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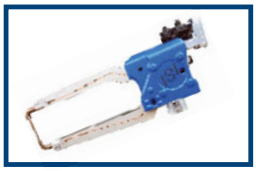

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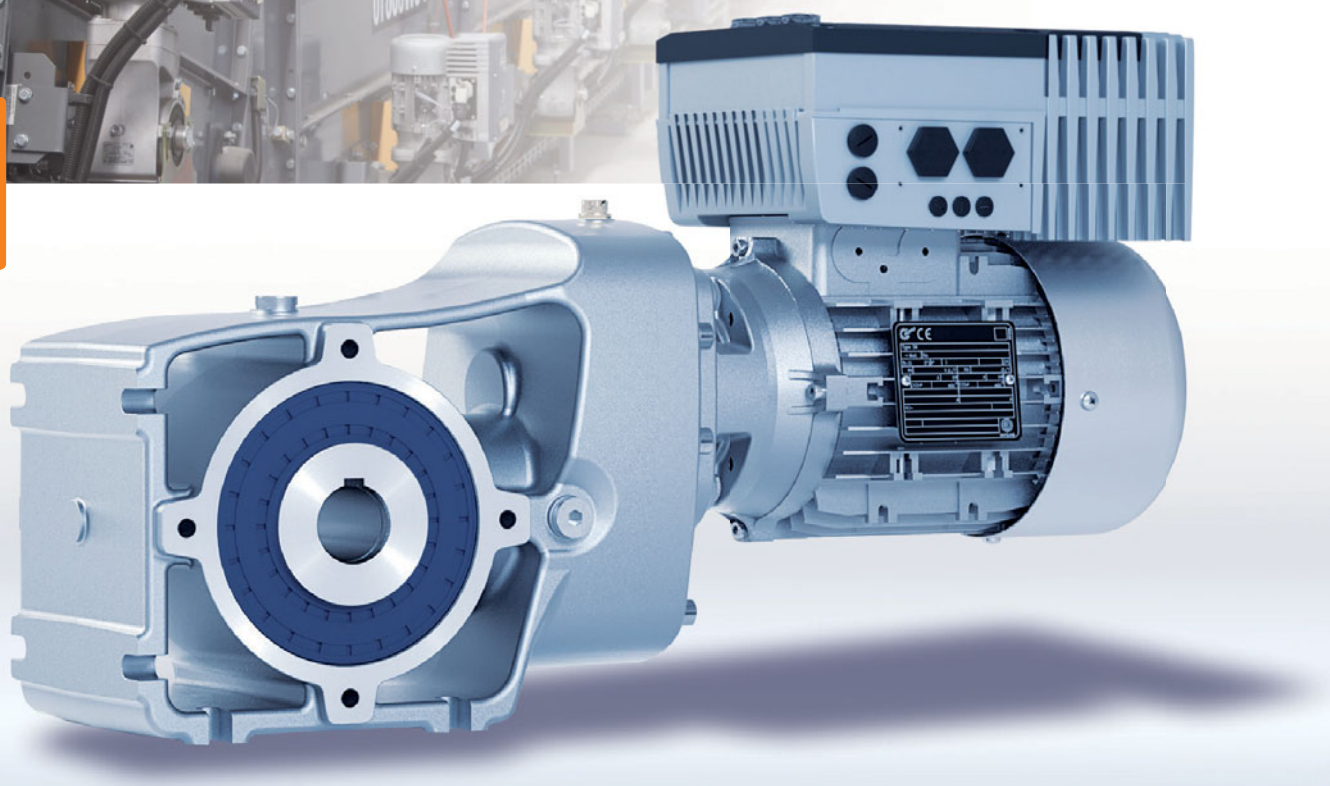

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EDITOR'S NOTE

Smart and agile: The future of manufacturing

The fault lines of depending on one country (read: China) by multinational companies (MNCs) were clearly visible when Covid 19 pandemic disrupted their supply chain. The need to look for an alternate manufacturing hub was felt even before the pandemic stuck with developed countries asking their companies to shift or diversify sourcing away from China due to political reasons. While Japan has budgeted about Yen 23.5 billion (about $ 225 million) for companies moving production to countries other than China, South Korea and Taiwan have announced incentives to shift production from China.

Amid this tectonic shift in supply chain, many global companies are looking at India as a possible replacement for China. But to take advantage of the opportunity, Indian companies will have to increase their relatively low productivity - especially among the small and medium enterprises (SMEs) - by modernising their manufacturing processes and facilities. Though adoption of automation in India is growing, it is still very low compared to other countries. Take the example of robots. The robot density (i.e. number of robots per 10,000 employees) in India is just 4 compared to the global average of 99. Availability of cheaper labour and high cost of automation are two major factors for this.

