than 1,400 exhibitors from over 53 countries in an exhibition space of 64,850 sq. mtrs.

Experience the latest technologies and production components, state-of-the-art machinery for the production of fibre optic cables and ultrafine wires, high-end wire sheathings and winding and rewinding live in action. From mega trends

to nano innovations, at Wire look into the future.

Wire 2018 will showcase innovation in manufacturing technology, including Wire manufacturing and finishing machinery, process technology tools, auxiliary process technology materials, glass fiber, measuring and control technology, test engineering, to name a few.

The expo will attract visitors from leading industries, including wire, cable, automotive supply, iron, steel and non-ferrous metal, electrical, construction, chemical, measuring and control technology, etc.

Tube 2020

At Tube 2018 in Düsseldorf, meet more than 29,800 international trade visitors from over 134 countries and more

than 1,250 exhibitors from over 48 countries in an exhibition space of 52,200 sq. mtrs.

Main product categories include raw materials, tubes and accessories, tube manufacturing machinery, rebuilt and reconditioned machinery, process technology tools and auxiliaries, measuring and control technology, testing, trading, stockists of tube of ferrous metal / non-ferrous metal and alloys/plastic/ fiber glass/ glass/ceramic, etc.

The expo will see visitors from tube, automotive supply industry, chemical, iron, steel and non-ferrous metal, energy, oil, gas and water supply, construction and electrical industries.

In a bid to help Indian visitors to attend the leading expos, InORBIT TOURS PVT LTD is offering special travel

packages. Mr. Om Prakash-Director, InORBIT was felicitated by Messe Düsseldorf, Organisers of WIRE TUBE as their Ambassador in India for his dedicated services for over 44 years. Mr. Om Prakash is the trusted name for organizing travel packages for WIRE & TUBE trade fairs.



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For more details, contact **Mr. Om Prakash - Director, INORBIT Tours Pvt. Ltd.,** 16, Kamat Industrial Estate, 396, V. S. Marg, Prabhadevi, Mumbai – 400 025. Tel: 022 4229281/40436868 Email: omprakash@inorbittours.com

HID Global unveils latest security identity solutions at SmartCard Expo 2019

Identity solutions provider HID Global® showcased its latest secured identity solutions at Smart Cards Expo 2019 held in Delhi. HID Global for the first time in India unveiled its latest ID card retransfer printer, HID® FARGO® HDP6600

High Definition Printer/ Encoder with breakthrough

speed as well as GreenCircle® certification and

the HID FARGO® Connect™, an industry's first cloud-based solution that simplifies and streamlines the issuance of ID cards as well as credentials.

HID Global also featured its solutions that help with tracking, meeting room



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bookings, monitoring of timelines and attendance. The company also conducted live demonstrations of its Identity Solutions on all three days of the expo from Sep 25th to 27th.

Products displayed at the SmartCard Expo 2019 include:

- **Secured card personalization solutions:** HID® FARGO® HDP6600 is a high definition printer/encoder designed to save customers' time, money and energy by cutting in half the time it takes to print the first ID card while doubling overall throughput as compared to many alternatives.
- **Powerful cloud printing solution:** HID® FARGO® Connect is a cloud-based card issuance solution

that takes seamless on-boarding and credential issuance to a new level.

- **Contact, Contactless & Multi-Interface Readers:** OMNIKEY® readers enable strong authentication to computer, network or cloud. These readers can support CCID driver and keyboard wedge mode; and are designed to support contact and contactless cards.
- **Integrating mobility and connectivity:** iCLASS SE® allow integrators to design third-party solutions that support mobility via near field communications (NFC) or Bluetooth Smart, alongside a full range of card technologies. The module's dual frequency capability allows the simultaneous use of both high and low frequency

credentials on the same reader for mixed credential applications.

- **Superior biometric performance:** HID® Lumidigm® V-series Fingerprint Sensors and Modules combine biometric authentication with variety of security features including strong liveness detection, data encryption and tamper resistance to provide an exceptional user experience while eliminating fraud and protecting identities.
- **Fast, Reliable & Flexible Fingerprint Readers:** HID® DigitalPersona Single Fingerprint Modules and Readers are compact optical or silicon reader that can meet both FIPS 201 PIV and Mobile ID FAP 30 standards. Designed to satisfy the high-volume requirements of

large-scale civil ID and commercial authentication applications, these readers are available with a Software Development Kit (SDK) that provides flexible APIs to enable fast integration with a broad range of applications.

Commenting on the event, Lalit Agarwal, Sales Head, South Asia Secure Issuance, HID Global said, "India is a very important emerging market for HID Global and events like Smart Cards Expo offer us the perfect opportunity to showcase our latest products. Through such platforms, we can tap into the various market opportunities and continue to expand our market in Asia."

*For more information
www.hidglobal.com*

TDK Corporation adds DC link applications to film capacitors range

TDK Corporation has extended its portfolio of EPCOS film capacitors for DC link applications with the robust new B3277*M series. The new types are suitable for extreme environmental conditions – a fact that has been proven by means of a THB test (temperature, humidity, bias) at 85 °C, 85% relative humidity with a rated voltage applied for 1000 hours.

The capacitors of the new series are designed for rated voltages of between

450 V DC and 1600 V DC and offer capacitance values of between 0.33 µF and 120 µF. The maximum operating temperature of these RoHS-compatible components is 105 °C. Depending on the voltage and capacitance, the lead spacings are 27.5 mm, 37.5 mm and 52.5 mm, and a 2-pin or 4-pin version is available for each lead spacing.

The service life of the self-healing capacitors is 50,000 hours at the rated voltage and an operating

temperature of 85 °C.

Typical applications include DC links of converters for photovoltaic plants, as well as frequency converters and power supplies for industrial applications. The series is qualified in accordance with AEC-Q200.

Main applications

- DC links of converters for photovoltaic plants
- Frequency converters and power supplies for industrial electronics applications



Main features and benefits

- Successful completion of THB tests at 85 °C, 85% relative humidity and an applied rated voltage for 1000 hours.
- Wide voltage range from 450 V DC to 1600 V DC
- Wide capacitance range from 0.33 µF to 120 µF
- RoHS-compatible
- Qualified in accordance with AEC-Q200

*For more information
www.tdk-electronics.tdk.com*



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ELGi celebrates the opening of its new headquarters in Europe

ELGi
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Elgi Equipments (BSE: 522074 NSE: ELGIEQUIP), one of the world's leading air-compressor manufacturers, with 2 million installations across 100 countries, announced the opening of its new European headquarters in Belgium. Situated at DrèveRichelle 167, 1410 Waterloo, (Brussels- the nerve center of Europe), and spread over 400+ sq meters, the workplace will house over 20 people and feature training rooms and offices designed to build collaboration and foster innovation, in line with the ELGi values that form the backbone of our culture worldwide.

Speaking at the inauguration Dr. Jairam Varadaraj, CEO, Elgi Equipments said "We're proud of what we've built at ELGi. Over the years, our definition of Always Better has ensured we are focused on always being the customer's choice. With this goal in view, we've concentrated on developing world class products with the best Life Cycle Cost (LCC). We've guaranteed the best in industry uptime. We've reaffirmed our com-

mitment to reliability by providing customers with robust warranty and we've driven cost leadership through technology and innovation. All of this, has resulted in us witnessing significant success in the USA, the world's second largest air compressor market, in a short span of 5 years. Europe is the third largest market worldwide and presents us with a huge opportunity. We're excited. And while we celebrate our successes, we will toast to the future."

Chris Ringlsetter, President, ELGi Europe said "We are proud to be part of a company that truly understands and believes in the importance of investing in its future. Over the years ELGi has been establishing itself across Europe, with a strong focus on diesel powered screw compressors (portables) and an expanding product portfolio of electric powered screw compressors (stationary). We will continue to evolve and grow our Pan-European presence substantially, while expanding our

existing channel footprint. While we are confident we have a strong leadership team in the region, we are now focusing on building our sales and service teams. Europe is a mature market, but we have quickly come to realize that the industry we serve and the distributors we choose to partner with are excited about our investment & growth plans."

The growing focus on energy efficiency, in line with the Paris agreement and the European Commission's climate strategy has mandated energy efficiency improvements of at least 32.5% by 2030, causing companies to employ energy efficient compressor ranges to achieve high performance while remaining competitive in their respective sectors. Additionally, customer increased air quality standards have enforced the use of 'Class Zero' compressed air in the food and beverage, pharmaceutical and other sensitive industries. David De Pril, Head of Product Management and Marketing, ELGi Europe

commented "ELGi has developed technology specifically to address an existing need with air compressors that offer customers maximum energy efficiency, sustainable advantages, significantly lower maintenance and ease of use, as well as reliable, high air purity for sensitive industry applications."

ELGi, is a pioneer in cutting edge compressed air technology, offering a complete range of compressed air solutions from oil-lubricated and oil-free rotary screw compressors, oil-lubricated and oil-free reciprocating compressors and centrifugal compressors to dryers, filters and downstream accessories. With state-of-the-art manufacturing units and a product portfolio of 400+ compressed air systems, ELGi redefines reliability, efficiency and cost-effectiveness across installations all over the world.

For further information on the organisation and its products, please visit <http://www.elgi.com>

VDMA hosts the 8th Mechanical Engineering Summit in Bengaluru

The 8th VDMA Mechanical Engineering Summit was held at Hotel Sheraton in Bangalore on September 6, 2019. The summit was attended by around 250 people. Rajesh Nath, Managing

Director, VDMA India, welcomed the attendees at the outset of the event.

Speaking about the current year, Nath said, "It has been an eventful year so far. Starting Narendra

Modi getting re-elected with a thumping majority leading to the beginning of Modi 2.0 to the escalating trade war between the U.S. and China rippling through the global economy."

Nath went on to add that the uncertainty of Brexit followed by the slump in the automotive sector in India in the first two quarters of 2019 have already raised a lot of pertinent

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questions including where the Indian economy is heading to. But this is the ideal time to consolidate and have an optimistic view. The monsoon revival followed by a lot of positive steps taken by the Indian government of India to boost investment and growth will eventually help the country come out of the current situation.

This was followed by a special address by the guest of honour, Vinay Kumar Katyal, Director, Bangalore Complex, Bharat Electronics Ltd. In his speech, Katyal mentioned that there was a wrong perception that most public sector undertakings in India were not performing well and incurring losses. Contrary to this perception, Bharat Electronics Ltd had a turnover of Rs 11,000 crore in 2018.

Ulrich Ackermann, Managing Director of Foreign Trade Division, VDMA Frankfurt then gave a presentation on the challenges of global trade. Global

trade and investment or globalization, is a common market condition for all countries of the world now. However, it is not free from challenges.

The technical session I commenced with a presentation on Macroeconomics Trade and Digitisation by Suvir Davda, Global Market Corporate Sales, HSBC, India. Davda mentioned that there is a need to watch out for US-China trade tension, RMB move, domestic slowing down of the economy and resultant impact on capital flows. On the positives, lower oil prices and a possible movement of global supply chains to India could give a push to exports.

The last presentation was by Debabrata Sinha, Chief Financial Officer, V.P, Rittal India. He shared his experience on anti-profiteering in the engineering industry and mentioned that the anti-profiteering framework under the goods and services tax (GST) has been extended by another

two years.

The post-lunch technical session began with the release of the report “Industry 4.0 and its impact on the people practices- within the HR domain” prepared by the HR Strategy Partner Maier+Vidorno.

The report tried to elucidate the key strategies and road maps required by HR to successfully restructure the various departments within the company and to pursue the establishment of end to end Industry 4.0 technologies.

The theme of technical Session II was Industrial Automation to Industrial Autonomy. It began with the presentation on the Future on Automation by M R Subramanya, Vice President, Siemens Technology and Services Private Limited. As per Subramanya, for an Automation system to become self-learning, the existing data-based decision making must evolve into a more flexible inference-based system, where the human interac-

tion is confined to a bare minimum.

The final session of the summit was devoted to “India Marching towards a 5 Trillion Dollar Economy – Role of Manufacturing”. This Panel discussion was moderated by Rajesh Nath, Managing Director, VDMA India. The discussions began with Nath, asking each of the panel members to explain the readiness of Indian SMEs in adopting Industry 4.0, followed by the impact of GST in reforming the business game and the importance of Re-Skilling as well as the Industry-Academia interaction.

After the panel discussion, the stage was set for the 2nd VDMA Manufacturing Excellence Awards aimed at recognising the VDMA members who have implemented methods either in energy efficiency and conservation or improvement in work conditions and work safety in their manufacturing process.

Railway Board Chairman highlights outlook for transformation of Indian railways

Indian railways has planned 100% electrification of its network in the next three years. Moreover, the entire signaling system is planned to be modernized with anti-train collision system in coming years,” shared VK Yadav, Chairman, Ministry of Railways (Railway Board) addressing the delegation

at recently held Rail India conference.

Organized by Messe Frankfurt India, the 4th edition of the high-level conference on Rail India focused on project plans for modernization of Indian railways. Report on Initiatives Driving Transformation of Indian Railways was

unveiled by CRISIL at Rail India conference.

A high-profile panel of experts including government authorities came together for the Rail India conference and Expo in New Delhi which was inaugurated by Chairman VK Yadav together with Rajesh Agrawal, Member (Rolling Stock)

Ministry of Railways (Railway Board). Speaking on on-going projects, RailBoard chairman shared, “Indian railways has identified 10 more high-speed rail corridors and work on those to start in phased manner. Rail Ministry of India has given first modern Tejas train on lease to IRCTC in Delhi-Luc-



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know route. Besides this, the panel is contemplating on leasing Mumbai-Ahmedabad train on lease. We are looking for meaningful partnership with industries and the Rail India conference serves as the meeting point for this goal.”

The two-day conference which brought together 200+ attendees including eminent speakers representing entire cross section of the rail industry addressed new initiatives and technological advancements taking place in Indian railway sector together with opportunities for modernization.

A CRISIL report on



Initiatives Driving Transformation of Indian Railways was unveiled at the Rail India conference indicated that Indian Railways is on the Path of Transformation and major initiatives such as Station Redevelopment Programme, High Speed Rail, Dedicated Freight Corridors, Port Rail Connectivity,

Wagon Investment Schemes, Tariff rationalization, Mission Raftaar, Project Swarn and Project Utkrisht for improving passenger amenities shall be instrumental in propelling it towards transformation. Innovative financing mechanisms and potential PPPs can be leveraged for accomplishment of

select initiatives of Indian Railways highlights the report. In the past couple of years, the Ministry of Railways has launched various marquee initiatives in this direction. The most awaited infrastructure projects in railways is the Dedicated Freight Corridor Project, which will bring about a paradigm shift in freight transportation by rail once commissioned by March 2020. With these initiatives underway, the Indian Railways is bound to see a radical transformation in the coming years.

*For more information
www.in.messefrankfurt.com*

SMEC appoints new Managing Director to drive growth in India

Global engineering and infrastructure advisory firm SMEC has announced the appointment of Andrew McKune as its new Managing Director for India. Andrew, who joined SMEC in 2011 and has worked in various technical and leadership roles across Africa and South Asia, said he planned to drive growth, signalling the global engineering firm’s commitment to the region.

“Our project experience in India is diverse, reflecting both the depth of our expertise and our strong local roots, having started our first project in 1975,” he said.

With the infrastructure sector a key driver of India’s economy, Andrew said that SMEC has seen

phenomenal growth in the highways sector and more recently in the water, power and rail and metro sector. SMEC has recently opened offices in Chennai and Guwahati, with Mumbai’s office soon to be launched. The firm’s Global Design Centre is also based in Bangalore and currently services multiple sectors across the globe.

“The Indian growth story has just begun and there is significant potential to transform this enormous nation. SMEC is well-placed to take a leading role in accelerating the region’s development. We have an enviable mix of specialists, technology, trusted local partners and a reputation for quality delivery,” said Andrew.

SMEC is currently playing key roles on significant infrastructure projects in India, including the Rohtang Highway Tunnel; construction supervision on the Green Energy Corridor in Madhya Pradesh; detailed design and engineering services for the 1000MW Tehri Pumped Storage Project, detailed project report for the Zojilla Tunnel and Approach Roads, design services for the Bundelkhand Water Supply Improvement Project; detailed design services for various packages of the Mumbai and Chennai Metros, and detailed project report for two bridges over the Brahmaputra River.

Andrew has more than 12 years’ experience in



civil engineering. His technical background pertains primarily to transportation projects, and he has been responsible for management and oversight of various multi-disciplinary projects across Africa and South Asia. Before being appointed as Managing Director India, he was the Director of Operations for SMEC’s South Asia and Middle East regions.

*For more information
Website: www.smec.com*



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SMALLEY: Extending sphere through TECHNOLOGY INNOVATION

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

For over 50 years, SMALLEY has been the world leader in the manufacturing and development of precision retaining rings and wave springs. Smalley works with nearly every industry, from Aerospace, Automotive, Medical, Off-Highway, Oil & Gas to Industrial. With regional offices in the Americas, Europe, & Asia, Smalley provides total global supply chain solutions to meet worldwide manufacturing demand.

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

Manufacturing in India is increasing and transforming from low cost manufacturing to high end manufacturing. MNCs are setting up / expanding their Design, R&D and Engineering centers in India due to talented manpower at competitive cost. Indian OEMs are also competing with global majors in global markets. Government policies, standards and regulations driving the market for globally proven technologies.

Priority to Quality & Reliability is the preference of SMALLEY's customers worldwide and the similar trend continues in India. We will be continuing to offer our product to the industries which demand high performance & overall cost optimization.

Q. What is your marketing strategy for India?

While continuing to support the existing clients which are majority

MNCs, we are exploring new customer creation & customer base expanding among Indian OEMs, new applications, new markets by targeting new product design and developing customers. Customers in India are now supported locally by SMALLEY INDIA REPRESENTATIVE, in application & product selection.

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

R&D at our company is focused on identifying and addressing unsolved customer problems. We conduct market research, test the latest technologies, and compare top manufacturing practices in order to conceive and roll out creative and valuable solutions for our customers.

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

SMALLEY's unparalleled dedication to quality and customer satisfaction has earned Smalley approved supplier status with leading OEM manufacturers worldwide. Smalley's goal is to supply customers with uncompromising quality and service by providing superior products with exceptional value. Smalley takes pride in providing the highest level of quality at every stage of the ordering and manufacturing process, from design to delivery. In accordance with the requirements of ISO 9001, IATF 16949, AS9100, ISO 13485, and ISO 14001, we have established and are continuously improving the Quality Management System upon a program that is geared to meet the following objectives:

- Total product conformance in terms of drawings, specifications and

contractual requirements.

- 100% on-time delivery performance.
- Complete customer satisfaction.
- Exceptional vendor performance.

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

As far as India is concerned, it is a very potential market & by having SMALLEY INDIA REPRESENTATIVE, we are penetrating key sectors like Aerospace, Automotive, Defense, Oil & Gas, Off-Highway and other Industrial OEMs.

We are reaching out to end users (process industries, manufacturing industries) OEMs, tier 1 & 2 suppliers, creating awareness about our technology, its features, merits and benefits. We see lots of opportunities in new product design and development.

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

- New design possibilities.
- Reduction in size, weight and raw material consumption, of the overall assembly.
- Engineered springs and rings to deliver specified results accurately & consistently.