Experts believe modernisation can be cost-effective for SMEs provided they undertake partial automation for processes (identified as bottlenecks). Many global companies like Tesla have shot themselves in the foot by trying to over-automate their factories and creating inefficiencies. Process automation applications, like Robotic Process Automation (RPA), create a new category of opportunities for efficiency and productivity improvement, ie incremental automation. SMEs can simply integrate RPA with their existing machines, systems and processes without making any big changes with low investment.

The optimal level of automation requires a balance of human and machine skills. Human skill is underrated, and partial automation like collaborative robots (cobots) gives the perfect opportunity for employees to utilise their talents to their maximum potential. Cobots are not necessarily cheaper (though they are likely to become), but their size and ease of doing business with them make them darlings of factory managers.

The Covid 19 pandemic has given a rise to many new ground realities such as plant closures, staggered shifts due to social distancing, labour shortages and stringent hygiene measures. Pandemic is arguably making companies automate their workforce faster than expected. In fact, according to a World Economic Forum (WEF) study, firms with operations in India are accelerating their automation and digitisation above the global average. While 58 per cent are accelerating automation of tasks (compared to 50 per cent globally), as many as 87 per cent are accelerating digitalisation of work processes (above the global average of 84 per cent).

In time of uncertainty, manufacturers have no option but to implement effective changes in production and deploy the right, smart and agile automation solutions as quickly as possible to stay competitive in the market.

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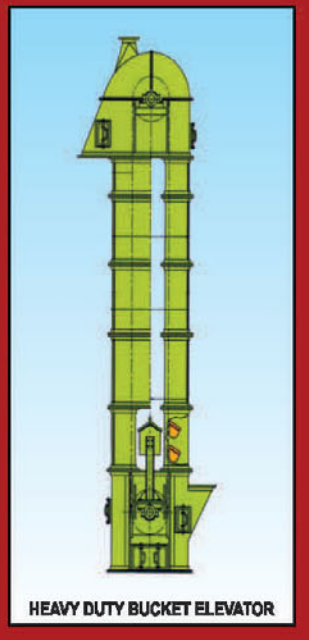
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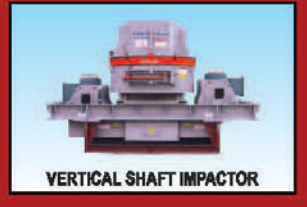
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Industrial automation taking a firm grip post-Covid

The global supply chain is set for a tectonic shift with big corporations looking for an alternative to China for manufacturing their products; thus, opening up trillions of dollars of opportunities for countries looking to attract investments. Faster adoption of automated solutions, aided partially by Covid 19 pandemic, can help India emerge as a winner in this situation, says Rakesh Rao.

Covid 19 pandemic has exposed vulnerabilities of multinational companies (MNCs) dependent on one country (read: China) for their sourcing requirement. Pandemic has only reinforced the thought of diversifying the supply chain in the minds of MNCs. Much before the pandemic stuck, the need to look for an alternate manufacturing hub away from China was felt due to the simmering trade war tension between the world's two largest economies - US and China.

Shifting manufacturing bases away from China has also been facilitated by the government policies. Japan, Taiwan and South Korea have already announced incentives for their companies to shift production from China to home country or countries other than China. According to Tulsi Jayakumar, Professor, Economics & Chairperson, Family Managed Business at Bhavans SPJIMR, it would take $ 1 trillion of capital expenditure spread over five years to move all manufacturing not meant for China outside of that nation.

How prepared is India?

Tectonic shift in supply chain will not be possible without automation aid. "From transformative mega trends to geopolitical chaos, there are several factors making it increasingly difficult to grow. In the near term, companies should focus on diversifying supply chains and leveraging new opportunities arising from changing customer demands. In the long term, it is important to internally adapt to new technologies that support workplace and operational continuity to have a smoother transformation during recovery," said **Murali Krishnan, Visionary Innovation Group Senior Industry Analyst at Frost & Sullivan,** in a report.

In an attempt to restructure supply chains, companies from the developed economies are looking at countries like India as a possible replacement for China. "Indian industries are now able to compete in international market due to their high-quality products at cheaper price. Therefore, a lot of global multinationals are shifting their manufacturing base from other countries to India. We have an added advantage as large percentage of our work force can speak English. To capitalise on this trend, Government should give emphasis on extending more facilities like faster clearance process, cheaper land and some tax holiday at least for first few years. Some states in India have already changed their policies to attract overseas investment," opines **Biswajit Mitra, Managing Director, Techtran Electronics India Pvt Ltd.**

But to take advantage of the opportunity, India will have to increase its relatively lower productivity, especially among the

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SMEs, by modernising their manufacturing processes and facilities. “Modern manufacturing technologies are necessary for precision, quality, new ways of human-machine interaction and improved safety, less time more productivity, less failures and defects, ability to collect and analyse data like never before, and changing the operating patterns of machines to achieve the optimum efficiency and a higher quality product at a lower operating expense. Automation, robotics, Industry 4.0, IIoT are the way forward for manufacturers to gain competitiveness,” says **Dr Girish Rao, Chief Executive Officer, HARTING India Pvt Ltd**.

So, will automation and digitalisation gain momentum due to Covid? Yes, says **Dr Umesh Mhatre, Director, Surface Modification Technologies Pvt Ltd (SMT).** He adds, “Rather this is the positive impact of Covid 19. This will accelerate the momentum of Industry 4.0 revolution.”

Manoj Dunung, Managing Director, Weidmueller Electronics India Pvt Ltd, adds, “I think Covid 19 will give the issues another boost. We can see this from the demand of our customers. The setting up of machines and plants or even entire production lines with the aid of augmented reality (AR), the remote monitoring of machines and plants and also the increase in efficiency with the aid of automation technology has gained in importance here.”

However, Biswajit Mitra has a different view. He says, “The labour cost in India is still cheaper compared to other developed countries in South-East Asia. Unless the volume of demand is very high, most of the manufacturers will remain in manual operation instead of fully automated process. If anyone wishes to implement complete automation in their production line, the business volume has to justify to calculate the RoI. I don’t think, Covid has any impact in any change in manufacturing process. Some of the industries are suffering for different reasons.”

> **The labour cost in India is still cheaper compared to other developed countries in South-East Asia. Unless the volume of demand is very high, most of the manufacturers will remain in manual operation instead of fully automated process.**
>
> **Biswajit Mitra,** *MD, Techtran Electronics India Pvt Ltd*

> **Low cost and right automation for labour intense SMEs are challenging and open for innovation at this front. The whole labour market and skillset are changing due to new manufacturing practices and automation.**
>
> **Dr Girish Rao,** *CEO, HARTING India Pvt Ltd*

Though the speed of the adoption of automation and digitalization can be debatable, we cannot underestimate their relevance for the company’s growth.

Robotics: Helping hand of cobots

Though adoption of robots in India is growing, it is still very low compared to other countries. The robot density (i.e. number of robots per 10,000 employees) is about 99 globally (with Asia being the world’s largest industrial robot market), as per the International Federation of Robotics (IFR) study in 2019. However, India’s robot density is about 4, i.e. 25 times behind the global average.

Although India is a populous country, manufacturers - especially SMEs - face a very unstable and fluctuating labour supply, made worse during the Covid 19 pandemic. “Many SMEs have always been facing issues with the size of their shop floor, and the pandemic has added onto this by enforcing stricter operating principles such as social distancing. Manufacturers who have deployed traditional robots face the additional requirement of skilled labour to handle new automation solutions, and have to deal with much higher maintenance costs due to the protective fencing around them,” opines **Pradeep David, General Manager - South Asia, Universal Robots A/S.**

Collaborative robots, commonly known as Cobots, have proven to be a solution to all of these problems, as their easy programming makes their utilisation easy for first time users. These cobots do not require any protective fencing (subject to application risk assessment), saving space for manufacturers while enabling labour to continue their work. Pradeep David explains, “Cobots are exceptionally useful if manufacturers are facing labour issues, as they can assign tasks that are dull, dirty, or dangerous to these niche robots. Additionally, since cobots can work along with humans, they also enable distancing on the factory floor to prevent the risk of Covid 19 contagion. For example, at Dell’s Chennai facility, a cobot works along with a person to package delicate PCs, a task which ordinarily required two people to work closely together.”