Q. What is your vision for your company?

SMALLEY's vision is to be recognized for providing the ultimate customer service and quality in the industry worldwide. We hope to contribute to our customers' success by offering precision engineered solutions through teams dedicated to a high level of urgency & exceptional service. ■



Mr. S M KANAKARAJ,
India Representative, SMALLEY,
& MD, Mark TechPro & Consultants Pvt Ltd.

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URB: The brand recall for **RELIABILITY & PERFECTION**

Q. Please brief us about the exports and overseas operations & what are the global alliances that has been made in order to out-front the competition?

Our Primary markets for exports are USA, EU and India. The brand has a history of over 60 years and has a built a impeccable track record for quality and long life. This rich history and the desire to continuously improve our systems and processes to achieve excellence in manufacturing products has held us in good stead over long years.

Q. Please elucidate in brief about the company's infrastructure & What are the measure that are being taken from the product manufacturing to distribution?

The company is an unique position in terms of manufacturing, in the sense it look like that we are the only truly integrated manufacturer of bearings. While outsourcing has been the norm in the industry, we have stead fully held on to our belief that we can provide a quality product only if we have control over the entire manufacturing cycle. Keeping this as a

core philosophy our Barlad operations is a unique location where the entire manufacturing is accomplished in one location starting from Forging to the assembly of the bearings. We believe that manufacturing has been one of our core strengths and the market does recognize an excellent product coming out of a truly word class manufacturer.

Q.What are the market prospects for the URB products in India and How do you plan to position these products?

The demand for URB products has

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improved substantially over the past few years & our growth in the last few years has been a testimony to this. We will continue to strive for better growth through customer acquisitions & new market penetration.

We are a European brand & we cater to a variety of industries. Hence we would like to position as a very credible alternative to the established brands. It's a brand on which the customer will derive the best value for money. That is why we are "The wise choice for ultra reliable bearings"

Q. Can you brief us about the marketing strategies that were applied in order to stand out in the competition of Bearing industry?

One of the main marketing strategies we have adopted is nearness to

the customers. While the product quality has also been the brand's USP the brand had its shortcomings in reaching out to the ultimate end customers due to legacy reasons. We have substantially improved in this front and are reaching out to the end customers with renewed vigor. This has resulted in significant improvement in the off take for our products.

Commenting specifically on India

: We had significant disadvantages due to limited distribution network accompanied with huge counterfeit products entering the market. This could also have been due to limited reach. In order to significantly enhance our market presence we went for a whole sale restructuring

of the distribution network from one distributor to the present strength of 10 in various parties of India which has resulted in improved product availability and the consequence thereof is a significant reduction in counterfeits. We also introduced certain features in packing which has enhanced the product experience.



A sample of specific ID code for each individual bearing



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In order to assure our customers for the originality of URB products they are buying, we developed a specific ID code for each individual bearing we produce.

Implementation of ID code was a project developed in order to offer in front of our customer a tool for brand check. This ID code is an individual identification code for each bearing which can be used to check the originality of the products. This code can be checked in our system if this info is provided through our website section referring to reporting the fake bearings (<http://www.checkurbbearings.com/>). This ID code was implemented also in order to protect the brand and the customers in front of fake products market.

Q.Brief us about the R&D and Quality policy for your business?

Our strategy for quality and R&D has been documented. I can briefly summarize like; Permanently offering products to fully meet customers' quality requirements, the applicable safety requirements, legal and regulated applicable requirements and other relevant interested parties requirements as well; Providing a



framework for establishing objectives related to quality, research and development and planning of actions and allocating resources - materials, humans and financials - for their fulfillment; Identifying the technical solutions through research and development activities in order to improve the products quality and their performance according to applicable actual requirements;

Assuring a framework to establish a connection for collaboration and cooperation with customers, suppliers and National or International Research Centers, and also with Technical Universities in order to develop common projects for improvement of resources consumption and products

and technologies approaches;

Transferring and implementing the results and knowledge obtained in different research programs in our own processes in order to be able to create new and sustainable products and technologies, useful to a continuous changing business environment;

Creating the intellectual property and develop the brand management strategies in order to encourage the innovation and research at all business levels. The research and development activities are focused on products and process optimization. Developing the products in order to

Continue on page no.58





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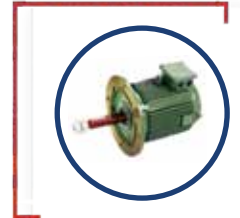
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increase the customer satisfaction and also our own portfolio. Currently, for this purpose the normal spherical bearings was developed in EC design. The benefits of the EC design to our customers are related to: load capacity increased, longer service life, thermal reference speed increase, lubrication coefficient increase which leads to the increase the bearing life, kinematics improved and also material structure improved (residual austenite content). All these improvements were possible by using the simulation and the research results and know-how based on practical experience in bearing design and manufacturing.

Q. Please comment on the current Bearing scenario in India ?

For URB , India is a very important destination. We feel that there is still tremendous scope for the manufacturing sector to grow in India. This in turn will help in improving the demand for bearings. We are one of the youngest European companies in India, we are quite upbeat about the scenario & we would like to be present to tap all opportunities coming our way.

Q. Could you brief us on Indian & Global perspective of Bearing industry? What are the distinguishing factors?

With increased globalization there are no significant differences in



various markets. The products we make for any our premier EU/US customers are the same we supply to the Indian market.

Q. How far the factors like government norms, excise duty, taxation, exim policies are affecting your business?

GST has been a major land mark reform in the indirect taxes sphere. It has significantly rationalized the tax regime with seamless credit and has been one of the major factors for our increased sales. India operates within the WTO framework and as a major international manufacturer it's the only level playing field we can ask for.

Q. What are the best possible remedies you can advise in order to maintain the high profitability in the shrinking margins market of India?

These are challenges faced by every company today not only in India but everywhere. We continue to invest in technology, improve our productivity and operate in as much as possible in niche areas providing value to the customer through reduced cost of ownership.

Q. What is your vision for your company?

We'll continue to be the wise choice of our customers as the number of them develops consistently. ■



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Cable & Wire Fair: Making Real Business Happen



Priyank Jain, CEO,
Tulip 3P Media Pvt. Ltd.

“Over the years, we have broadened our understanding of the needs of industries such as wire and cable, pulp and paper, and maternity, baby and hygiene products, which enables us to further the interests of these industries,” says Priyank Jain, CEO, Tulip 3P Media Pvt. Ltd. Here we present the excerpts of the interview sharing his views on the forthcoming Cable & Wire Fair to be held in New Delhi.

Q. Can you tell us a little bit about your organization and its activities?

Established in 2006, Tulip 3P Media Pvt. Ltd. is a leading media group based in Delhi. We publish industry-oriented periodicals for different B2B verticals aimed at providing the reader with latest news, analysis, opinions, market outlooks and trends. We conduct market research and organize industrial events, such as exhibitions, conferences and seminars, to promote business networking among the companies. Our key strength lies in providing our readers with correct, accurate and relevant industry-related

information and knowledge. In order to maintain our strength, we keep bolstering up our database by interacting with industry stakeholders on a regular basis. Over the years, we have broadened our understanding of the needs of industries such as wire and cable, pulp and paper, and maternity, baby and hygiene products, which enables us to further the interests of these industries.

Q. How will the upcoming Cable & Wire Fair contribute towards the growth of the industry?

India is a fast-growing economy, and the total market demand for goods and services is rising by leaps and bounds. To meet the growing demand, investments have to be made in technology acquisition and capacity expansion. In the prevailing economic scenario, events such as exhibitions, conferences and seminars can provide the industry with business networking platforms. Cable & Wire Fair aims to give exhibitors an excellent opportunity to showcase their offerings and a platform for establishing a mutually beneficial relationship with other business people and potential clients. This event has emerged as a wonderful networking platform for the wire and cable industry. It



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gives the exhibitors an excellent opportunity to gain knowledge about latest technologies, materials and products in a high-profile environment. It should be noted that the most illustrious wire and cable machinery manufacturers, suppliers of materials for the wire and cable industry and even wire and cable manufacturers take pride in exhibiting their products and services at Cable & Wire Fair, which has undisputedly become India's leading trade fair for the wire and cable industry.

Q. Can you tell us a little bit about Cable & Wire Fair 2017?

Cable & Wire Fair 2017, which saw 10,800 visitors from 24 countries, 164 exhibitors from 19 countries and over 300 conference delegates, had spectacular success in providing the industry with a platform for exchange of knowledge and networking.

Q. What are the special features of Cable & Wire Fair 2019?

Like the Cable & Wire Fair held in 2017, this year's fair aims to give players from various segments of the wire and cable industry a good opportunity to network and to exhibit their products. It will make real business happen – something that will eventually push up economic growth. Approximately 200 exhibitors from around 25 countries will showcase their machines, products and services at this important event. Valuable knowledge and information will be shared at the event's collocated two-day conference and CEO conclave.

Q. What trends have you noticed in the wire and cable industry in India?

Demand for wire and cable is directly related to the growth of the economy and infrastructure sectors. The government has taken major initiatives to boost infrastructure



sectors like power, railways, roads and petrochemicals etc. India is expected to become the third largest construction market globally by 2022. The government has approved the plan of 100% electrification of railways by 2022.

The wire and cable market in India, which comprises nearly 40 per cent of the electrical industry, is growing at a CAGR of 15 per cent – thanks to the growth of the power and infrastructure sectors. The recent policy and regulatory initiatives and government schemes like Ujwal Discom Assurance Yojana (UDAY), Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY), Integrated Power Development Scheme (IPDS) and Pradhan Mantri Sahaj Bijli Har Ghar Yojana have given the market a major boost.

In addition, the government's 'Smart City' project is expected to promote large-scale growth in infrastructure, telecom, power generation, T&D, engineering and automotive sectors.

Global investors now consider India as a potential market for high voltage (HV) and extra high voltage (EHV) cables. These investors increase their investments in the Indian cable market through

technical collaboration with Indian cable manufacturers for production of EHV cables up to 400 kV. With increasing focus on renewables, the industry is now looking forward to supplying cables for solar and wind power applications in addition to oil and gas, railways and other specialized segments.

In addition, electric vehicles (EV) are expected to drive growth for cables and wires firms in a big way, and hence more power cables.

Also, growing market potential, increased adaption of new technologies by the utilities, growing importance of services that may be linked to digital technologies have widened the scope for the growth of the wire and cable industry in India.

Q. What is your vision for your organization five years from today?

I want to take Tulip to the next level by launching a few more periodicals and events for other B2B verticals. We recently launched a magazine called Mommy & Baby Times, which provides a B2B news platform for maternity, babies and children. In addition, we have launched two events – Mommy & Baby Fair and Hygiene & Disposables Products Expo too. ■



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Women in Manufacturing

Is manufacturing offering lucrative career opportunities to women? What kind of jobs are they getting in this sector?

What are the opportunities available to them for career progression? Industry leaders reflect on this important topic. - P.K. Balasubramanian



Mr. R. Jayakanthan,
Director - People, Systems and
Strategy, ELGi Equipments Ltd.

Q. Do you think Manufacturing is offering a lucrative career opportunity for women?

Today, modern manufacturing is undergoing a transformation – the fourth industrial revolution. With technological advances and the convergence of conventional and digital manufacturing, the skillset demands are changing. Talent, apart from being key, is also in shortage.

Women are largely under-represented and underutilized in the manufacturing workforce and represent one of the largest pools of untapped talent for manufacturers all over the world, however. A study on Indian women in manufacturing sector reveals that women represent only about 3% in core engineering industry while it is up to 12% in sectors such as electronics. This is against the women representation of ~21% in the organised sector.

Global Studies reveal that women make up at least 40% of the workforce in more than 80 countries and in contrast, studies have also revealed that manufacturers' top concerns have been the inability to attract and retain a quality workforce. In fact, there are about half a million jobs open in manufacturing right now, across the world.

So, yes, there is tremendous opportunity for women to not just build meaningful careers in manufacturing but also drive the future.

Q. What kind of jobs women are getting in this sector?

Well, it does depend on the skill set really – but the opportunities are quite limitless. At ELGi for example we have women in every function, from shopfloor to leadership.. They're blazing trails and inspiring other women, every step of the way.

Q. What are the opportunities available to them for career progression?

At ELGi, career progression is purely based on performance and passion and one's gender doesn't play a role. Employees move to the next level based on their potential and the opportunities available in the organization.

In my view, the industry need to focus on building female role models to inspire and encourage young women. We need to adopt and develop more inclusive workplaces and we need to find creative ways to build flexible and good work-life balance for all our employees.

Q. How is the women workforce distributed in ELGi? What kind of job roles they serve in the company?

At ELGi, as I mentioned before, we have women workforce in blue collar and white collar. From shopfloor to R&D to supply chain, Sales & Marketing, IT, finance and If we look at our current distribution, we're

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at about 30% in sales & marketing support; 18% in finance & HR and 14% in technology.

At ELGi, We conduct a two day women exclusive sports event once in a year in line with the Annual Sports Day with varied outdoor activities.

Q. Because of technological advancements women are now opting for jobs in the manufacturing industry as compared to IT industry – What is your view on this?

Well, studies reveal that over 70% of women would stay in manufacturing if they were to start their career today. Now this is very encouraging, however despite progress, studies also reveal that less than 15 percent of women surveyed believe their industry is very accepting of family / personal commitments and allows them to meet these commitments without impairing their career

. More than 4 out of 10 women surveyed are either responsible for the majority of household duties or share home responsibilities equally with their spouse or partner. Nearly three quarters of women surveyed believe they are underrepresented in their organization’s management team. Manufacturers worldwide, have room for improvement when it comes to attracting, retaining and developing women talent.

Q. How do you think more women can be brought in the manufacturing sector?


The perception of manufacturing continues to be slightly outdated among women. In my view changing or improving that perception is key to attracting women talent. Creating an environment that is supportive for women, extending parental leave and providing work life balance is something to be worked on. What is also critical is sharing success

stories and positive views about manufacturing, especially with young students and aspirants.

Besides some public sector enterprises, organisations such as HAL, L&T, Mahindra, Tata motors, Mondelez to quote a few, are attracting and retaining women, not just in factory floors but in operations leadership. Other companies should learn to create ecosystem and environment that help women succeed

The industry also needs to look at engaging and retaining women at career points when their lives become more complex. Providing support, extending flexible options and alternate career pathways can also help manufacturing organizations attract the right talent.




Finally, all efforts to address the gap, starts with leadership including board and need to begin with the dominant group; that’s men. ■



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“As the applications get harsher, the niche becomes sweeter for us”:

Sanjay Koul, Timken India Ltd.

Q. You are a leader in the Bearing Industry. What precisely is your niche? –

The Timken Company designs a growing portfolio of engineered bearings and power transmission products. Wherever an application needs to overcome friction and transmit power, we would find our niche, and have done so for 120 years. As the applications get harsher, the niche becomes sweeter for us. We have deep knowledge of metallurgy, tribology and mechanical systems to improve the reliability and efficiency of equipment, machinery and vehicles worldwide. So be it Railways, off highway, heavy trucks, aviation, stationary equipment or a mission to Mars, Timken products help move our world forward.

Q. What are your outstanding contributions to the user industry?

Timken is committed to continuously improving its portfolio of engineered bearings and power transmission products and services to make global industries stronger. Timken® Tapered Roller Bearings improve efficiency and dependability for our customers in the automotive and rail industries. But if we name just one contribution to the industry, it would be our 120 year history of helping our customers overcome their most difficult friction management challenges.

Q. What are your offerings specific to the Automobile Industry?

Timken works with global automotive leaders and commercial vehicle manufacturers (including fleets, installers, truck owners and operators), to develop innovative ways to balance power and efficiency. We also support professional technicians and do-it-yourself installers through our authorized channel partners with products and technical resources designed to maximize vehicle performance and uptime.

But closer home to India, Timken bearings can be found on differential and pinions for heavy commercial vehicles.

Q. Which are the other industry segments you serve?

Timken collaborates with customers from diversified markets that span the globe. From wind farms in the North Sea to freight cars crossing the Sahara, we bring



Mr. Sanjay Koul,
Managing Director, Timken India Ltd.

to life know-how and innovation, providing true marketplace advantage.

Q. What are the customized solutions you can offer?

Timken has over the years catered to the specific needs of the industry and has emerged as a reliable partner for leading OEMs and aftermarket customers. Our global engineering team delivers application-specific solutions for our global customers in the markets we serve.

Q. What are the latest trends in the industry and how do you keep in step with them?

Timken is helping to design solutions that improve durability, efficiency and dependability in new markets and new applications emerging in wind, food and beverages and the electrification of the vehicles. ■

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Use of **TIP-TIG Technology** in Process Equipment Plants

by Rakesh Choudhary,
Head WAPS, Ador Welding Ltd.
(with inputs from Plasch, TiP-TiG, Austria)



Fig.1

TIP-TIG welding is a new advanced innovation of the common GTAW Process.

This process uses new, patent-pending technology (TiP-TiG), that delivers the highest possible weld energy with the lowest possible weld heat, all while still being user-friendly.

What is TIP-TIG welding?

TiP-TiG new welding with a hot wire process can be used in every industry. It is very simple to learn, use and simple to teach. This process is so unique that higher travel speed, lower heat input, reduced cycle time, and an overall better-quality welding advantage can easily be achieved.

The Process

The TIG weld receptivity for higher weld deposition rates is done by decreasing the speeds for the weld solidification process and increasing

the fluid weld area. This allows for a 100%-400% increase in TIG wire feed rates, increasing the overall weld deposits. All these attributes like faster speeds and higher than normal weld energy, increase the resulting TIG weld quality and overall process productivity.

The process is also slag-free and uses the lowest possible heat input of any welding process, producing a Heat Affected Zone (HAZ), all of which help to reduce distortion and weld stress. It produces some of the highest quality products with the best metallurgical and mechanical properties on all alloys, but also increases production up to four times the normal speed. There is also no inter-pass cleaning, creating availability for an increased Arc on time and weld quality.

The TIP-TIG process is available in manual and automated capability to attain weld and clad quality levels way beyond the conventional TIG – Hot – Cold Wire TIG – Pulsed MIG and the Flux-Cored process.

How it Works

A TIP-TIG welding system uses a wire fed GTAW system just



Fig.2



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like a typical TIG system, but it's distinctive for the vibratory effect on wire at weld pool which is achieved by a linear forward and backward mechanical motion created by the customised wire feeder system. The forward and backward motion of the filler wire creates an oscillation that is then transferred to the weld, agitating the molten weld pool and ultimately disrupting the surface tension. In addition to this vibratory effect on the wire, a hotwire current (powered by a secondary power source) is also applied to the filler metal, prior to entering the weld puddle. The two pictures (fig. 1 & 2) describe the weld finish with Manual GTAW & Manual TIP-TIG process.

ChampTig 400P Power source from Ador Welding with the TipTig wire feeder.

Benefits of the TIG-TIP process

- Increased fluidity of the weld pool
- Greater tolerance to joint fit-up
- Significantly reduced joint sensitivity
- Greater ability to accept more wire into the weld pool, results in a higher deposition
- 4-6 times increased travel times
- Reduced cycle time and heat input
- Cleaner welds with agitated weld pool
- Reduced weld stress with the reduced heat input

Approved Alloys

TIP-TIG welding can work on a wide range of alloys such as carbon steel, stainless steel, duplex and super duplex stainless steels, inconel, titanium, aluminium, copper, nickel, and many other critical materials like P-91, which are used in process plant production.