Another huge challenge for manufacturers is that traditional robots are cumbersome to operate and deploy, and many

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> **Covid episode gave some space to think and plan our future industrial ventures. It is the beginning of new future that will be completely based on digitization and automation with renewable energy sources.**
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>
> **Manoj Dunung,** *MD, Weidmueller Electronics India Pvt Ltd*

manufacturers do not have enough money and space to automate entire lines. However, cobots allow for partial automation - manufacturers can automate a single task at once by identifying where the bottlenecks are specifically. Pradeep David adds, "Cobots also enable flexible automation, as they are not heavy fixed installations and instead can be moved around for different applications to different lines. Manufacturers can identify where exactly the demand is and install cobots to automate these specific tasks, helping in high mix, low volume production. This partial and flexible automation eventually saves both time and money for manufacturers."

He believes, as awareness about the benefits of cobots grows, more factories will start using collaborative methods, bringing India at par with the world's leading automated nations.

SMEs: The critical link

Small and medium enterprises account majorly to the manufacturing output and exports in India. For increasing India's contribution in the global trade, competitiveness of SMEs will have to be enhanced. So, can automation be cost-effective for SMEs? "Cost-effectiveness is a relative term and it is industry specific. But, in general, as the industry continue to grow, SMEs will absorb the cost of automation. It is to their advantage anyway. Automation market is growing, more and more players are coming to this market with cost effective solutions. Hence, in due course of time, low-cost automation solutions will also be available. Even an incremental automation is beneficial. It is good step towards Industry 4.0 revolution," opines Dr Umesh Mhatre.

Proper understanding of in-house production processes can help in identifying the bottlenecks, where automated solutions can be more effected. Pradeep David explains, "Automation can be very helpful, but it is important for manufacturers, especially SMEs to choose the processes they wish to automate. Many global companies like Tesla have shot themselves in the foot by trying to over-automate their factories and creating inefficiencies. The optimal level of automation requires a balance of human and machine skills. Human skill is underrated, and partial automation like collaborative robots gives the perfect opportunity for employees to utilise their talents to their maximum potential. Cobots enable companies of all sizes to truly optimise quality and productivity in the shop floor."

According to **Rupali Jadhav Menon, CEO, SATRONIX India Pvt Ltd**, automation can be cost-effective for SMEs, if the whole process is broken up with partially automation done in-house and the rest being outsourced. "Organisations with a hybrid human-digital workforce require flexible, accurate document intelligence solutions that can serve both types of workers. Process automation applications, like RPA (Robotic Process Automation), create a new category of opportunities for efficiency and productivity improvement, ie incremental automation. When we examine any document process, each touch action or review by a worker is lost time, a lapse in productivity and a hit to an organisation's overall efficiency. If we can methodically find the document/material processing choke points for both physical and digital workers and eliminate them one by one, the sum of those incremental can be massive," she adds.

Mainly the manual and labour intense stages like shop floor, inventory and supply chain are top priority for automation for companies, who have realised the importance of automated processes due to Covid 19. Dr Girish Rao states, "SMEs can simply integrate RPA with their existing machines, systems and processes without making any big changes with low investment."

Agile and smarter

The Covid 19 pandemic has exposed vulnerabilities in almost every industry. To combat its huge impact and ensure a speedy recovery, industries will have to become smarter and more efficient. "Manufacturers must implement quick changes to their line of production, and use the right automation solution to ensure that

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> **Automation and digitalisation solutions like Human Robot Collaboration (HRC) can play a big part in helping industries to recover post-coronavirus, as installing cobots will help manufacturers make a speedy recovery and get back on track from the impact due to Covid.**
>
> **Pradeep David,** *GM - South Asia, Universal Robots A/S*

> **Technologies like robotics, 3D printing, AI, VR & AR, IIoT, etc can help the modern-day manufacturing sector in lowering costs. The challenge lies in skilling or re-skilling a large number of people which will increase employment.**
>
> **Rupali Jadhav Menon,** *CEO, SATRONIX India Pvt Ltd*

Covid regulations are met without sacrificing the production levels and quality. Industries must keep a protective armour for themselves which will help them swim and not sink in any such future crisis, and the best way forward is to invest in solutions like collaborative robots, which make best use of the potential of both, man and machine," opines Pradeep David.

The Covid crisis may galvanise robots, says Rupali Jadhav Menon, adding, "Within the segment of industrial robots, there is a sub-segment that is growing even faster, ie collaborative robots. Unlike the heavy giant robots that one generally sees, cobots are small, can stand alongside a worker, can be easily moved from place to place and shop floor workers can program them for simple, repeated tasks. These are not necessarily cheaper (though they are likely to become) than conventional industrial robots but their size and ease of doing business with them make them darlings of factory managers."