Heat Exchangers

Heat Exchangers are commonly

constructed from low Carbon Steel, Copper, Copper-Nickel, Stainless Steel, Hastelloy, Inconel, or Titanium. There are certainly some unique applications and challenges



associated with the welding of heat exchangers, such as the position and access for the popular circumferential welding of Tube to sheet welds or the half tube shell welding.

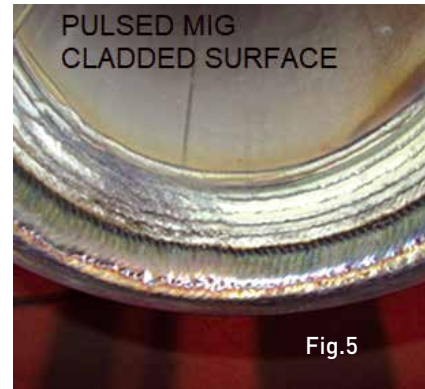
A trained TIP-TIG welder can typically weld a 50mm tube in 30 seconds... or less with the highest quality and lowest heat input. Our typical travel speed for fillet welds will be between 300 to 500 mm/min on most applications. Compared with 80 to 150 mm/min with conventional GTAW.

TIP-TIG manual system is a low cost semi-automatic solution to tackle any job by selecting a wide variety of torches for different applications, with modified 180 deg torch it allows a complete tube sheet welds without repositioning the wire or stopping, allowing for defect free welds.

The typical customers in the manufacturing and repair of various sized heat exchangers are in power plants, chemical plants, petrochemical plants, petroleum refineries, natural gas processing, and sewage treatment.

INCONEL CLADDING

Normally, when you manually clad the end of a pipe ID with Inconel using Pulsed MIG as shown in the picture and result is often not so good. However when we use TIP-TIG, the results are visible as shown



on the mentioned pictures.

In the picture TIP-TIG cladded Job, TIP-TIG Inconel 800 pipe was welded with Inconel 82 wire on 10 inch pipe 3/4 Wall. The TIP-TIG weld cycle time for the Inconel pipe was 40 – 50 minutes, whereas the customer used to take around 4 hrs with regular TIG. When your weld process can weld a complex incoloy* pipe and make the welds look simple, that's a process that should be given consideration. With TIP-TIG, no brushing, no grinding, no spatter, no weld rework, no feeding of wire, no foot control, less skills. Note weld smoke prep machining lubricants.

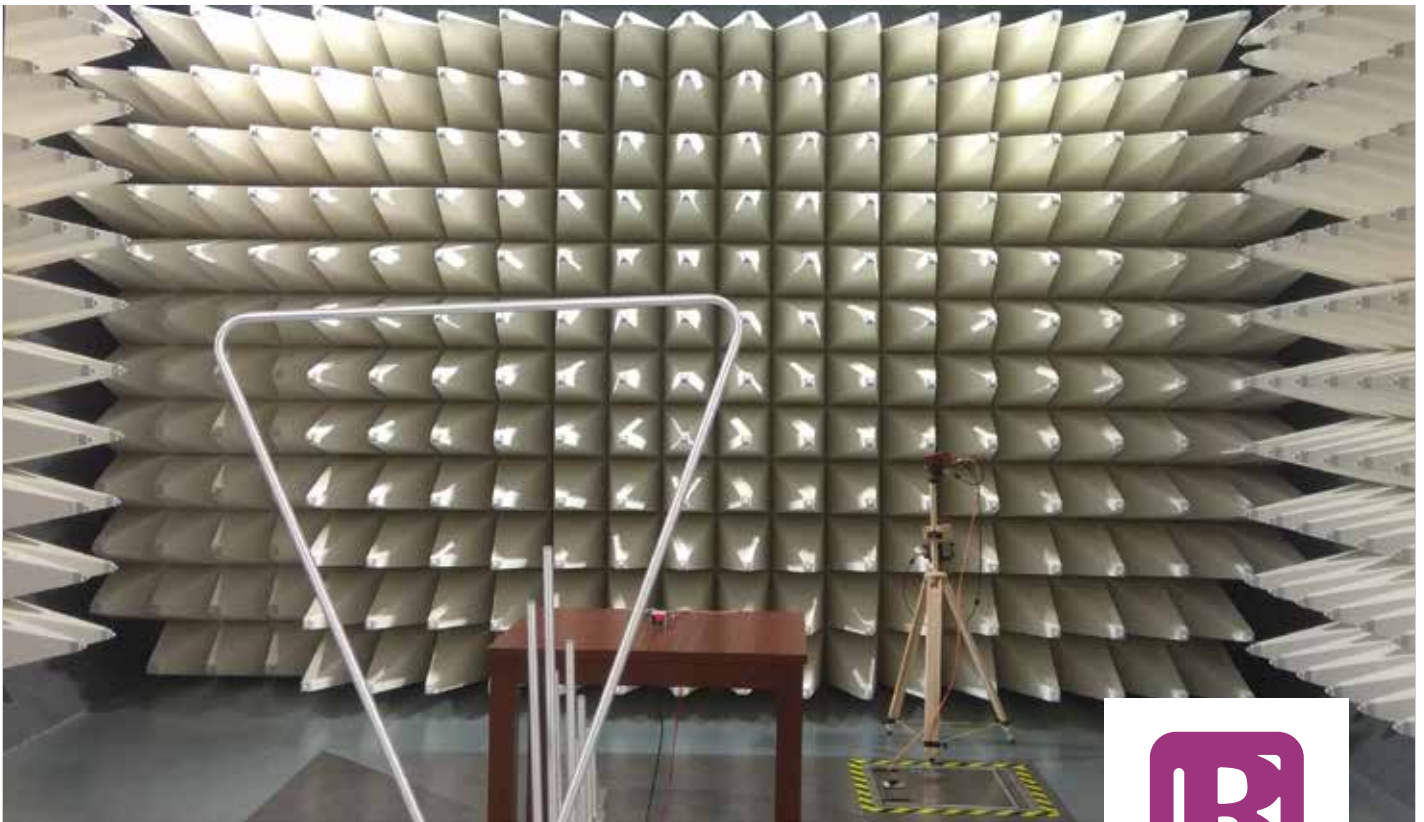
(*Incoloy refers to a range of superalloys produced by the Special Metals Corporation group of companies. They are mostly nickel-based, and designed for excellent corrosion resistance as well as strength at high temperatures; there are specific alloys for resistance to chemical attacks)

Duplex Steel Welding Applications Application

The picture (fig.5) is of a very thin Gage Duplex Boiler. Traditional automated TIG process with cold wire may result in sluggish duplex welds.

The customer typically attained a maximum Hot Wire TIG weld travel speeds from 12 – 15 inch/min.

Then the customer switched



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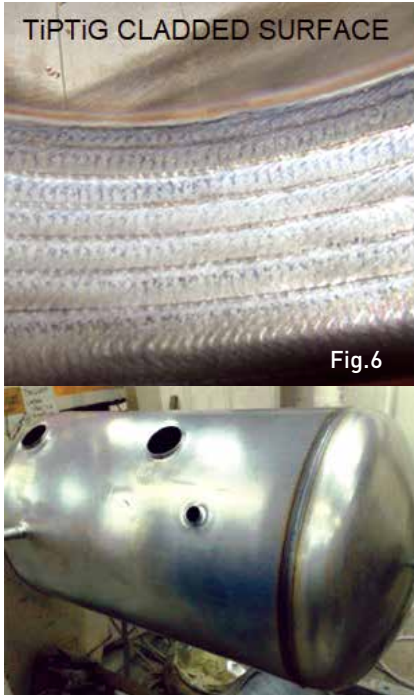
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over from Hot Wire TIG to the TIP-TIG process. The TIP-TIG weld parameters and speeds were achieved using an 0.035 (1mm) 2205 Duplex wire, with TIP-TIG travel speed of 35 inch/min was achieved providing 200% increase in weld travel. The welds had a superior, less sluggish weld bead appearance and the parts had a dramatic reduction in weld distortion, (note the much smaller HAZ). Also the TIP-TIG process was much more stable and consistent.

TIP-TIG produces the cleanest welds from lowest possible oxidation. The welds will have the lowest possible weld pores and inclusions and the smallest possible weld HAZ.

Welding of P-91 Material

Welding of Grade 91 (9Cr-1Mo-V) chromium-molybdenum steel has presented numerous challenges since its introduction in the 1970s. The gas tungsten-arc (GTAW) process can produce welds of high quality; however, manual welding can be expensive and labour intensive, requiring skilled welders with

extreme hand-eye coordination and dexterity. Grade 91 productivity can be increased in either shop or field fabrication by introducing a semiautomatic high deposition metal transfer (HDMT) GTAW welding process that combines controlled excitation of wire with a hot wire addition. This technique is cost-effective and can be used for the entire weld from root to cap while producing high quality welds that industry expects from the GTAW process.

With Tip-TiG weld study, it indicates that semiautomatic HDMT GTAW welding process is capable of producing toughness values comparable to or exceeding manual GTAW and that the process provides an attractive alternative for welding P91 root and hot passes or the entire weld from root to cap. Results of this study indicate that semiautomatic HDMT GTAW welding process is capable of producing impact values comparable to or exceeding manual GTAW. The process also provides an attractive alternative for welding P91 root and hot passes or the entire weld from root to cap. The semiautomatic HDMT GTAW welding process



permits an increase in energy (heat input), larger weld puddle and increased deposition rate while still providing tempering of the previously deposited weld beads or layers.



TIP-TIG HDMT (HIGH DYNAMIC METAL TRANSFER) FOCUS

TIP-TIG HDMT FOCUS is a unique TIP-TIG welding process. Its precision and reliability make the TIP-TIG HDMT FOCUS welding process particularly suitable for automated applications in combination with linear axes, robots and other guiding systems. Nearly all steels, non-ferrous metals or galvanized sheets can be welded in one layer with filler material; e.g. CrNi-steels with a material thickness of up to 10 to 12 mm can be welded in single pass without any joint preparation. Some of the welded examples are listed below.

It has resulted in elimination of backing gas in austenitic stainless steel welds using high deposition metal transfer gas tungsten-arc welding (HDMT GTAW)

TIP-TIG HDMT FOCUS PROCESS

Example

- Material: CrNi 8+8mm
- Weld current: 500A
- Weld speed: 46 cm/min
- Wire feed speed: 2,0m/min

Details of Welded Samples

- Material: CrNi 10+10mm
- Weld current: 500A
- Weld speed: 32 cm/min
- Wire feed speed: 1,8m/min



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Variable / Results	Units	Conventional TIG	TIP TIG Process
Welding process		GTAW	GTAW
Wire type		ER308L	ER308L
Wire size	mm	2.4	0.9
Wire deposition speed	mm/min	100	1900
Melt off rate	g/h	200	580(3 times)
Deposition efficiency	%	100.00%	100.00%
Deposition rate	g/h	200	580(3 times)
Duty cycle	%	100.00%	100.00%
Final deposition rate	g/h	200	580(3 times)
Gas type		Argon	Argon
Flow rate	cfh	30	30
Gas/Wire ratio	cf/g	63.05	23.62(60% Reduction in gas per gm of wire)

TIP-TIG REDUCED COSTS BY OVER 60%, WHEN COMPARED WITH CONVENTIONAL TIG PROCESS

TIP-TIG Cost Comparison

The following comparison shows the actual savings calculated on a real stainless-steel welding application comparing conventional TIG and TIP-TIG on a pipe application (2" Sch 80 Stainless) in the 5G position.

The above data shows, the deposition rates approx. 3 times to standard TIG process which reduces the production costs by 60%.

Conclusion

TIP-TIG is an innovative TIG process and good alternative to standard gas

tungsten-arc (GTAW) process. Its versatility and simplicity makes the manual welder to give higher output. The Automated High Deposition Metal Transfer (HDMT) GTAW welding process that combines controlled excitation of wire with a hot wire addition and gives very promising results to challenging applications.

Plant equipment manufacturing, wherever GTAW is applicable, is possible to be replaced by TIG-TIG process which gives very high output without compromising on quality. The success in P91 welding with TIP-TIG, also increases the application possibility in that area.

References:

1.Paper on 'ACHIEVING

TOUGHNESS IN P91 WELDS FROM ROOT TO CAP USING SEMIAUTOMATIC HIGH DEPOSITION METAL TRANSFER (HDMT) GTAW WELDING PROCESS ' by Charles W. "Pat" Patrick

2. Information from TIP-TIG USA

3. Information from TIP-TIG International AG



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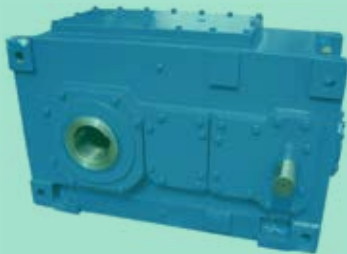
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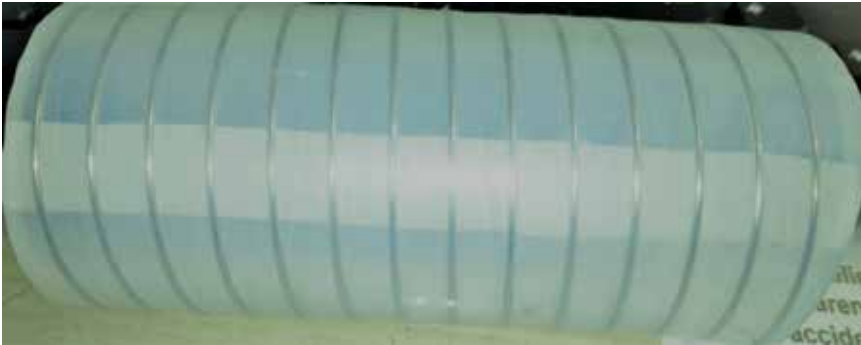


Figure 1 Antistatic transparent hose

Now a days Silicone elastomer based hoses are widely used mostly in the area of medical, pharmaceutical, biological, biotechnical, artificial cell culture industries due to its cent percent biocompatibility, high and low temperature resistance, solvent resistance properties, high pressure flow of aggressive liquids and low leachability. The problem with conventional silicone hoses is the development of static electricity due to friction. A static electric charge is

developed whenever two adjacent surfaces are in frictional contact. Here charges are developed when fluids are passing through silicone hoses or due to electrical induction when tubes are close vicinity of some electrical instruments in medical, pharmaceutical, hospital sectors. As silicones elastomers are insulator so that accumulated charges are stagnant followed by catastrophic static discharge leads to a fatal accident. This fatal accident comes with outputs like static shock or fire hazards. So removal of static charges are very important in those critical areas.

Antistatic transparent tube is most challenging area of development. Industries are developed antistatic transparent hoses. This hose are transparent as well as it can dissipate static charges if charges are developed due to friction or induction.

This transparent antistatic hose use both in high pressure applica-



TM

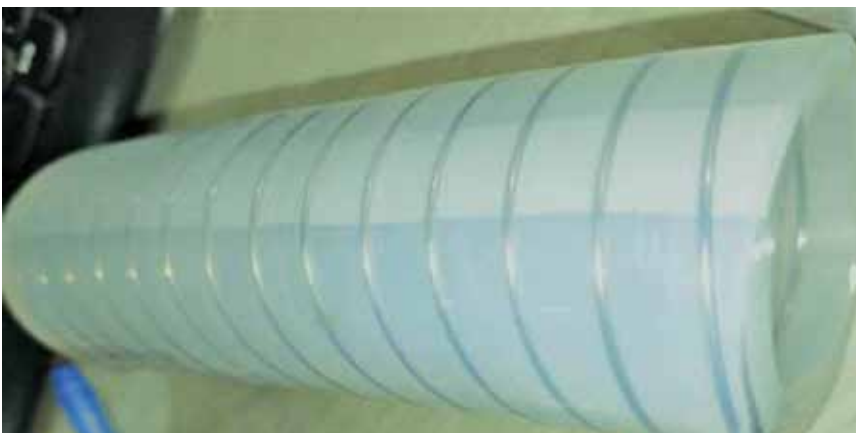


Figure 2 Antistatic transparent hose

tion and as well as to reduce static discharge failure. Also transparency gives aesthetics look.

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Cable-Ø

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A lubrication-free world for heavy machines

igus has developed a lubrication-free, two-component bearing iglidur Q2E to survive extreme conditions; tested to withstand loads up to 130 MPa



Withstands extreme loads: iglidur Q2E, the new two-component plain bearing made of high-performance plastics from igus. (Source: igus GmbH)

In construction machines, agricultural machines, utility vehicles and offshore installations, plain bearings often have to cope with extreme conditions such as heavy loads. igus has therefore further developed its lubrication-free two-component bearing iglidur Q2E. The material iglidur Q2 ensures a tested high degree of wear-resistance, and a hard polymer shell protects the heavy-duty bearing.

Dirt, impacts and high edge loads bearings in construction equipment, agricultural machines and offshore installations often have a hard time and have to cope with extreme conditions. Durable materials and dirt-resistant components are therefore called for. igus has now upgraded its iglidur Q2E heavy-duty bearing for exactly such scenarios of use. igus is expanding its range of bearings for heavy-duty applications

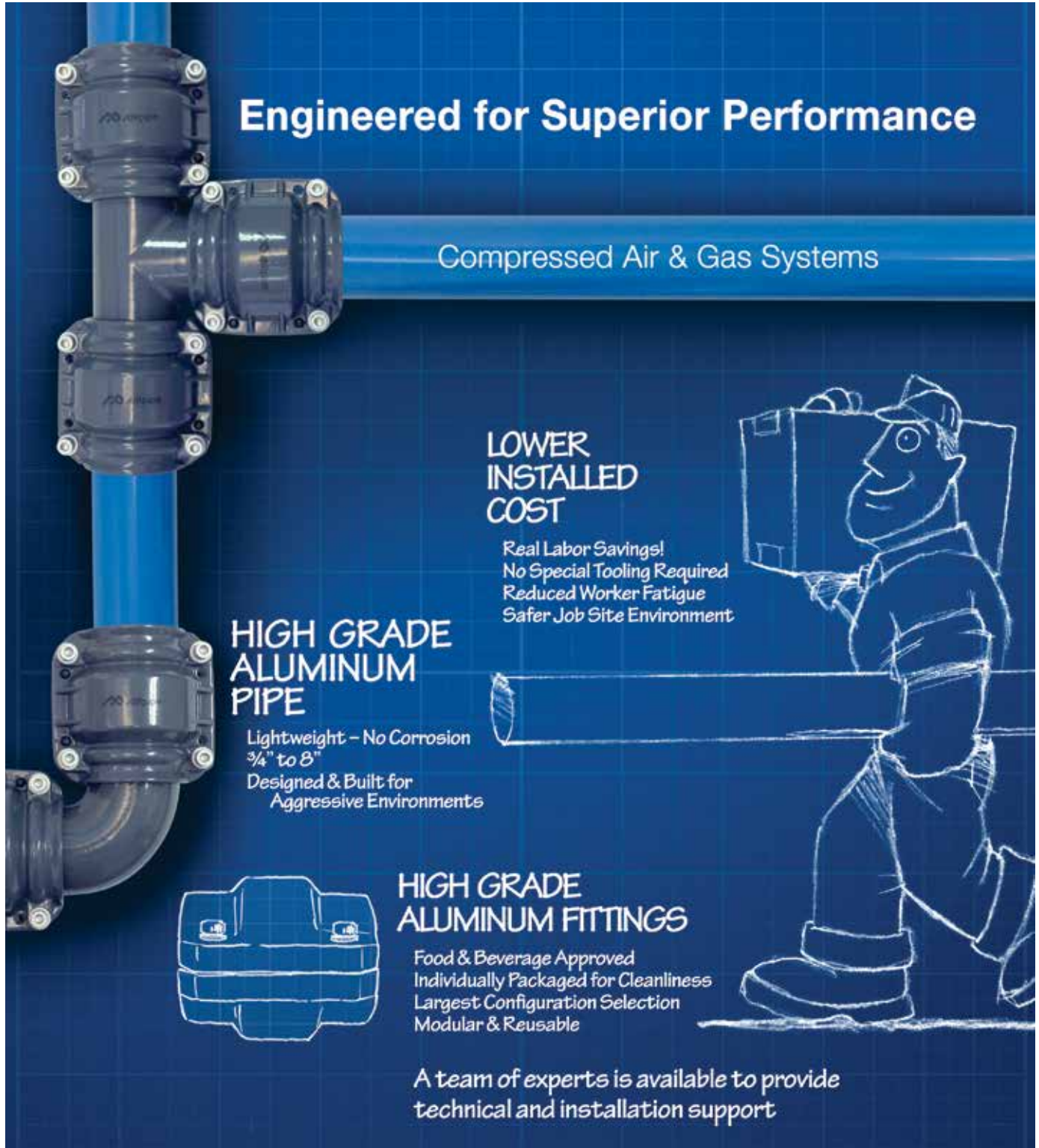
and closes the gap between existing bearings and solutions made of metal and composites.