Skillset for new-age manufacturing

Indian industries have a diverse manufacturing practice. For the last few years, the industries are facing an uncertain market due to various issues like policy changes, tax and environmental norms. These situations are pushing industries to modernise, save cost and manage labour.

"Low cost and right automation for labour intense SMEs are challenging and open for innovation at this front. The whole labour market and skillset are changing due to new manufacturing practices and automation. New technology, inventory management, supply chain, global competition and acquiring new markets will be major challenges for industries," says Dr Girish Rao.

Today traditional business models have become outdated. In the era of digital transformation, companies around the world are embracing modern technologies like cloud computing, artificial intelligence (AI), Internet of Things (IoT) and block chain. Rupali Jadhav Menon opines, "Technologies like robotics, 3D printing, AI, VR & AR, IIoT, etc can help the modern-day manufacturing sector in lowering costs. India has a population of nearly 1.35 billion people spread across hundreds of thousands of large urban centres, small towns and rural clusters. The challenge lies in skilling or re-skilling a large number of people which will increase employment. We should not lose out on the opportunity that the current Covid-19 situation has opened up as India has the potential to become a large manufacturing hub next to China."

As per WEF study, automation and robot in the workplace may lead to 85 million jobs getting displaced in the next five years globally with 97 million new jobs being created. According to **Rupali Jadhav Menon,** skill development and employment of future workforce of more than half of Indian workers will require re-skilling to meet the talent demands of the future. "The education system focuses on gaining conceptual knowledge rather than tangible skills which ensure employability. In house training of the automation set-up will help bridge this gap," she adds.

Smart and clean future

Along with the adoption of automation, companies are looking to reduce their carbon footprint by minimising wastage of raw materials and energy, and by making their products more energy efficient. Dr Umesh Mhatre opines, "In this globalised business scenario, there is no option but to become smarter and efficient. This is the only way to be in the race on the platform of Industry 4.0. Covid episode gave some space to think and plan our future industrial ventures. It is the beginning of new future that will be completely based on digitization and automation with renewable energy sources. 'Go green and be smarter' will remain the mantra of coming future."

The government has announced many ambitious initiatives like Make in India and Aatmanirbhar Bharat to put India on the map as a global manufacturer. Faster adoption of automation - aided to some extent by Coivd 19 episode - by manufacturers to reach global standards of production can make India a global manufacturing hub. IPF

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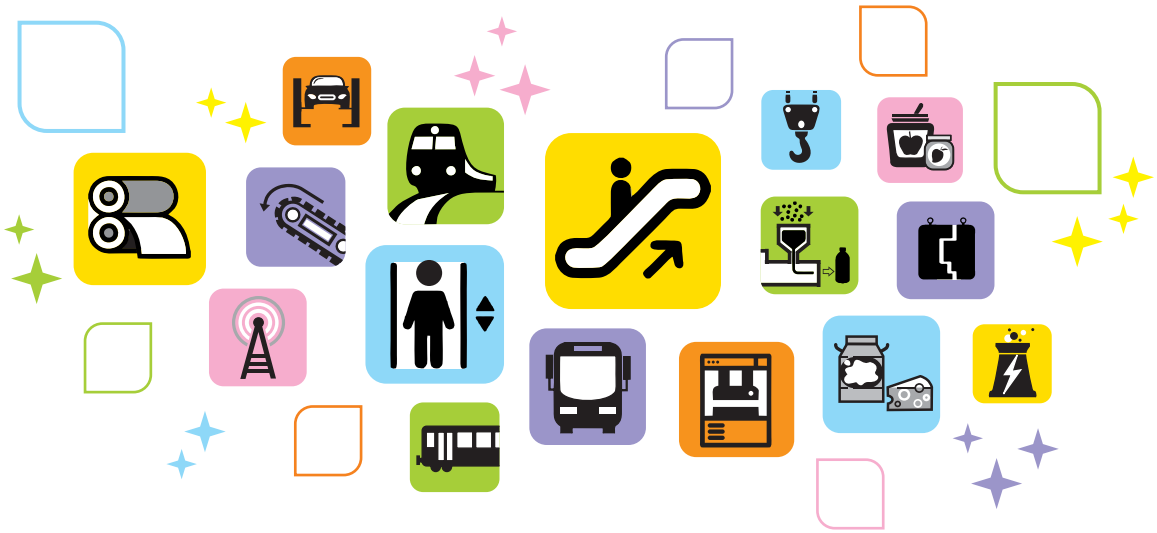

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"Digitalisation is a natural evolution of automation"

Many Indian companies are looking to adopt automation and digitalisation to improve their competitiveness globally, and COVID 19 is likely to fasten this process. COVID 19 pandemic has made these companies realise that digitisation not only helps in improving productivity but also keeping business continuity plans on track, says **Rajat Kishore Managing Director & Vice President Process Automation India Hub, Schneider Electric**. Rajat Kishore joined Schneider Electric in 2012 as the Country Managing Director and oversees the business in India providing in-country leadership encompassing sales, marketing and communications, delivery, projects, and services.