The bearing consists of high-performance plastics and is therefore completely lubrication and corrosion-free. The absence of lubrication allows maintenance-free operation of the bearing points and prevents machine failures due to lack of lubrication. Expensive central lubrication systems are no longer necessary. Dirt and impurities can no longer adhere to the bearing points, and this minimises wear. In addition, less grease and oil escapes into the environment, a result of which the annual consumption of over 35 million metric tons of lubricant, as measured by RWTH Aachen University, is reduced. Another advantage: the injection-moulding method used to manufacture the plain bearings is especially cost-efficient.

The combination is the secret

Two materials in an encapsulated design ensure that the bearing can cope even with the most extreme edge loads. This is because the iglidur Q2E has a hard polymer shell and a tribologically optimised core composed of iglidur Q2 as the material. When used for a plain bearing with a diameter of 20 millimetres, this material is also very dimensionally stable and wear-resistant even under high loads of up to 7 metric tons. Functioning as a protective sheath, the shell makes the bearing very sturdy and ensures that it has a longer service life. igus has proven this in its own in-house test laboratory. In the swivel test, the material withstood a radial load of 130 MPa. iglidur Q2E is initially available for shaft diameters of 20, 25, 30 and 40mm.

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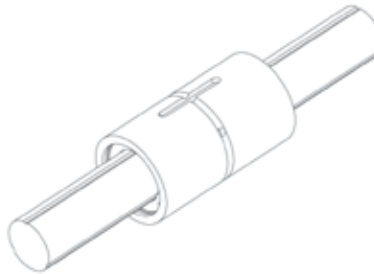
Application

Robots, Transporting equipment, Wire winder, ACT (auto tools change), etc.

Types and Features

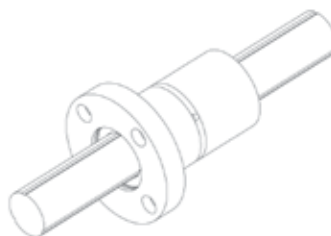
Types of Spline Nuts

- **Cylindrical Type Ball Spline Model SLT**



The most compact type with a straight cylindrical spline nut. When transmitting a torque, a key is driven into the body.

- **Flange Type Ball Spline Model SLF**



The spline nut can be assembly to the housing via the flange, making assembly simple. Due to key-way is machined, thus it may be deformed, and where the housing width is small. It is most suitable for model SLF.

Types of Spline Shafts

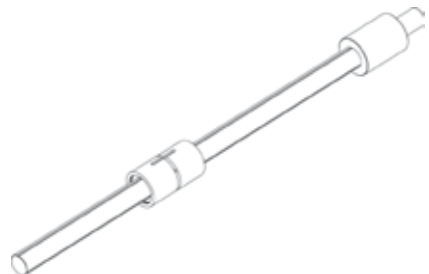
Precision Solid Spline Shaft (Standard Type)



Special Spline Shaft



Hollow Spline Shaft



Design Principle

The ball spline has load groove of three row on the outside diameter of shaft. Due to the Gothic arch groove design, it could be make sure three grooves withstand clockwise or Counterclockwise of torque at the same time, and then increase the service life and rigidity. The balls recirculation in ball holder, prevent balls falling from the spline nut while assembling.

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- **Large Load Capacity**
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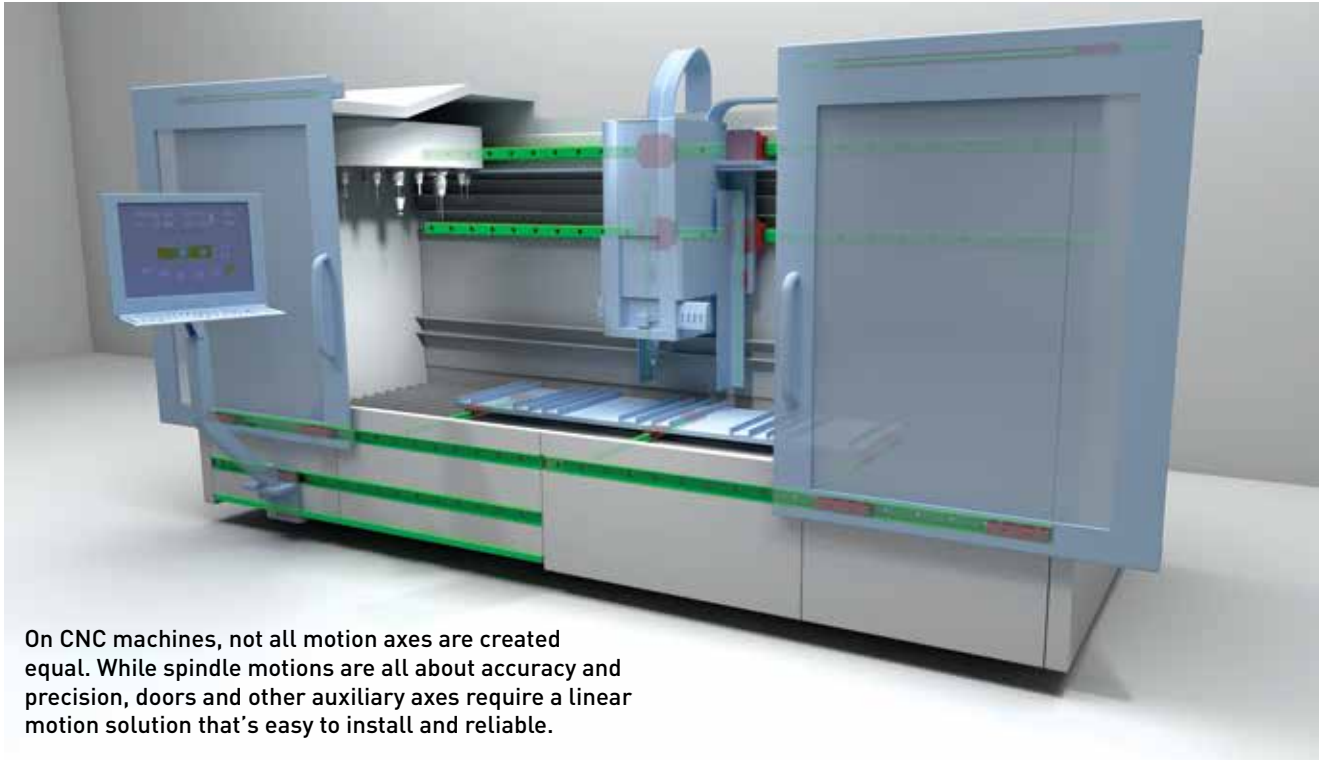
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Linear Bearings for CNC machines doors and auxiliary axes

Doors and auxiliary axes on machine tools need different linear motion components than spindles.



On CNC machines, not all motion axes are created equal. While spindle motions are all about accuracy and precision, doors and other auxiliary axes require a linear motion solution that's easy to install and reliable.

The makers of CNC machine tools are not known for skimping on their motion control components, especially those related to spindle movements. Yet not every motion on a CNC machine is mission critical. In fact, most machines have one or more axes that, unlike the spindle, do not require high degrees of accuracy and precision.

These axes can include doors and other auxiliary systems not associated with cutting. By picking an ap-

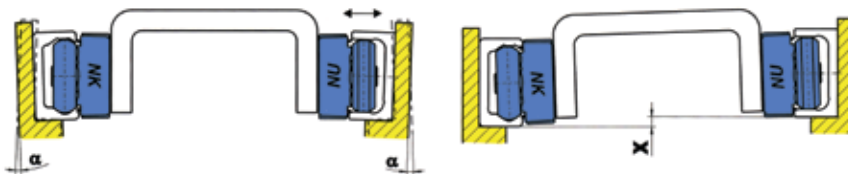
propriate motion solution for these auxiliary axes, machine builders can not only take some cost out of a CNC machine but also improve that machine's reliability in the field.

Doors, in particular, are an axis that are often designed with less-than-ideal motion components. From an accuracy standpoint, door motion may seem like an open and shut case, but they do present some challenging design issues of their own. They tend to be large sheet-metal structures that are

subject to deflection and alignment problems. They also have to work reliably in a contamination-prone environment filled with metal chips and cutting fluids.

These size and contamination issues can be especially hard on linear bearings. Engineers who work in machine tools will sometimes reflexively specify recirculating ball linear bearings, in part because of familiarity. Yet this style of bearing is not the best choice when it comes to creating a dependable, cost-effective door.

Rollon has developed an alternative bearing solution for doors and related auxiliary applications. It's based on Compact Rail bearings, which are both self-aligning and resistant to contamination.



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Rollon is a global provider of **linear motion solutions** for several industrial sectors, such as: **industrial machines, railway, automation, packaging and logistics, aerospace.**

Self-aligning. Aligning linear bearings is usually a difficult process that takes place during the machine building phase. Machine builders must first machine mounting surfaces to near perfect flatness. Then they'll install bearings using fixtures to ensure that rails are aligned horizontally and vertically. Both of those steps can add significant time and cost to the machine.

And in the case of machine tool doors, both of those steps may be both ineffective and unnecessary. They're ineffective because the doors tend to be large sheet metal structures that will deflect in use, undoing even the most careful installation techniques. And they're unnecessary because self-aligning bearings can accommodate deflection without the need for the expensive machining or fussy installation procedures.

Rollon's Compact Rail system gets its self-alignment capability from the way that its large roller bearings interact with a set of rail profiles. The profiles are designed to allow the rollers an extra degree of freedom or two to offset misalignment between rails.

In the case of machine tool doors, an emerging solution combines Compact Rail's U and K rail profile to support the slider (See Figure 1). The U-style rail has a flat raceway that allows a roller freedom translate in an out relative to the axial direction of the rail. The K-style rail has a geometry that allows for lim-

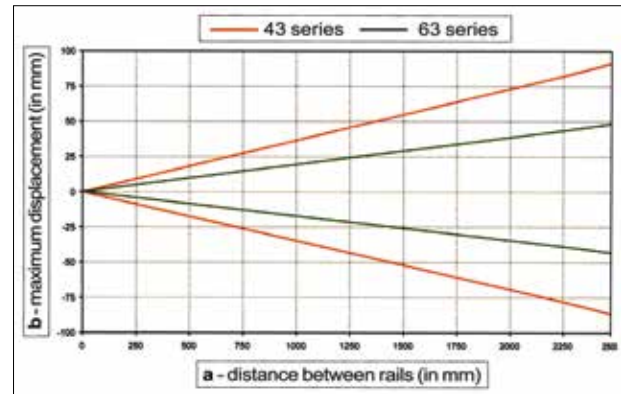
ited angular rotation of the roller, while still offering precise linear guidance. Together, these rails can absorb significant alignment errors in two axes: Parallelism on the horizontal plane and height differences between rails in the vertical plane.

How significant? It depends on the distance between rails. For example, at a two-meter span between rails, the system can absorb parallelism errors up to 4 mm in the horizontal plane and differences in rail height of +/- 50 mm. (See Table 1 for self-alignment capabilities at other rail distances).

With the Compact Rail system, the source of the alignment errors is not important. Whether the errors are caused by the machine structure, installation or deflection in the field, the Compact Rail will adjust and do so without affecting the wear characteristics or lifespan of the bearing.

Low Closing Force. Compact Rails additionally make the doors easy to open and close—and not just because design tolerates misalignment without impeding motion. Compact Rails also contribute to the smooth door motion because they have a low coefficient of friction (COF). The typical COF for a Compact Rail ranges from 0.003 and 0.006, depending on size.

Contamination Resistant. Another important linear bearing attribute important in doors and other machine tool auxiliary axes is contam-



ination resistance. Recirculating ball linear bearings, which have little clearance between balls and raceways, have historically been susceptible to contamination-related failures and require elaborate protective measures. Making matters worse, metal chips are among the most damaging contaminants in the industrial world.

Rollon's Compact Rail keeps contamination at bay in a few ways. It has small features, like seals and wipers, that minimize contaminants on the rails. Installation tricks, such as installing rails upside down, can further reduce contamination levels.

Mostly, though, Compact Rail's contamination resistance rests on its overall design. Its small ball bearings are permanently sealed within larger rollers. And the rollers have a large size relative to typical contaminants. They can roll over many chips that would stop a recirculating ball bearing in its tracks.

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Rollon's Compact Rail bearings are both self-aligning and resistant to contamination.





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Insulation Resistance Testing

Insulation testing is very critical type of test for checking the quality of insulation and prevent unwanted breakdowns. Insulation starts to age as soon as it's made. As it ages, its insulating performance deteriorates. Any harsh installation environments, especially those with temperature extremes and/or chemical contamination, accelerates this process. This deterioration can result in dangerous conditions in power reliability and personnel safety. As such, it's important to identify this deterioration quickly so that corrective steps can be taken. We will discuss here Basics of insulation, Need of insulation resistance testing, Different test to conduct insulation resistance testing, Recommended test voltages, Methods to know minimum Insulation resistance values of different Device under test (DUTs) and precautions to be taken while Insulation resistance testing.

Let's start with basics to have a small brush up and establish a better link on subject

What is Insulation?

In simple terms Insulation is nothing but a material which opposes the flow of current. Technically, it contains almost negligible free electrons for the flow of current. There are different types of Insulation material present on Earth which can be classified as Solid (Ceramic, Glass,

plastic), Liquid (mineral oil, castor oil) & Gaseous (SF6, Air, etc).

The insulation material is classified according to the temperature's which they can sustain and not breakdown, take a look in table below as per IEC 60085.

This evokes us with a thought that why do we need insulation? So let's have a look

The first and basic need of insulation is to provide safety to the human beings and to the circuits in the instruments. In any electrical equipment, the current has to flow along designated conducting pathways (called conductors), Insulation prevents currents from taking other unintended path. Insulation has got the inherent high electrical resistance property which does not allow contact with live circuits and hence ensures safety also Maintain the voltage at the terminals of the load, Avoid arcing to a different voltage or earth, Avoid electrocution. Hence all electrical equipment's are manufactured by using insulation materials of proper grade in its construction.

So now it's evident that how important insulation is! Taking this ahead and as we wrote that every electrical/electronic equipment has some kind of insulation over it, leaves us with a question whether insulation degrades and if it degrades, then what will happen if this degradation goes undetected.....? let's discover...

First we will see, why does insulation degrades! we as human beings, as our age increases we get affected with several diseases, our body starts degrading and similar is with insulation. As its continuously exposed to different conditions the degradation in insulation takes place. Let's see the various reasons of insulation degradation:

Different types of stress lead to degradation in Insulation

There are five types of stresses which leads to degradation in quality of insulation

- **Electrical stress**
eg: Spikes and over voltages
- **Mechanical stress**
eg: Vibration, movement, impact
- **Chemical attack**
eg: Dirt, oil, corrosive vapor
- **Thermal stress**
eg: Hot/ cold condition, machine start/stopping
- **Environmental conditions**
eg: Moisture, humidity, rodents

As we understood the different reasons of insulation degradation it's time to now answer what will happen if this degradation of insulation goes undetected?



Ans

No! No! don't worry the intention is not to scare you but just to make you understand what can happen if Insu-

Insulation System	Temperature Classification
Y	Up to 90° C (Cotton, Silk or Paper)
A	Up to 105°C (Reinforced Class-Y materials with impregnated varnish)
E	Up to 120° C (Cotton lamination & Paper lamination)
B	Up to 130° C (Inorganic materials are hardened with adhesives)
F	Up to 150° C (Class B materials that are upgraded with adhesives)
H	Up to 180° C (Made of inorganic material glued with silicon resin)
C	>180° C to up to 220° C (Made of 100% inorganic material)

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lation resistance testing is not done periodically, all of a sudden you can get horrible surprises like the one in image above.

Let's have a look at the criticality of Insulation resistance testing how it can be useful at different times of testing!

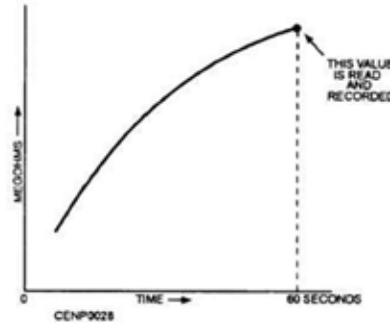
- As a quality control measure at the time of manufacturing of the electrical equipment, a basic value of insulation resistance is available for reference
- To ensure that the required specified insulation values are met for a new installation
- Periodical preventive maintenance task
- Used as a tool for trouble shootings in the power system /equipment's
- To avoid unexpected breakdown of the high voltage equipment
- To monitor the rate of change of deterioration of health of insulation
- Saving high cost of replacement of the material

So far we have understood that testing of Insulation resistance periodically is of outmost importance. Now we move on towards the different procedures, methods, various ways that would help us in assessing the quality of insulation.

Spot Insulation Test

The most basic test for insulation resistance testing is Spot Insulation test. It suggests the application of test voltage for 1 minute and then note the value of Insulation Resistance. Note when your devices have a very small capacitance then spot test will be all what you need. But mostly equipment's are capacitive so spot insulation test is an indicator of how good or bad insulation is!

Whenever a Device under Test is



subjected to insulation testing and if its highly capacitive in nature then, three types of current flows through the insulation which are:

Capacitive current

The initial burst of current that occurs when voltage is first applied to a conductor is called capacitive current. Like the first rush of water flowing through a hose, it typically starts out high and then drops quickly once the conductor is fully charged.

Absorption current

Like capacitive current, absorption current also starts out high and then drops. However, it falls at a much slower rate. As the voltage builds up, the absorption level in the insulation decreases. This gradual change reflects the storage of potential energy in and along the insulation. Incidentally, absorption current is an important part of the time resistance method of insulation testing.

Leakage current.

Also commonly referred to as conduction current, the small, steady current present both through and over the insulation is called leakage current. Any increase in leakage current over time is usually an indication of deteriorating insulation. This would be noted on the insulation test meter as a decrease in resistance.