In this interaction with Rakesh Rao, Rajat Kishore explains the importance of automation for the Indian process industry and the effect of COVID 19 pandemic on the production processes in the near future.

How is Schneider Electric's Process Automation division helping Indian industries?

India - a unique and diverse market - is ambitious to become a global manufacturing hub. As a result, there is a lot of focus on industrial assets to improve productivity; thus, needing up-gradation with the adoption of better technology. So, the country is focusing on the competitiveness of its industry and industrial processes and consistency in quality (which has typically been a bane of our industry). Industries will have to step up their game in the adoption of automation to achieve these objectives.

At Schneider Electric we do just that. We provide customers with solutions to increase their rate of production, improve productivity, enhance efficiency in using materials, superior product quality, utmost safety, reduce factory lead time, etc. All these aspects are critical in many ways. They not only improve industry's competitiveness & product quality but also help in creating high-quality jobs.

We provide remote digital connectivity for contact-free support

to the customers. In the current pandemic situation, this is very critical for companies, especially in essential services sectors.

Oil & gas; metal, mining & minerals; water and wastewater; consumer packaged goods (CPG), and power utilities are our core customers. We also support sectors like Smart Cities, Life sciences & pharma, healthcare, etc.

What is driving the demand of EcoStruxure platform from process industry in India?

EcoStruxure is Schneider Electric's open, interoperable system architecture and platform that uses the latest technologies to improve connectivity and bring about smarter process control. Its vast data analytics engine helps in converting information into insight for an enterprise. EcoStruxure is a 3-tier IoT (Internet of Things) based architecture with a layer of cybersecurity, so crucial in today's time. This is precisely the kind of architecture needed for process industries to meet its core needs as it not only improves process efficiency but also enhances the safety and security of the process. EcoStruxure also helps in increasing the productivity and quality of the output and better management of assets. It provides knowledge-based guidance to operators and the plant and acts as a training tool to upskill plant operators.

These are the reasons why the response to EcoStruxure is good, and adoption of the platform has been steadily growing in the process industry in India.

What are the key challenges before the process industries today?

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manufacturing hub, industries must improve their competitiveness, for which it is imperative for them to produce low-cost, high-quality products. Indian manufacturers can offer low-cost products, and yet ensure consistency in quality. Hence, it becomes a key challenge.

It is imperative for decision-makers to have accurate data to improve production in a process by ensuring process optimisation and for better production planning to meet the fluctuating customer demand - especially during today's uncertain market conditions. In the connected world of today, security and safety of the plant and assets, and data are incredibly critical.

With so many technological advancements happening around them, customers are not always clear about what is best for them. Hence, the agility of the enterprise to adopt new technologies is also a must in the challenging market condition.

Plant safety is of utmost important for process industries. How can process automation enhance the safety of the production plants?

Safety and security are critical aspects of the overall process and, hence, must be a vital part of process automation adopted by the industry. It is not just about accident prevention and cybersecurity risk mitigation, but it is directly linked to the profitability of the operations. Automation is key to mitigate these risks and improve productivity.

In case of anomalous behaviour at the production site, process automation system (with proper safety measures) can give early warning to the plant operators and give them sufficient time to take steps to prevent the accident.

Implementation of adequate process safety requires a deep understanding of the process and domain expertise. This is typically provided by process automation.

What effect is digitalisation having on process industries? How are Indian process industries gearing up for Industry 4.0?

Digitalisation is a natural evolution of automation. Digitalisation is helping unlock the real value of manufacturing assets in the process industry by integrating IT (information technology) layer with OT (operating technology) layer - these 2 layers earlier used to be separate and independent of each other. This enables efficient data governance, information security and ease of use; thus, ensuring better efficiency and optimisation of the process.

Typically, because of digitalisation, Cloud-hosted services like SaaS (Software as a Service), IaaS (Infrastructure as a Service), etc. are becoming very popular. By leveraging digital technologies, companies can provide end-to-end services. In the process industry, they are also used in plant design and simulation right up to the Digital Twin - a simulation process in the cyber-physical term. This is precisely the concept of Industry 4.0, which is basically about making your shopfloor smart, boosting productivity and saving cost.