As we discussed that most of the devices are capacitive so spot test is just an indicative of good or bad insulation. However, we have further

tests which are also called as diagnostic test to have a detail analysis of quality of insulation.

There are different diagnostic tests which can probably be conducted to check the quality of Insulation

- 1) Polarisation Index test
- 2) Dielectric Absorption Ratio
- 3) Step Voltage Test / Ramp test

1) Polarisation Index Test

The PI (Polarisation Index) measures the time required for molecules of insulation to polarize to resist the flow of current.

For testing high capacitance systems such as large motors, generators, or apparatus with complex insulation systems. Steady readings are only possible after the time-dependent currents have almost died down.

PI Test measures the ratio between insulation resistance readings taken at one minute and ten minutes after the application of voltage to judge the rate of disappearance of capacitance and absorption currents.

A low polarization index usually indicates excessive moisture and contamination.

PI	0-1	1-2	2-5	>5
Criteria	Dangerous	Poor	Good	Excellent

2) Dielectric absorption Ratio

Dielectric absorption ratio is the ratio between insulation resistance readings taken at 30 seconds and 1 minute after the application of voltage to judge the rate of disappearance of capacitance and absorption currents.

DAR	0-1.0	1.0-1.3	1.3-1.6	1.6
Criteria	Dangerous	Poor	Good	Excellent

3) Step Voltage Test / Ramp test

Step voltage test is basically applying the different test voltages in steps for fixed duration of time to check

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LV APFC Panel

the behavior of Insulation at different test voltages. As per standard generally the variation of insulation resistance between consecutive readings should not be greater than 25% if it is observed beyond 25% then there is some problem with the quality of insulation. Nowadays more popular test is the Ramp test where instead of in discrete steps, voltages are gradually increased and the leakage current is graphed continuously against voltage rise. Normally, the relationship is expected to be linear, but if current begins to rise more sharply, the material is breaking down and the test can be terminated prior to the occurrence of full breakdown. The Ramp Test has been evaluated by standards agencies, and is described in IEEE 95-2002. The evaluation of test results first prescribes that insulation in good condition should produce a smooth, almost linear rising current curve against the applied voltage. Any deviation should be viewed as a warning that the test could be approaching a possible breakdown. A sudden increase in current usually indicates imminent breakdown, and it has been possible to approach as closely as 5% below breakdown voltage.

Thus we have seen different diagnostic test which can be performed to evaluate the quality of installed insulation on any electrical equipment & how these different test methods would be useful to assess the insulation health.

We always have the question in our mind what would be the suitable test voltage to be applied for testing insulation resistance. To answer this question, we have some recommendations published by international testing agencies which we will elaborate so that it would help us to know the different test voltages which would be suitable to

test insulation resistance.

SYSTEM VOLTAGE	TEST VOLTAGE
Up to 1000V	500 Volts
>1000V Up to 3.3KV	500 – 1000 Volts
> 3.3 KV Up to 6.6KV	2500 – 5000 Volts
> 6.6 KV	5000 Volts

MAX. RATING OF EQUIPMENT IN VOLTS	MIN. TEST VOLTAGE DC	RECOMMENDED MIN IR IN MEGA OHMS
250	500	25
600	1000	100
5000	2500	1000
8000	2500	2000
15000	2500	5000
25000 & Above	5000	20000 & Up to 100000

Common test voltages depending upon system voltage (L-L) Recommended Values for Good Insulation as per NETA

There are also some of the thumb rules which tell us the minimum required insulation resistance values which are as follows

THE RECOMMENDED MIN IR VALUE (Rm) FOR

Field windings can be determined as $R_m = kV + 1$ (M Ohm)
 Where,
 R_m = Recommended Minimum Insulation in MΩ at 40°C
 kV = Rated machine terminal to terminal potential in kV

MIN IR VALUE FOR CABLE AND CONDUCTORS

Single- Conductor Cable

$$R = K \log_{10} (d/ D)$$

Where:
 R = Mega-ohms per 1000 feet of cable
 K = Constant for insulating material
 D = Outside diameter of conductor insulation
 d = Diameter of conductor

MINIMUM IR VALUES FOR TRANSFORMERS

Recommended minimum insulation resistance for winding to ground with other windings guarded, or from winding to winding with core guarded.

$$R = \frac{CE}{\sqrt{kVA}}$$

Where:
 C = a constant for 20°C measurements.
 E = voltage rating of winding under test.

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kVA = rated capacity of winding under test

As we are talking about the insulation resistance testing which is conducted to know the safety level of insulation it's also very important to know the different safety requirements to be followed while performing the insulation resistance test at different devices under test to ensure the safety of operator. Following are some of the safety requirements

- All equipment under test MUST be disconnected and isolated
- Equipment should be discharged (shunted or shorted out) for at least as long as the test voltage was applied in order to be absolutely safe for the person conducting the test.
- Never use Insulation tester in an explosive atmosphere.
- Make sure all switches are blocked out and cable ends marked properly for safety.

ly for safety.

- Cable ends to be isolated shall be disconnected from the supply and protected from contact to supply, or ground, or accidental contact.
- Erection of safety barriers with warning signs, and an open communication channel between testing personnel.
- Do not test when humidity is more than 70 %.
- Good Insulation: IR reading increases first then remain constant.
- Bad Insulation: IR reading increases first and then decreases.

Rishabh offers solutions for testing Insulation resistance through its various products like Rish Insu 10/20 1KV Digital Insulation Tester, Rish MIT 30- Multimeter cum Insulation Tester, Rish Insu 5000 5KV Analog Insulation Tester, Agam AIT 501-5KV Digital Insulation Tester, Rish Insu 5Dx- 5KV Digital Insulation tester with diagnostic tests like PI,

DAR & Ramp test suitable for testing in live switchyards.

Thus different important aspects on Insulation testing has been tried to cover in the article. But again lots of things yet remain to pen down however we need to curtail at some point. For suggestions in article feedback are always welcome you can write us on email id: vishwadeep.nanda@rishabh.co.in



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4 key **Building Management** Systems implementation challenges

From empowering the safety and security to optimizing electrical power usage, Building Management System enables the smart operation and efficient maintenance of the buildings. However, BMS involves various subsystems and hence end-to-end integration of these subsystems is complex, involving several challenges. We look at four key challenges to avoid for successful BMS implementation



Mr. Rahul B. Chandrayan
AMIE, MBA

With the rapid growth in the real estate market and construction industries in the past few decades in India. The need for a BMS solution has become the topmost priority to provide a safe and secure environment to the hotels, commercial and residential buildings.

BMS system works on various aspects for the benefit of society such as environmental, economic, social, safety and security to prevent losses and preserving the values of the whole ecosystem.

Role of BMS Solution

The role of BMS becomes crucial to monitoring, controlling and optimizing all aspects of energy use within a given environment, such as lighting, heating, air conditioning, ventilation, office equipment and many more.

For many companies managing energy costs has become the key to competitiveness and business survival, particularly within the current economic environment. Energy consumption can be one of the largest regular costs to deal with, depending upon a company's activity. Managing a building's energy use is therefore essential, rather than just desirable.

BMS – Core Functions

The core functions of a BMS system installed in buildings is to control and monitor utility equipment's such as

Lighting, HVAC, Ventilation systems, Fire Alarm Panels, Fire Hydrant Panels, Water Tank Monitoring, Elevator Operations, CCTV, Access Control, Vehicle Management, Perimeter Security, Generators, STP, WTP and many more of the sub-systems that are employed within a building. It provides the security to property, building occupants and assets.

A BMS system includes sensors, pressure switches, flow meters, controllers, relays, communication protocols, API's, Interfaces to Modbus and User Interface that work together to deliver the end to end BMS solution.

BMS: Need of the hour

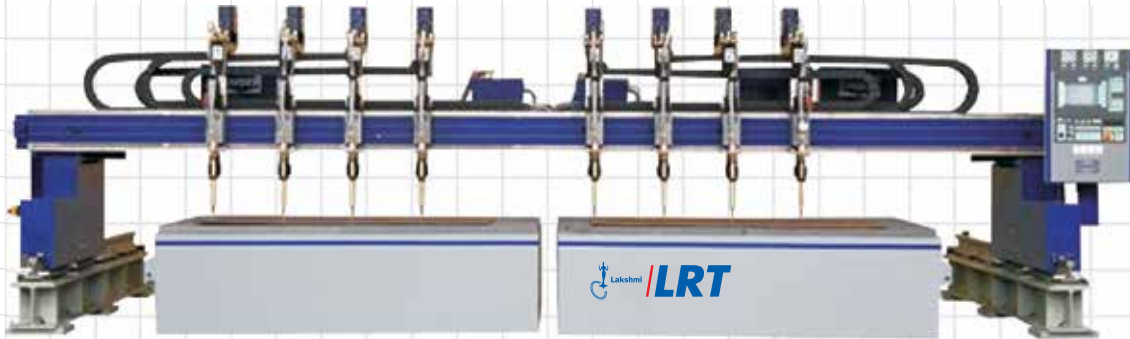
Implementation of a Building Management System enables the smart operation and efficient maintenance of the building. A building management system can add significantly operating costs savings while providing security to property, resources, assets and building occupants

a) Empowering the Safety and Security

With the use of different types of sensors as per the requirements, the BMS system can record and notify the alerts to central servers or cloud thereby the concerned authority can be notified via emails or SMS. Similarly, the use of Access control systems to allow or restrict the building entrance.

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b) Optimized Electrical Power Usage

With BMS systems, the complete control and scheduling of the facility lighting for common areas, podiums, parking, facade lighting and landscaping can be effectively and efficiently automated. Also, BMS systems allow to automate and control of water pumps and water tank status. The BMS can be integrated with Generators, STP plants, Elevators, etc. to completely automate and efficiently manage the power usages. The BMS facilitates to track the overall consumption of electrical energy in real-time.

c) Ease in serving for building occupants

BMS System with the usages of Smart Apps allows the building occupants to generate service requests for a variety of maintenance support activities. This service request gives notifications to the concerned facility managers so that the desired actions can be taken immediately. The smart App also includes functionality whereby which the building occupants can manage their assets, schedule the maintenance activity, notified the expiration of AMC and much more.

Types of BMS

1. Home Automation
2. Designed specifically for cottages, country houses, and individual apartments
3. Building Automation
4. Designed specifically for commercial real estate.

BMS Sub-Systems

The BMS Sub-systems are essential components integrated to act as an end-to-end solution fulfilling the entire need of Safety, Security, and Comfort:

1. Safety Systems: Fire Alarm Systems, Fire Fighting System, Gas Detection Systems

2. Security Systems: Video Surveillance Systems, Access Control Systems, Intrusion Systems
3. Comfort Systems: HVAC control, UPS, Generators, Escalator, Elevators, Water Valves, Metering systems, Control Lights, Air Conditions, Automated Parking, Audio Video devices, and much more

The BMS subsystem ensures the following values additions a) Effective use of energy and eliminate waste.

- Automate the process and create a safe and secure environment
- Increase the assets life
- Decrease in operating cost expenditures.
- Individual tenant billing for services facilities time saving
- Remote monitoring of the plants (such as AHU's, fire pumps, plumbing pumps, electrical supply, STP, WTP, etc.)
- Use the latest technology to improve the overall sustainability of systems and equipment
- Ensure real-time data logging, alerts, email and notifications.

BMS: The Three Layer Integration

1. Sensing Layer (Field Level)

The sensing level includes sensors, actuating mechanisms, and various field-level devices. The sensing level acts as a transducer converting various physical quantities such as pressure, temperature, etc. into measurable electrical signals. These electrical signals are further processed as per the requirement and fed to the control layer

2. Control Layer (Automation Level)

The control layer includes protocol converters, plc, microcontrollers, gateways, various switching equipment, and access points. The automation layer performs the desired automation functions such

as to read the inputs of the sensor, to communicate the sensor inputs with the compute layer, take the input from the compute layer and perform desired actions so that the desired results can be maintained.

3. Compute Layer (Management Level)

The compute layer includes various computational devices including computers, embedded pc, edge devices, HMI, etc. The compute layer performs various computations with the help of algorithms and software programs. The compute layer acts as a visualization, debugging and reporting tool for the entire BMS applications. The compute layer also generates alerts and email a timely basis so that the concerned authority gets informed and the desired action can be taken on time to avoid losses and hazards.

BMS Implementation Challenges

As we understood that the BMS involves various subsystems and hence end-to-end integration of these subsystems to achieve the common goal of actions is challenging. Following are some of the challenges while implementing the successful BMS system

1. Protocol Integration

Depending upon the requirement there are various protocols needed to be used at sensing level such as field bus, Modbus RTU / Ascii, ethernet, etc. Thus, certainly, it arises the need for protocol conversion so that the communication between various subsystems can be possible and the desired functionality can be achieved.

2. Scaling

Scaling becomes another important challenge. The proposed BMS solution should be easy to scale so that it should cope up with the latest



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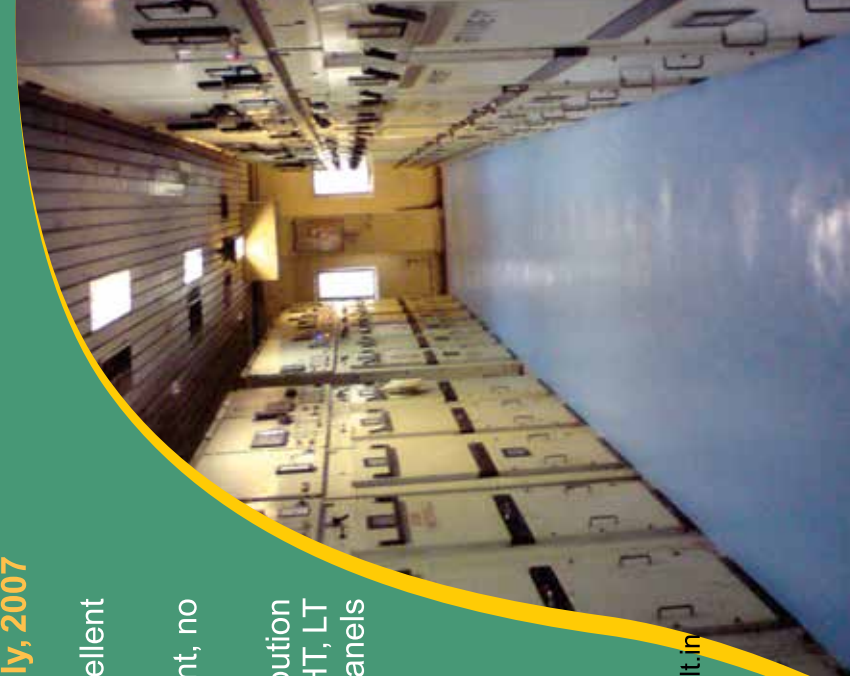
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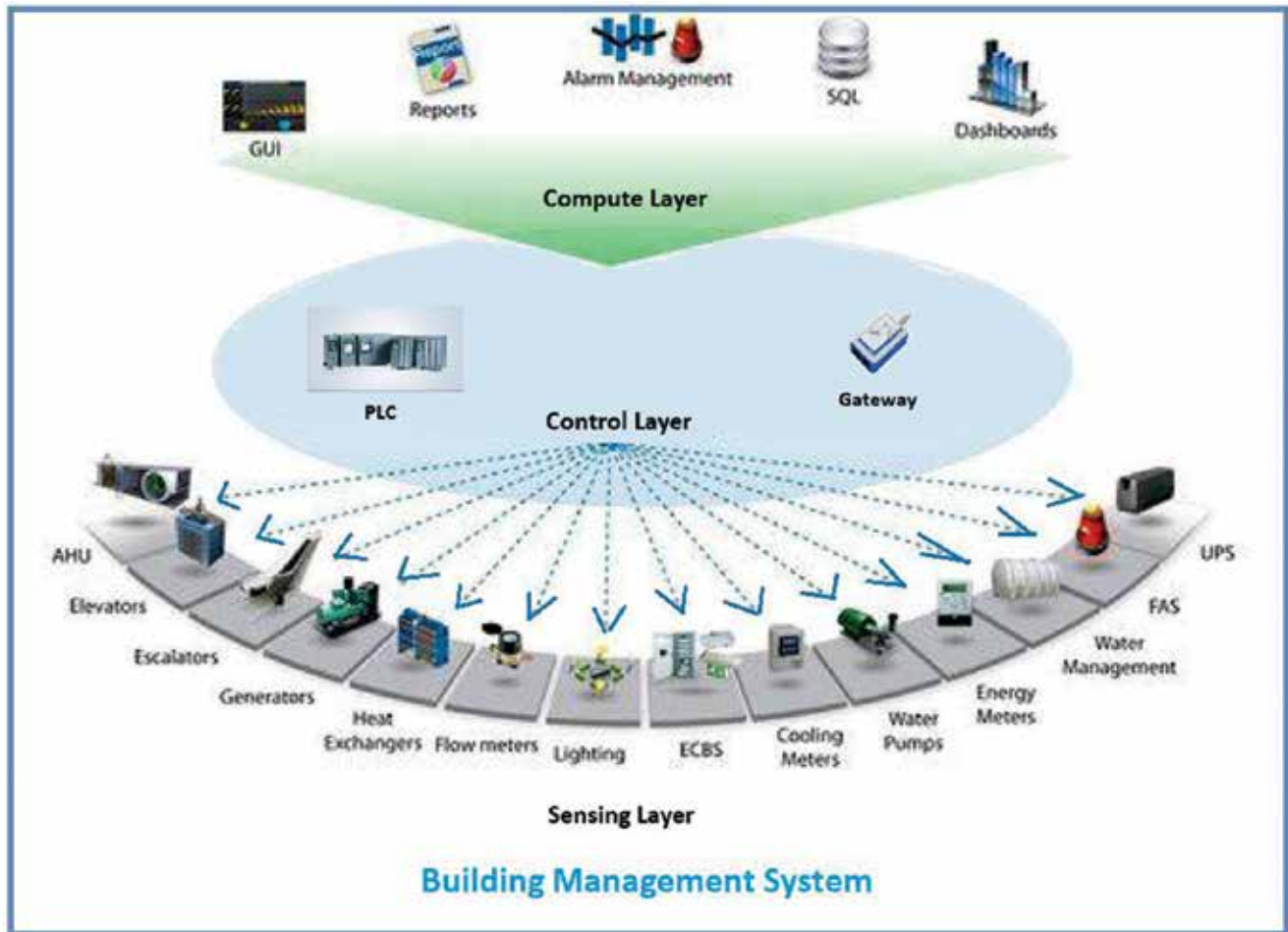
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technology and the value addition can be easily achieved. The older BMS systems are so rigid that hardly any possibility of scaling and doing some value additions hence the scaling becomes an important factor to make the BMS solution successful

3. Single Platform

If the BMS subsystems are running in silos, then it became very difficult to get the desired outcome and the purpose of implementing the BMS solution will not be fulfilled. With a single platform approach, every BMS subsystem can become under one umbrella which serves the purpose of implementing BMS successfully. Nowadays most IoT companies have their owned IoT platforms hosted on the cloud, which includes various integrated applications such as parking systems, IP surveillance, predictive

maintenance, asset management, energy management, security management, etc.