Indian manufacturers have been known to be a laggard when it comes to adopting new technologies. Fortunately, India today is implementing significant reforms in the manufacturing industry and is poised to become the third-largest economy in the world by 2030. Industry 4.0 will provide India with an opportunity to bridge the technological gap that exists between itself and other competing countries.

How are we doing it? Through Make in India, the country aims to increase the contribution of manufacturing to the GDP from the present 16-17 per cent to 25 per cent by 2025. For this, the government has launched many schemes. One of them is SAMARTH (Smart Advanced Manufacturing and Rapid Transformation Hub) scheme for the capital goods sector. Individual segments are adopting their strategies. For example, CPG segment is adopting track and trace technologies of the products from shopfloor to market and deploying cobots (collaborative robots). Sectors like power utilities, automakers, etc. are using Augmented Reality (AR) and virtual reality (VR).

All these latest technologies are used in the country. What is needed is the shift in the mindset from the traditional approach of pumping more capital expenditure to boosting existing asset base by using smarter, IIoT based technologies. This is Industry 4.0, which is the next-gen industrialisation.

Will COVID 19 pandemic lead to a rise in demand for automation?

Every dark cloud has a silver lining. In India, companies in consumer-packaged goods segment (which includes food & beverages also) have been reticent in adopting automation. COVID 19 pandemic has made these companies realise that digitisation not only helps in improving productivity but also keeping business continuity plans on track. Those plants which had remote connectivity, or which quickly adopt remote connection, did not take a hit as they were up & running faster compared to plants that were dependent on the traditional production process. This is a permanent change.

So, the new normal has accelerated the mindset of people towards digitisation. IPF

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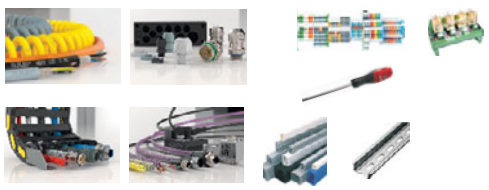

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"Smart services will determine the success of companies tomorrow"

Manufacturing landscape is changing fast. For example, Big Data is paving the way for the implementation of Industry 4.0. But, to turn Big Data into Smart Data and get the maximum added value from the collected data, suitable data analysis solutions and in-depth expertise are required: both mechanical engineering and IT skills. For this, the smart networking of industrial components is must. Companies that do not take care of the networking of their production facilities today run the risk of missing the economic connection in the long term, says **Manoj Dunung, Managing Director, Weidmueller Electronics India Pvt Ltd.**

In this interview with IPF, Manoj Dunung delves into advantage of digitalization and importance of smart connectivity to reap the benefits of Industry 4.0.

As major player in the industrial connectivity space, how Weidmüller is helping industries to prepare for the future?

Weidmüller is considered a pioneer in connectivity. Over the years, we have helped shape an entire industry with our inventions. Here we can look back on a long tradition dating back to the year 1850, when Weidmüller was founded. In 1948, Weidmüller invented the first modular terminal blocks, the first connectivity device and the base for the worldwide connectivity today and has been ever-present in the industrial and technology sector since then.

Whether the PUSH IN connection system or tried and test clamping yoke technology - Weidmüller has developed pioneering innovations in the field of connectivity over the years. Today, our A-Series with the advanced PUSH IN connection system is one of the most innovative systems in panel building for nearly any industry.

The interaction of automation and energy technology, intra-logistics, IT platforms and artificial intelligence forms the driving force behind Industry 4.0 and digitalisation.

This means that all production and logistics processes are becoming interlinked - and the industry smarter, more efficient and more sustainable. Connectivity is the key, whether of power, signals or data, of demands and solutions or of theory and practice. And as a partner of industrial connectivity, we play an essential role in shaping this development with our products and solutions.

Besides intelligent and communication-capable components for the panel, as well as on the device and field level, Weidmüller also increasingly offers automation and digitisation solutions.

How is your company helping customers (or industries) to modernise?

We believe that innovation is in first stage the innovation in transferring highly sophisticated technologies to local markets and enable these to further develop these technologies by using the synergies of different players. Customers and end-users become co-developers and co-innovator. Weidmüller was involved in the field of artificial intelligence (AI) at an early stage and has built up considerable expertise in this area in recent years.