Thus, the data from various sensors and subsystems finally push to the cloud with the help of gateways devices (Mostly supporting standard IoT protocols such as MQTT, CoAP, HTTP, etc.). Once the data is successfully and securely posted to cloud, further processing of data is done with the help of IoT platforms or applications and the desired User Interface / Dashboard, Alerts, Notification and Analytics can be drawn as per the requirements.

4. 24/7 Real-Time Monitoring

Today 24/7 real-time monitoring becomes essential, this helps to avoid damage and losses to the property, increase security, perform timely maintenance activity, increase the process performance, automate and

stabilize the process, etc.

Traditional BMS vs IoT BMS

The limitations of traditional BMS solutions are overcome by IoT BMS solutions. The IoT-based BMS solutions are easy to develop, integrate, secure connectivity, the capacity to store huge data, facilitate with predictive and preventive maintenance and complex analytics support, easy to scale, 24/7 support and service and ownership to the end-users.

The cloud-based IoT platform services facilitate various working models to the end customer such as subscription-based model and pay as you go, model, which reduces the overall implementation risk at one go. The ROI can be easily quantified, and further up-gradation and the scaling decision can be easily and confidentially taken. ■



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2. Flap Barrier- LEAPTOR Flap barriers series are articularly designed to suit the internal office layout and add aesthetics value to the reception area. The ease to use & its simple integration makes it very popular in every industry. SS 304 casing & acrylic flap which moves inside the casing in operation

makes it suitable for handling heavy crowd public places like commercial office, Metro stations, Railway stations, Airports etc. As per site conditions these can be either single lane/dual lane. These can be specially designed to have high width lane for handicapped entry keeping same aesthetics & access control integration system. These are installed in indoor applications like office, admin buildings, IT parks, large business facilities, industrial areas, etc.

3. Swing Barrier : LEAPTOR Swing barriers Series designed with SS bent tubular section which act as swinging section to allow/restrict the access. These have high performance drives & control system. These are available in Single & dual swing mechanism suitable for the various requirements. These are most popularly installed in corporate office entrance, Government offices & heavy crowd premises. As the number of visitors in the restricted premises get increasing on everyday basis, security guards and receptionists find it difficult to keep track of growing human traffic in a building. Swing barriers are more attractive & specially designed to match the premises. Swing barriers are either single/dual lane with metallic/acrylic flaps depending on the site requirements.

4. P- Type Gate : LEAPTOR P type gate Series Flaps are used for arrangement of passageways and interior design enhancement at entrances of administrative buildings, industrial and trade facilities, banking offices, airports, etc. These have pillar type design which accommodates in very less area & per-

forms the heavy operations. These have facility to integrate with access control system for controlled & monitoring of entry & exit.

5. Sliding Barrier: LEAPTOR Sliding barriers series are of SS 304 construction having very sturdy design & high aesthetics value. Sliding barriers are very popular in Airports/Metro stations & commercial premises. Various inbuilt sensors make these products very safe in operation. Heavy duty drives & control mechanism is adding value to be used in crowded places. Sliding Flaps are majorly used for high speed operations & flap retracts inside the casing body in operation. These can be either single/dual flap depending upon the requirements.

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Reliable machining processes for maximizing customer satisfaction

When planning and implementing machining processes, manufacturers generally focus on manipulating elements of their internal operations and may lose sight of the end purpose of their work: assuring customer satisfaction

To a great extent, customer satisfaction is based on minimizing the time between the placement of the customer's order and delivery of the finished product. In the past, manufacturers minimized lead times by machining thousands of identical parts and creating large inventories from which they could ship products immediately. This low-mix, high volume production (LMHV) scenario enabled manufacturers to meet customer needs in a timely way throughout gradual development of the machining process and unanticipated production errors and interruptions. Today's market requirements, however, are radically different. Customers increasingly order small batches of products tailored to specific needs. As a result, manufacturers rarely make long production runs. Groups of duplicate components are not produced in the thousands, but rather in hundreds, tens or even single units. These high-mix, low-volume (HMLV) scenarios leave no room for ongoing process development or unanticipated interruptions. Manufacturers are under pressure to develop machining processes that are totally reliable beginning with the first part. Immediate speed, consistency and predictability are paramount. Nevertheless, many manufacturers continue to focus on what they call "efficiency," developing manufacturing processes aimed nearly exclusively at maximum output and minimal cost. They unintentionally ignore "the elephant in the room" – the crucial priority of satisfying their customers, especially



Figure 1: HQ_IMG_The Elephant In The Room

customer demands for timely delivery.

QRM

Conceived in the early days of the HMLV era, a concept called Quick Response Manufacturing (QRM) underscores the critical role of time in the manufacturing process. QRM strategies, along with zero-waste and process optimization efforts, provide a roadmap that can put manufacturers on a path to minimize lead time and thereby maximize customer satisfaction. Rajan Suri, a professor of industrial engineering at the University of Wisconsin-Madison in the 1990s, recognized looming changes in manufacturing markets, particularly the trend towards HMLV production. In 1993 he founded the Center for Quick Response Manufacturing. The Center's purpose is to create partnerships between the university and manufacturing companies to develop and implement ways to reduce lead times. QRM strategies are often applied in addition to lean, Six Sigma and similar process improvement initiatives.

The Traditional Approach

Production managers in traditional machining environments seek maximum machine utilization above all.

If a machine is standing still, it is not efficient and is costing money, not earning it. The goal is to produce large batches for inventory. Parts in stock buffer fluctuating customer demand. In HMLV manufacturing, however, a job is put into production not for stock, but to fulfill a customer order for a limited number of specific components. There is no buffering inventory. Further complicating the situation are factors such as so-called "hot jobs" that arrive unexpectedly in response to emergency circumstances or special requests by important customers. If all of a facility's machines are running, other jobs will be delayed to deal with the hot jobs. Then the delayed jobs themselves become hot jobs, lead times increase, and chaos begins to creep into the production process. Another issue is the tendency of manufacturing staff to concentrate on finding ways to meet internal goals, such as achieving 100% on-time delivery. Planning often is carried out with those internal goals in mind. For example, shop personnel may know that completing a certain job takes one day, but will allocate two days to account for interruptions by hot jobs or other possible delays. Planners add a time cushion to avoid incidents of "acoustic management" – being reprimanded by management. However, if similar behavior is common throughout a shop, two weeks of





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lead time can grow to perhaps seven weeks. On-time delivery performance as measured internally may be 98%, production personnel are happy to meet internal goals, but the customer who needed the product in two weeks is not happy at all. The traditional manufacturing environment has systemic limitations (see figure 2). In the figure is a highway with minimal traffic that symbolizes underutilization of resources and, as applied to manufacturing, high production cost per finished workpiece. The over-utilized highway at right, jammed with stopped vehicles, represents the chaos and extended lead times that result when errors occur or unexpected jobs vie for space on the production highway. The middle image illustrates a balanced and cost-efficient approach to output and utilization of resources.

Roadmap for HMLV Production

In a HMLV production environment, first time part yield and consistent quality in production of non-identical workpieces is key. The objective is to provide customized products where the part in a one piece batch costs the same as a part in a million piece batch and immediate delivery is assured. Producing good parts from the start depends on establishing a trouble-free and reliable machining process. It currently is fashionable to point to the newest production techniques and digitalization technologies as solutions to machining problems. However, speed, consistency and flexibility always have been, and still are, based on a foundation of operational excellence as well as an educated manufacturing staff with a positive mindset and motivation. (see sidebar). Before discussing digitization and optimization, it is necessary to look at the workshop operations overall, determine where waste of time and resources occurs, and develop methods to minimize it. After that, the emphasis shifts to process quality or

reliability.

A Zero-Waste Workshop

Reducing lead times requires elimination of waste in the manufacturing process. A zero-waste workshop does not over-produce parts, fully utilizes workpiece material, and does away with extra movement for semifinished parts. Wasteful and time-consuming activities in the machining process

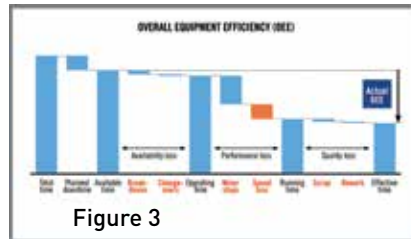


Figure 3

itself include production of burrs, bad surface finishes, long chips, vibration, and machining errors that create unacceptable parts. Bad parts must be reworked or rejected and remade, either of which adds waiting time to the production process.

Even producing part quality that exceeds customer requirements represents wasted time and money. Shops must realize that it is necessary to achieve only the lowest possible workpiece quality that meets customer specifications and functional requirements. If a part tolerance is five microns, achieving three microns is wasteful. Higher quality tooling and more precise operating processes will be required to meet the tighter tolerance, but a customer will not pay for the unrequested higher quality. The job will be a money-losing proposition for the shop.

Respecting Constraints

The first phase in establishing a balanced machining process is choosing tools with load capacity that meets or exceeds the mechanical, thermal, chemical, and tribological loads present in the metalcutting operation.

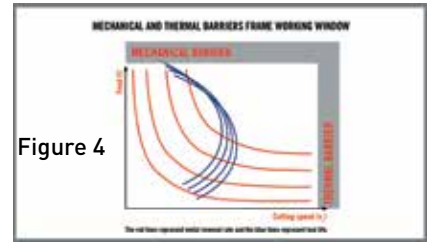


Figure 4

Phase two involves selecting cutting conditions that recognize the constraints put on a machining process by real-world factors. A cutting tool possesses broad capabilities, but specific realities constrain the range of effective application parameters.

For example, tool capabilities change according to the power of the machine tool in use. Machining characteristics of the workpiece material may limit cutting speed or feed rate, or complex or weak workpiece configurations may be prone to vibration. Although a vast number of cutting condition combinations will work in theory, reality-dictated constraints will narrow trouble-free choices to a certain selection of parameters. Applying cutting conditions outside the constraints of the specific situation will have negative consequences, including higher costs and lower productivity.

The majority of the problems experienced during machining result from a lack of respect for the constraints that physical realities place on the cutting process. When cutting conditions do not exceed real-world constraints, the operation is safe from a technical perspective. However, not every technically safe combination of cutting conditions will produce the same economic result and changing cutting conditions will change the cost of the machining process. Aggressive but technically safe cutting conditions will speed output of finished workpieces. After a certain point, however, output will slow because the aggressive cutting parameters also will result in shorter tool life, and multiple tool changeovers will consume

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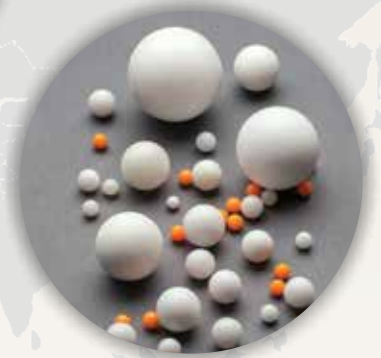
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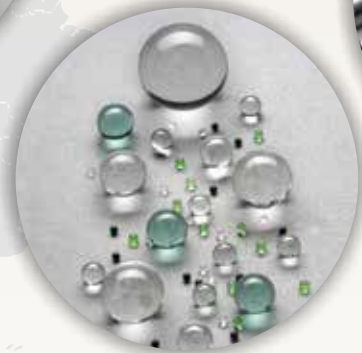
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excessive time.

Accordingly, the third phase of achieving a balanced machining process involves determining the optimal combination of cutting conditions for a given situation. It is essential to establish a working domain where combinations provide the desired levels of productivity and economy. After the combinations are put into production, episodes of troubleshooting to solve specific problems are usually required, as well as ongoing process analysis and optimization.

Versatile Tooling

While high-performance, specialized tools can boost output speed, recognizing process constraints may prompt the choice of tools developed for versatility. When tools are selected for maximum productivity and cost efficiency in machining a specific part, a change from one workpiece configuration to another may require emptying the machine turret completely and replacing all the tools. In HMLV situations where smaller runs of different parts change frequently, that changeover time can consume all of the productivity gains resulting from use of maximum-productivity tooling.

In cases where tool performance is stretched to the maximum, some operators will reduce cutting parameters in fear of tool failure and disruption. Versatile tooling, on the other hand, is applicable across a wider range of cutting conditions than productivity focused tooling, although at less-aggressive parameters. When versatile tooling is applied to process a variety of different workpieces, actual machining may be somewhat slower or more expensive, but the reductions in setup time, scrap, and lead time make up the difference and then some.

Customer satisfaction is the goal of any business relationship, and a key element of customer satisfaction in manufacturing is timely delivery of machined components. HMLV

production scenarios put pressure on manufacturers to optimize their operations to reduce lead times and speed delivery. Applying the concepts of Quick Response Manufacturing and zero-waste and optimization initiatives enables manufacturers to achieve the speed and reliability needed to fulfill customer demands for timely delivery while also assuring manufacturing profitability.

(Sidebar) Smart People as well as smart machines

The complex and changing nature of HMLV production scenarios appears to be an excellent situation for the implementation of the latest manufacturing technology including internal digitalization via smart machines and data analytics, external digitalization via an integrated supply chain and web-based connection with customers to correlate supply and demand. The wave of new technology apparently minimizes the value of human input in manufacturing operations.

But on the contrary, the rapidly changing elements in HMLV production scenarios increase the importance of human input. The complicated operations require a form of traditional craftsmanship that involves creativity and flexibility to quickly adapt to the continually changing parts, workpiece materials and cutting conditions. Above all, manufacturing staff must have the positive mindset and motivation necessary to confront and solve the new and varying challenges presented by HMLV production.

Gaining that mindset involves ongoing internal education that demonstrates to shop personnel that

the solution to productivity issues doesn't necessarily involve large expense and high technology. The mindset includes realizing the critical importance of satisfying the customer. Lessons learned while improving an operation or a family of operations can be reapplied and expanded to include similar situations throughout an entire shop. Shop-floor experience can be supplemented with organized education initiatives such as the Seco Technical Education Program (STEP), a well-developed and practical program designed to familiarize users with the latest tooling systems and techniques.

Combining practical experience in process analysis and improvement with organized education programs is the key to establishing a culture of problem-solving and process improvement that will support ongoing manufacturing success. Complementing that education are interactive information resources such as the Seco My Pages digital portal, an online site designed to aid tool procurement and delivery, find better ways to apply tools, optimize processes, and gain engineering assistance.

In maximizing the benefits of HMLV machining, management must move away from the systemic limitations of traditional high-volume machining. It is essential to concentrate on reinforcing the role of employees in providing the mindset and creativity necessary to establish a balance between output and flexibility that will consistently assure complete customer satisfaction.

By: Patrick de Vos, MSc, Senior Consultancy Specialist & Technical Education Programmes Manager at Seco Tools



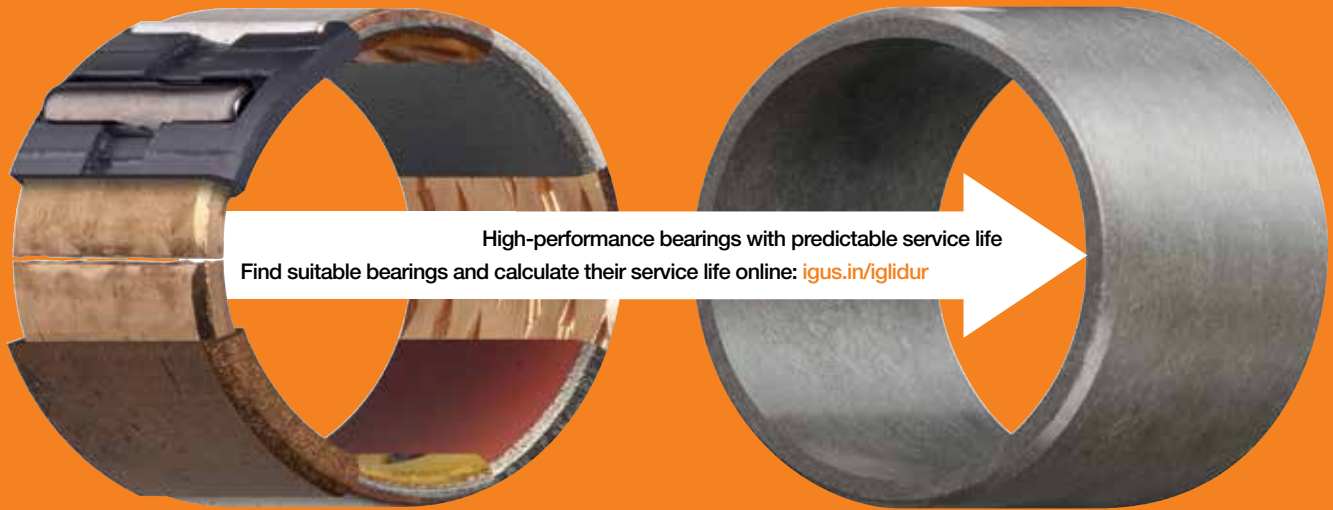
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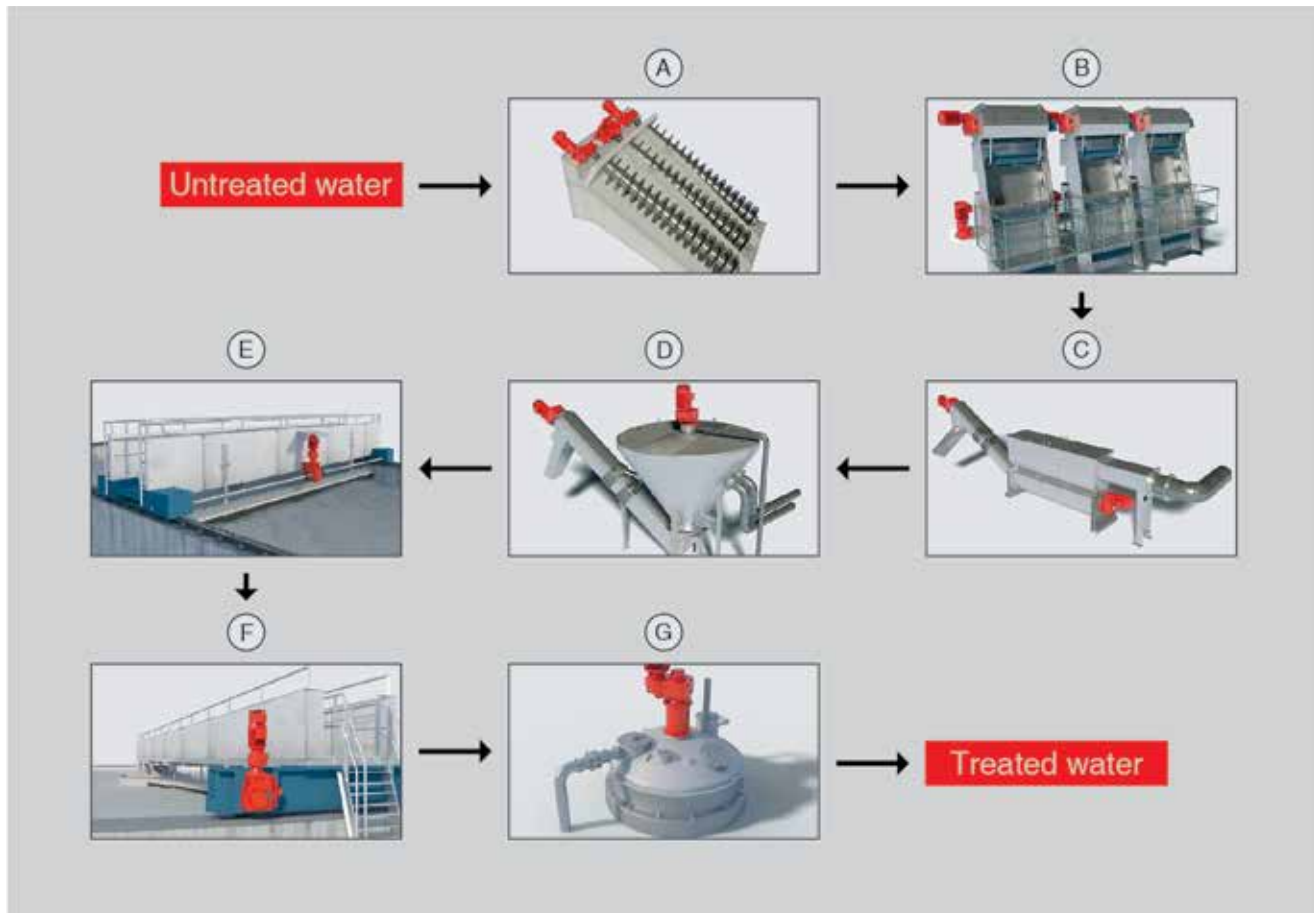
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- Ask the service engineers how you can keep your stock of replacement drives and spare parts to a cost-effective minimum.
- Increase your plant availability through forward planning. Ask your service engineers how.

(B) Screening system and wash press feed.

The waste water in the screening system is first coarsely cleaned and larger solids removed. Next, the filtered substances are transported by screen cleaners for further processing. SEW's parallel-shaft helical gear units are used in combination with an AC motor. Designed slim, these use very less space and are meant for long-term use.

(C) Screening treatment.

The wash press is fed directly through the screen or using a conveyor. A solid shaft screw then moves the screenings into the wash area, where faecal matter is removed with a washboard and friction process. Then water is separated out in the pressing zone. This process uses SEW-EURODRIVE parallel-shaft helical gearmotors and helical-bevel gearmotors and frequency inverters.

(D) Sand trap with scraper and grit classifier.

The flow-rate of the waste water is slowed in the sand trap, allowing the heavier materials to settle. These are pressure fed into the grit classifier, where the tangential inflow makes the water rotate, so that heavy materials sink into the funnel tip. SEW-EURODRIVE's helical-bevel gearmotors are most used in the sand

trap, as the gearing is designed for high-torque drives for long continuous usage, and are wear-free.

(E) Primary sedimentation with scraper.

Since the waste water flows very slowly, even light particles could settle in the primary clarifier. For these to settle, the flow-rate must be reduced to 0.015 m/s. SEW-EURODRIVE's helical-bevel gearmotors are used in primary sedimentation, and they are durable enough to be near wear-free even in continuous operation.

(F) Final sedimentation with scraper.

Further flow-rate reduction enables sedimentation of settleable substances, and saturated microorganisms settle in the final clarifier. This sludge is pushed, along with a slide feed, and discharged through a funnel in the middle of the basin. SEW-EURODRIVE's helical-bevel gearmotors are used here as they are ideal for moving heavy loads over long time periods.

(G) Digestion tower.

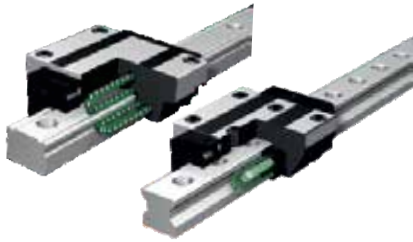
Some sewage sludge is the unavoidable by-product of any waste water treatment process. This sludge produces gas in the digestion tower, which is converted into heat. For an optimal digestion process, the temperature in the tower must be kept at 36 to 37 degrees. Compact drive solutions are needed, which is why SEW-EURODRIVE's parallel-shaft helical gearmotors are often used at this stage.

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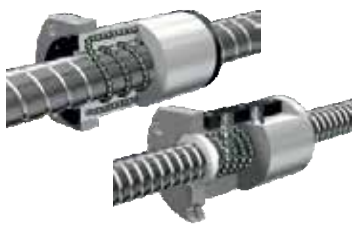
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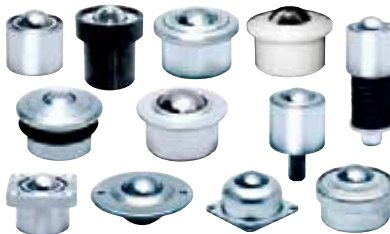
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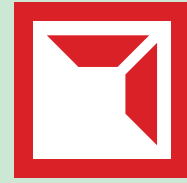
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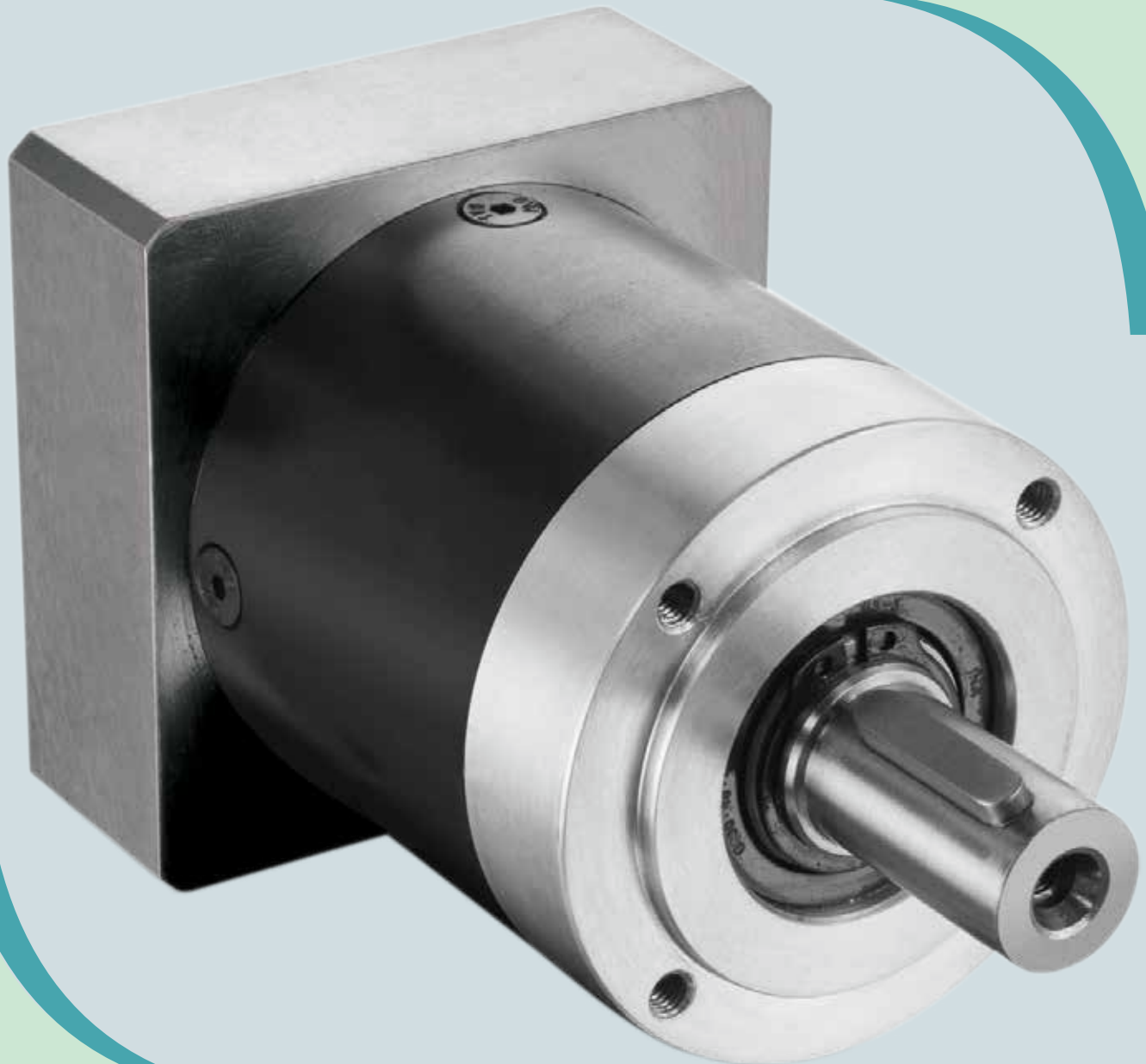
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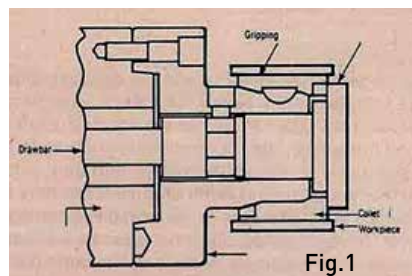
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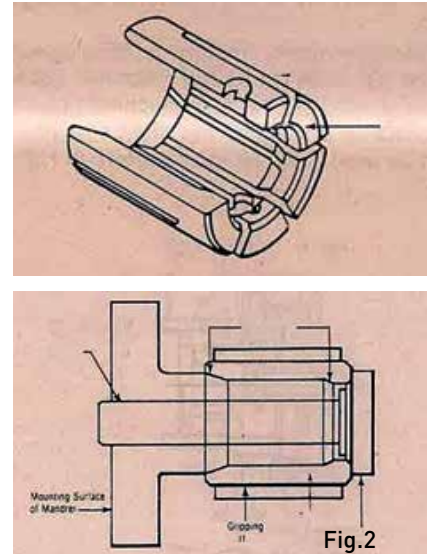
Considering the problem of large-diameter workpiece with a small ID mounted on the solid mandrel. The torque generated when cutting on the relatively large OD creates a slippage problem. Likewise, a short-length ID creates a problem of holding the workpiece square / perpendicular to the centerline. The use of end drivers / End Locators, or other assists to gain either holding capability or to insure part accuracy may create a problem of machining end surfaces. In addition, serrated or tooth-type end drivers could leave marks on the ends of work pieces. Simply stated, the answers are found in a wide range of mandrel designs and applications that have been developed to meet virtually every need. However, these items are not always known to those who face a new problem.

With the very simple plug-type solid mandrel, which can be very effective when used with certain types of work pieces. Its strength lies in its very simplicity. It is nothing more a plug of suitable length with a threaded end upon which is slipped a work piece which is then bolted into place with some kind of an end clamp. Its weaknesses are twofold. The first is the inability to accommodate work pieces with any variation of inside diameters. For example, if the plain plug mandrel is 25mm in diameter & customer components location bore size is 25.50mm i.e. over size by 0.5 mm... work piece can not be clamped. It obviously, would locate off center due to its own weight, and concentricity between the ID and OD would be lost. Secondly, any kind of an end clamp either covers part of the work piece end, which may be a machining area, or end drivers may leave unacceptable indentations on the work piece. Most machines are equipped with the standard mounting shown in Figure 1.



The spindle nose has a 7 1/2-degree taper and holds the mandrel plate to the nose with bolts. BPTs mandrels are suitable for ISO Std Spindle Nose A2-5"/A2-6"/A2-8". Through BPT Standard Adaptor plates. As stated, the simple plug-type solid mandrel cannot cope with any variation of workpiece ID. So

the most prevalent approach is the use of an expanding -sleeve mandrel as shown in Figure 2.



Although most applications do involve lathes, there are plenty of examples whereby round work pieces are held on machining-center and milling-machine tables. The drawbar principle can be applied to non rotating work as well it is variation for use in a non rotating application. These are often powered by shop air and they can develop several tons of drawbar pressure. There are two things to keep in mind about the drawbar and expanding sleeve or segments. First, a preload pressure is always maintained. Even when the drawbar is released, it never moves forward so far that the slope of the sleeve loses contact with the slope of the mandrel body. Secondly, while expansion is achieved with air or hydraulic pressure, the return is achieved with springs built between the mounting and mandrel plates.

*For more information
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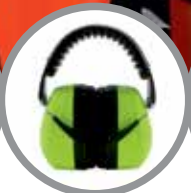
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DEALERSHIP ENQUIRIES SOLICITED

5G: Is the Industry ready?

Latest research from HMS Networks shows that half of the industry professionals are clearly positive about 5G in manufacturing and see it as a way to obtain universal connectivity

HMS Networks, one of the leaders in solutions for industrial communication and IIoT, surveyed 50 international industry professionals to inquire about the positioning of wireless communication in their companies and to see how they are getting ready for the launch of 5G. HMS' whitepaper titled "5G: Is the Industry ready?" presents the results of this study and provides state-of-the-art insights into the current situation in the manufacturing industry in terms of 5G preparedness.

The whitepaper from HMS Networks provides an overview of the industry's opinions towards 5G technology as an emerging trend and future standard in the manufacturing and industrial automation industry. It also touches on the use of wireless technologies in the industry today and future directions of this technology.

Key findings include:

- More than half (54%) of the interviewees indicated using wireless communication solutions for remote monitoring and remote operation of assets. One third of the respondents (34%) stated that their companies were using wireless communication for different kinds of IIoT.
- Half of the interviewees (48%) were clearly positive about 5G in manufacturing – they mostly appreciated that the technology will replace cables, unreliable Wi-Fi, and the many industrial standards in use today.
- For the majority (58%) of the



respondents, the reliability and robustness of wireless systems plays a decisive role in whether to adopt 5G or not, and this was voiced equally by representatives of OT and IT. Low latency was mentioned as important by more than a quarter (26%) of the interviewees.

"The survey clearly showed that the industry is getting increasingly aware of 5G benefits for industrial communication. What the industry really needs is technical information and practical examples" says Marcela Alzin, Program Manager at HMS Labs at HMS Networks, who conducted the research. "This is why I created a fictional model of a typical OT professional and his attitude towards 5G. This should help to better understand the situation on the market."

About HMS Networks

HMS Networks is the leading independent supplier of solutions for industrial communication and the Industrial Internet of Things. HMS develops and manufactures products under the Anybus®, Ixxat® and Ewon® brands. Communication

solutions for building automation are offered through the subsidiary Intesis.

Development and manufacturing take place at the headquarters in Halmstad, and in Ravensburg, Nivelles, Igualada and Wetzlar. Local sales and support are handled by branch offices in Germany, USA, Japan, China, Singapore, Italy, France, Switzerland, Spain, India, UK, Sweden, Finland, South Korea and UAE, as well as through a worldwide network of distributors and partners. HMS employs over 600 people and reported sales of SEK 1,366 million in 2018. HMS is listed on the NASDAQ OMX in Stockholm, category Mid Cap, Information Technology.



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How autonomous drones are transforming mining operations

Percepto demonstrated how a drone-in-a-box can improve monitoring, inspection, surveying, compliance, safety and security at Smart Mining 2.0

Percepto, the global market leader for autonomous industrial drone solutions, shared how mining operations around the world are harnessing its multi-mission Drone-in-a-Box (DIB) solution to improve monitoring, inspection, security, safety and compliance. The event which focuses on transformational technologies in the mining sector took place in Toronto on 19-20 September.

Accessing essential data at a mining operation often involves personnel climbing on stockpiles with GPS equipment, 3D imaging and laser inspection, or hiring manned aircraft to fly over sites. The mining industry has been quick to recognize that drones offer a viable alternative to these costly and laborious processes. At Smart Mining 2.0, Percepto demonstrated how the next generation of autonomous artificial intelligence powered DIB are able to collect, capture and analyze more data across more applications much faster, and at greatly reduced cost.

Chief Commercial Officer & Co-Founder of Percepto, Ariel Avitan, explained, “Conducting site surveys, routine noise and dust pollution assessments, daily inventory and equipment checks, perimeter security patrols and production forecasts can all benefit greatly from the rich sources of aerial data and insights that our multi-mission DIB are able to capture and transform into meaningful insights.”

Autonomous drones also minimize risk associated with confirming the clearance of safety zones ahead of planned explosions, as well as



providing real-time situation monitoring in the case of an emergency. Ariel also notes how drones are supporting the increasing use of driverless vehicles: “Drones can assess large sections of roadways quickly and immediately notify personnel of any obstacles that may impede or damage vehicles and slow down operation.”

At Smart Mining 2.0, Ariel demonstrated how Percepto's autonomous drones are making the benefits of drone technology more accessible for mining companies around the world. He added, “Mining companies have been quick to recognize the potential of the technology to transform their operations, however the operational expense and availability of skilled pilots has proven prohibitive. With Percepto, once the DIB is deployed the only cost is the electricity to power the system.”

About Percepto

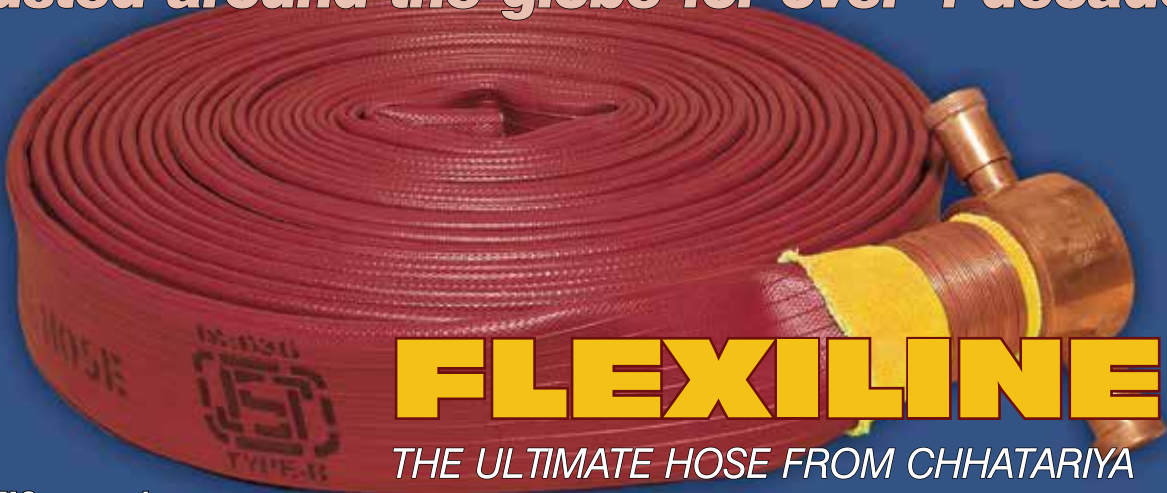
Founded in 2014, Percepto is the

market leader of on-site autonomous drone solutions for critical infrastructures and industrial sites. Operating with no need for human intervention, Percepto's autonomous Sparrow drones perform multi-missions, around the clock. The solution is ideally suited to any large-scale enterprises looking to improve security, increase productivity and reduce safety risks and operational costs. Organizations using the Percepto solution are better aware of events taking place, allowing them to be proactive and more efficient in addressing risks and operational needs. The Percepto Solution is currently in use around the world including Enel in Europe, as well as a number of Fortune 500 organizations. The company is the recipient of the Frost & Sullivan Global Enabling Technology Leadership Award.

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Portescap has come out with a new line of standard prototype motors for surgical applications. These 15 motors represent Portescap's new SM series of surgical motors designed to meet the demanding requirements for surgical devices at a more cost-effective price point. These motors leverage Portescap's market leading sterilizable design approach and surgical application expertise to provide a more affordable and consistently reliable solution for surgical device makers.

These motors have been optimized for Powered Staplers, Large and Small Bone Orthopedic Tools, Arthroscopic Shavers, ENT Microdebriders, and High-Speed Neuro Drill applications. They are also well-suited for traditional surgical tools, as well as for robotically assisted surgical devices and can be paired with a Portescap sterilizable controller for battery powered applications.

Portescap is one of the leaders in sterilizable motor technology. Thanks to decades of develop-

ment and millions of surgeries in the field, Portescap motors have the proven capability to deliver exceptional surgical results under the most demanding conditions. Portescap's cost-effective SM motors have been designed and tested to withstand 500+ sterilization cycles. These small motors range in diameter from 0.5-1.23 inches, speeds up to 97K RPM, and torques up to 17.5 oz-in. They are lightweight with low noise and vibration to maximize tactile response and surgeon control in the most delicate of surgeries.

Standard prototypes are available within two weeks, enabling Portescap's partners to begin testing quickly and shorten their time to market. Portescap's R&D engineers are well-versed in medical device integration and are eager to collaborate – for partners needing custom solutions, Portescap can optimize a design to meet the exact requirements of the application.

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Grundfos India provides access to clean water in Tamil Nadu village

In partnership with an NGO, Grundfos India is providing clean drinking water to more than 1,450 villagers residing in Maiyur Panchayat using sustainable solutions

Pump solutions and water technology firm Grundfos is providing access to clean drinking water to more than 1,450 villagers in Maiyur Panchayat, Tamil Nadu. This initiative is being carried out in partnership with Hand in Hand India, a leading international non-profit organization.

The villagers in Maiyur Panchayat consisting mostly of labourers were struggling to get water daily. Some of them even walking more than two kilometers a day to fetch water. Grundfos India through its Corporate Social Responsibility (CSR) initiative has sponsored a complete drinking water system, including the erection of drinking water bore well, installation of solar operated pump and storage tank arrangement for controlled water use. Through this, more than 290 households have been positively impacted and their dependency on external sources for drinking water

has reduced extensively. Grundfos India has been working to improve access of clean water in hundreds of villages in India.

The Maiyur Community Drinking Water Project was inaugurated by Mahathi Parashuram, Regional Head Public Affairs, Communications & Engagement, Grundfos Asia Pacific Region, Sandip Mookerjee President, Hand In Hand India and some local village community leaders.

Speaking about the initiative, Mahathi Parashuram said, "Water is a key focus for us at Grundfos. Providing access to water to rural communities through our CSR initiative also directly aligns to our goal of supporting UN's Sustainability Development Goal 6. Through this initiative, not only are we bringing safe drinking water closer to the community, we are helping improve health, hygiene and quality of life of these families. In the long run, this water access is

also helping women as they no longer have to spend hours fetching water—giving them a chance to work and earn more, enabling girls to return to school and reduce health costs of the community."

Sandip Mookerjee, President, Hand in Hand India, also added, "While we at Hand In Hand India work closely on addressing drinking water issues across communities through our Integrated Village Upliftment Programmes. This is only possible through the close collaboration with companies like Grundfos India. We have been working with Grundfos India over the last few years and have seen their dedication to improve the lives of people through the access to clean water."

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Translating between System Worlds

Flexible connection of industrial networks



“Hilscher offered a highly flexible solution in a compact format that came with an easy-to-use programming tool for fast configuration.”

Rogelio Hernández,
Automatism Project Leader
Schneider Electric Argentina



Project at a glance

- Company: Schneider Electric
- Solution: High-End Gateway NT 100
- Country: Argentina
- Key Contact: Rogelio Hernández
- Timeline: 12 Months

Sometimes great solutions come in a surprisingly small package. Such as the Gateways of the netTAP series from Hilscher. At a lithium carbonate processing plant in Argentina they proved to be a cost-effective solution to integrate proprietary protocols into the automation system.

Schneider Electric is a global player that takes a leading position in fields such as electric energy supply, process automation and control systems as well as building management. The company has some 170,000 employees worldwide in more than 100 countries.

Schneider Electric Argentina Services is an Argentina based subsidiary of Schneider Electric which is primarily engaged in the realization of industrial process automation projects.

One of the customers of Schneider Electric Argentina was a mining company located in the Jujuy province of Argentina.

The company recently started

operating a plant for the production of primary lithium carbonate. Lithium does not appear as a pure element in nature but is contained in either specific rocks or in mine bodies within salt lakes (salars). For the production of lithium carbonate, the mining company exploits a large salt lake located in northern Argentina. The newly erected plant for mining and processing is located at high altitude with corresponding low temperatures, as well as low oxygen and air pressure levels. The plant covers a large area and consists of several sub-plants.

The process plant uses third party controllers to monitor field IOs and other devices that are connected via a PROFINET communication infrastructure. For a large number of sub-processes throughout the plant the mining company decided to obtain **variable frequency drives (VFD - ATV71)** and the related **Motor Control Cells (MCC - M340)** from Schneider Electric. These Schneider MCCs are equipped with



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Motor Control Cells M340 - Schneider Elect

a communication front end that uses Schneider's proprietary protocol to communicate with their IOs.

Dilemma between system worlds

In order to establish seamless process control to drive the automation system of the plant and its sub plants, Schneider Electric's customer wanted to integrate a solution to monitor and control the MCC field IOs complementary to the VFD control. This required some type of solution to translate the proprietary IO signals into the standard PROFINET protocol used throughout the plant.

In other words, Schneider Electric was confronted with a requirement that initially seemed to be anything but trivial. One option that the project team identified involved exchanging all IOs by other

PROFINET compatible devices. But this approach was quickly discarded because it proved to be much too cost-intensive for the customer. Another approach would involve a rather complex integration into the MCC standard communication front end of the company. In other words, although both solutions were generally feasible, they also involved considerable drawbacks. After all, seamless integration of the Schneider Electric motor control cells and variable frequency drives called for creating a communications bridge between two protocol worlds.

The automatism team at Schneider decided to start a comprehensive market analysis. They communicated with various vendors to find a cost-effective solution for this particular project and eventually ended up with **Hilscher**. The German company headquartered in Hattersheim in the southwest of the country has more than 230 employees in 10 countries worldwide. The company focusses on development and production of industrial communication solutions for Fieldbus and Real-Time Ethernet as well as on ASIC technology for

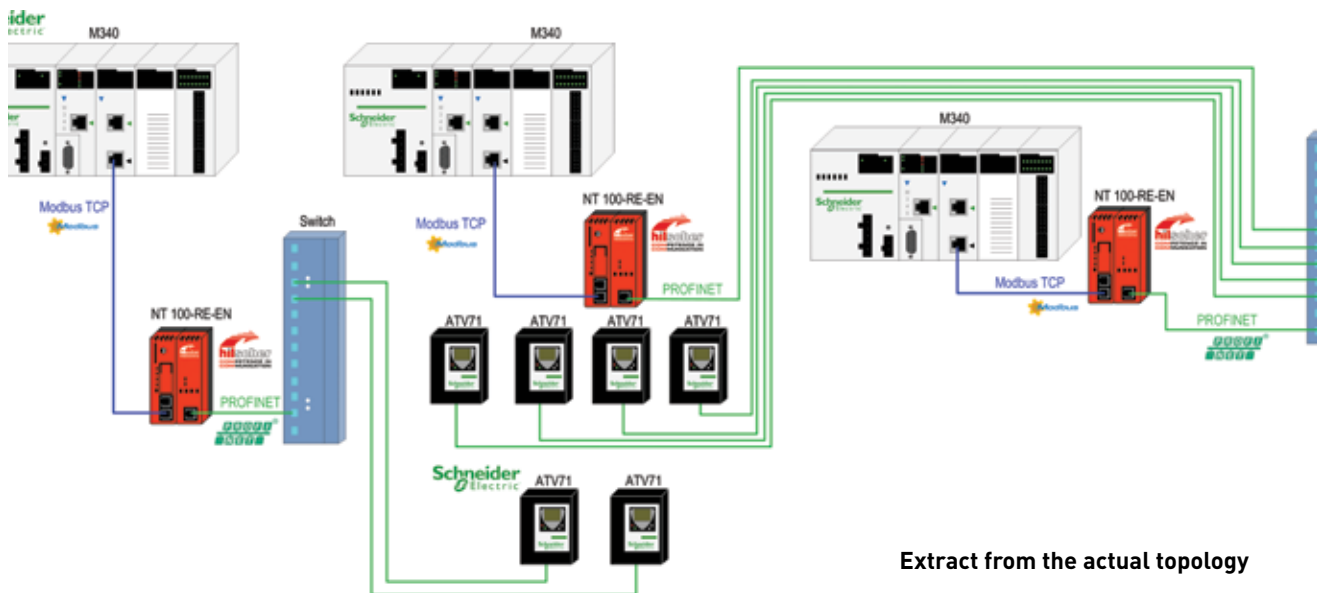
- Easy-to-use programming tool for fast configuration
- Greatly simplify any implementation
- Cost effective way to synchronize communication protocols with the open PROFINET world

modern factory automation.

"Hilscher offered a highly flexible solution in a compact format that came with an easy-to-use programming tool for fast configuration," Rogelio Hernández, Automatism Project Leader at Schneider Electric Argentina justified the solution he recommended Project Manager Edgardo Enz to this mining plant project.

Translating between protocols and systems

The product that fulfilled all the requirements of the Argentinian process plant was the **NT100-RE-EN Gateway** of the Hilscher netTAP 100 range. This high-end Gateway was especially designed for demanding conversions. It is a highly versatile PROFINET IO Controller to EtherNet/IP adapter.



Extract from the actual topology



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It supports slave and master functionality in any combination. Apart from standard protocols, the Hilscher netTAP 100 Gateway **NT100-RE-EN** supports the creation of serial protocols with the help of the Lua-based scripting language netSCRIPT. The Schneider Electric project team was able to use a fully featured development environment that came as a standard feature of the package. It allows comfortable and rapid programming of any proprietary serial protocol as well as the IO data pre-processing during the conversion into another field protocol.

For mining plant, the Hilscher solution proved to be a very cost effective way to synchronize the Schneider Electric communication protocols with the open PROFINET world. It allowed the company to use the variable frequency drives (VFD) and the related Motor Control Cells (MCC) from Schneider Electric with proprietary IO communication and still establish seamless process control from the PCS all the way down to field device level.

Solution with future options

The mining process plant automation project proved to very

“By extension, this solution can be used with any process controlled via PROFINET that needs to interact with the Schneider automation platform.”

Rogelio Hernández,
Automatism Project Leader
Schneider Electric Argentina
Motor Control Cells M340 -
Schneider Electric

time consuming. After producing the MCCs that needed to be tailored to the specific application, a comprehensive factory acceptance test (FAT) was required. After that, the equipment needed to be transported from the factory to the remotely located site of the lithium carbonate production plant. After assembly at the plant, the complete automation system had to go through a site acceptance test (SAT).

The Hilscher Gateway considerable added to an accelerated system implementation and proved to be a highly flexible solution that is open for future expansion and added functionality.

“We were able to establish a standard way to integrate our M340 platform with PROFINET controllers, so they can act as remote IO for any type of PROFINET controller,” Rogelio Hernández commented on the solution and added: “The Gateways greatly simplify any implementation that involves the use of Schneider MCCs in combination with VFD, soft starters or any direct outputs.”

He also sees future applications that can be realized in a fast and efficient way: “By extension, this solution can be used with any process controlled via PROFINET that needs to interact with the Schneider automation platform.”

The UL certified Hilscher Gateway PROFINET IO Controller to EtherNet/IP Adapter is an inconspicuous device that measures only 100x52x70 mm and matches the DIN rail of any standard switching cabinet. Yet, it is a highly



versatile component that can be programmed easily to match any application calling for process control signals to be translated between system worlds.

You want to get information about our Gateway solution?

netTAP 100 is the protocol converter for sophisticated conversions and, in addition to serial/fieldbus to two port Real-Time Ethernet conversions, it also supports fieldbus to fieldbus conversions and it supports slave and master functionality in any combination. There are no restrictions on the master functionality which requires a master license.



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Jayant Group of Companies is **ISO 9001:2015** Certified Company & promoted and run by young experienced entrepreneurs belonging to well established industrial groups and is engaged in trading of quality products.

We are one of the largest Stockholders for **Bars, Billets, Blooms, Rods, Squares & Flats.**

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Alloy Steel	F-5, F-9, F-11, F-12, F-22, F-91, EN19, EN24, EN-36C, SAE 4130, SAE 4140, SAE 8620, 42CrMo4, 25CrMo4, 15CDV6, 34CrNiMo6, 18CrNiMo6-7, 17CrNiMo7-6, S355, S235, Etc.
Carbon Steel	SA105, C45, C60, EN-8, EN-9, SAE 1144, LF-2, Etc.
Stainless Steel	SS410, SS416, SS420, SS431, SS446, SS303, SS304, SS309, SS310, SS316, SS317, SS321, SS347, 17-4Ph, SS31803 (Duplex), 2205 (Duplex).

We also are Stockholder for **Fasteners** and currently catering various different industries as per their requirements.

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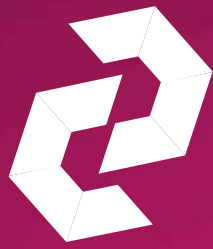
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Supreme Industries speeds the development cycle with 3D printing

With the Stratasys uPrint SE Plus 3D printer, the company has been able to reduce product development time and cost and improve quality

Founded in 1942, Supreme Industries Limited (Supreme) is a leader in India's plastics industry. The company handles a volume of over 320,000 tons of polymers annually, which makes it the country's largest plastic processor.

Supreme offers a wide range of plastic products with a variety of applications in molded furniture, storage and material handling products, PE (Polyethylene) films and products, performance films, industrial molded products, protective packaging products, composite plastic products, and many more.



Using Technology to Improve the Prototyping Process

Supreme's new product development initiatives are key to its success. The company relies on cutting-edge technology for a fast product development cycle, ensuring that time-to-market deadlines and product quality benchmarks are always met. Prior to 2015, the



These stacking monobloc chair models were 3D printed in ABS material to check the viability of the design.

company resorted to manual prototyping during product development. But this method posed a unique set of problems in terms of time, cost, and quality. Manual prototyping is prone to human error, and necessitated rework in many instances. This increased product development time and cost estimates, upsetting the company's time-to-market targets.

To avoid the unpredictable nature of manual prototyping and add stability to the process, Supreme moved to standardize its prototyping efforts. The company also wanted to maintain design confidentiality by keeping product design in-house. To achieve these objectives, the company invested in 3D printing, which also promised to reduce product development time and cost and improve quality. To select the appropriate 3D printer, the Supreme Design Center team estab-

“The 3D printer has helped us reduce cost of error, time to market, and identify design flaws at an early stage.”

Aniket Suryawanshi –
Executive Product Designer
– Supreme Industries



A prototype water spray nozzle 3D Printed in ABS material to validate the nozzle size and flow capacity to withstand the speed of water.

lished specific criteria. 3D printed parts needed to be tough, have a smooth finish and fit seamlessly with mating parts.

Preventing Prototyping Obstacles

Since the installation of Stratasys uPrint SE Plus 3D printer, Supreme's design department uses it extensively to fulfill various prototyping needs. The team uses 3D printing for design verification, marketing approvals of new products, and assistance in mold and tool development. By printing dimensionally and geometrically precise prototypes, the 3D printer also improves internal communications and client demonstrations. For example, the marketing team printed a diverter part in ABS material to use for promotional activities and demos with clients. Diverter parts are used in bathroom fittings to mix hot and cold water. In another example, the R&D

department 3D printed scaled-down versions of monobloc chairs to see whether they stack with each other. The models also helped confirm the chairs are safe by ensuring they do not have sharp edges that could hurt users. Additionally, the team 3D printed a water spray nozzle prototype to validate the size of the nozzle and the maximum speed of water it can withstand.

Supreme uses ABS material for all its prototypes as it gives the required strength for functional testing. Also, the marketing team can easily demonstrate these prototypes to their clients and better explain product functionality.

The printed parts are accurate and display fine product features, key benefits for proving the product's intended fit and function. The team also uses the 3D Printer to make butterfly valves, furniture parts and taps. They subject all printed parts to stringent functional tests for per-

formance validations.

With in-house 3D printing, Supreme has been able to utilize the machine with ease and speed. On average, the team prints a prototype only in three hours, which used to take three days through the manual process. With the hassle-free, fast, and user-friendly 3D printing process, the team saves 90% time and produces durable, high-quality parts ideal for product design validation.

For Aniket Suryawanshi, Executive Product Designer at Supreme, the 3D printer has been a valuable addition. "The 3D printer has helped us reduce cost of error, time to market, and identify design flaws at an early stage."



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- Relative humidity : 80% at 25 deg. C
- The compact construction integrates the filter, extraction arm



and fan

- The filter can be used at workplaces unreachable to other ventilating equipment, &
- The filter requires connection to a general compressed air supply.

The standard delivery set includes Built-in fan, Control console, Filtering cartridge of respective type, Spark arrester, Oil separator with reduction box for compressed air system, and Electrical grounded cable L= 5 m with plug.

For more information :

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GEM's Bottle Type FRP Cooling Tower

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aluminium body, epoxy painting, SS shaft and EPDM sealing; saves power; highly reliable and built to last.

- RTM Mould body, UV protected and with glossy finish
- FRP Louver profile reduces water spillage loss, prevents entry of foreign particles and extends cycle for blow down. Also proper L/G reduces evaporation loss.
- High Efficiency Aero Dynamic Fan: Axial flow, direct driven, low noise, long life, corrosion-free aluminium, computerized balanced



and wind tunnel tested.

- Revolutionary Spiral Fills: Rigid PVC – with long life, clogg-free and ease of assembly. UV stabilized
- The product is offered to the customer with a 5-year warranty – for the first time in India.

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Steady Volt Servo Voltage Stabilizers

Frequent voltage variations are a menace that can damage electronic components like power supplies, drives, PLCs, controllers, etc. Their effects are widely felt in CNC, printing and textile machines as well as laboratory, data processing, medical & telecommunication equipment. Frequent breakdowns of such machines are costly to repair. This apart, the downtime and frequent interruptions in operation



brings substantial loss of revenue. Steady Volt from Unity Controls is a state-of-the-art Voltage Stabilizer designed to protect such equipment from voltage variations & its ill-effects.

Following are some of its unique features:

- Intelligent

microprocessor-based system(available in new digital models)

- Digital interface with large LCD display and keypad
- Auto re-start, adjustable output voltage, trip bypass, fault list
- No hunting, oscillation and noise generation
- Innovative transformer design to minimize power loss
- Constant output voltage across a wide input voltage range

- Single phasing prevention, surge suppressor and EMI / RFI filter

With the best-in-class response time and correction rates, Steady Volt offers improved power quality and greater energy efficiency, thereby saving the cost of breakdowns and energy utilization. Apart from protecting your equipment from damage, Steady Volt also saves energy during continuous operations.

For more information

Unity Controls Pvt. Ltd.

405, Sapphire Arcade, 42 M.G. Road, Ghatkopar (E), Mumbai 400 077

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Self Adhesive Profiles



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ADVANTAGE OF EPDM SELF ADHESIVE STRIP:
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peel off the self-adhesive backing. The adhesive backing tape used is not fully resistance to water, therefore where there is a large amount of moisture or water present; it is advisable to use plain

expanded EPDM and a good conduct adhesive. EPDM provide excellent resistance against oil, acid, alkalis and has good weathering against heat and ozone.

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/tæki.on/ or tachyonic

noun

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