Weidmüller has developed a completely new approach to implementing automated machine learning (ML) software for the mechanical and plant engineering industry. The domain experts are enabled to create ML models independently based on their application knowledge. The Auto-ML tool consists of four modules for model creation, execution, optimization and management of the models over their life cycle: With the module for model creation, ML models can be generated for anomaly detection, classification and error prediction. The user is guided through the modelling process so that he can apply his application knowledge in a targeted manner.

Could you please share some details about your recently products?
Since 2019, we have introduced a large number of new products and solutions to the market, including our IoT terminal block and many other products in the IoT environment. The feedback from our customers is very good. In addition, we are of course also driving forward further innovations in the field of control cabinet building.

What is the effect of digitalization on the manufacturing industries?
The industry is changing. Industrial companies today face many major challenges. In the media you can read a lot about digitalisation and its effects on companies. And rightly so, digitisation and the opportunities it offers is one of the central challenges of our time - if not the biggest in recent decades. Digital networking and modularity permeate industrial technologies and enable high flexibility in production. But in the last levels of automation, networking often still encounters structural barriers. At the same time, the growing number of smart terminals worldwide is making networking increasingly complex due to digitalization.

But digitisation is only one of many megatrends with which companies currently have to deal. Globalisation, speed of innovation, demographic change, energy efficiency, platform economy and ecosystems, shared economy, modularisation and decentralization are other megatrends we have to deal with. Industrial companies are, thus, exposed to a variety of different global megatrends. The crucial thing is to get involved in this change and work out a path for themselves.

Digitisation and automation allows us to find answers to the challenges, for example through digitisation along the value chain, “from the R&D of the supplier to the production of the end user”, the extensive use of cloud-based IT systems, the use of machine learning and analytics applications in a broad sense and thus the implementation of new business models. This allows potentials for internal efficiency increases as well as innovation and differentiation to be achieved and thus significant added value for the company. Weidmüller deals with all these topics and offers a coordinated portfolio.

How important are automation and other

modern manufacturing technologies to gain competitive edge in the marketplace?

As a result of industrial digitisation, for example Big Data is paving the way for the implementation of Industry 4.0, but to turn Big Data into Smart Data and get the maximum added value from the collected data, suitable data analysis solutions and in-depth expertise are required: both mechanical engineering and IT skills. However, the smart networking of industrial components required for this is still proceeding hesitantly, even though it is already clear today that smart services will determine the success of companies tomorrow.

Companies that do not take care of the networking of their production facilities today run the risk of missing the economic connection in the long term. Because in future, real-time forecasting of possible downtimes, bottlenecks and maintenance-related machine failures will become the decisive competitive and cost advantage. Thanks to the most complete possible automated process monitoring and prediction of production quality, high-quality products are guaranteed.

Do you expect automation and digitalisation will gain momentum due to COVID?

I think that Covid 19 will give the issues another boost. We can also see this from the demand of our customers. The setting up of machines and plants or even entire production lines with the aid of augmented reality (AR), the remote monitoring of machines and plants and also the increase in efficiency with the aid of automation technology has gained in importance here.

Can automation be cost-effective for SMEs?

We attach great importance to the fact that it is also possible to retrofit existing systems with our solutions cost-effectively and easily. In this way, we want to promote the vertical integration of IoT. Solutions from Weidmüller help to develop needs-based solutions for IoT applications and to integrate them successfully into existing structures, for example for location-independent machine commissioning, improving overall plant effectiveness (OEE) or generating automated reports on energy consumption. Depending on the application, this can be simple, effective and cost-effective.

What kind of products and services are you planning to develop for making factories/ plants smarter?

All in all, Weidmüller wants to position itself with its automation and digitisation offer with its customers as a first-class IoT partner, providing them with a scalable offer according to their requirements. As a special feature of the IoT offer, we provide both the service and the software that supports the customer in generating added value from his data. This can mean both increasing plant availability and optimising service structures. All in all, we supply a complete range of products and services, from sensors and Weidmüller's classic field of infrastructure components to analytics software including software support.

Thanks to the large number of projects we have implemented in recent years and the experience we have gained from them, we are now in a position to accompany customers - who are still uncertain in this area - on their way as a consulting partner. At the Smart Production Solutions (SPS) 2019, Weidmüller presented the IoT Terminal Block for the first time, an open, secure and quickly integrated solution for Industrial IoT. The solution collects data, transfers data to cloud services and also enables active data-driven interactions. In the future, we want to expand our range of services in the field of IIoT even further.

Will COVID pandemic make industries smarter?

We have noticed that the demand for projects to increase efficiency has risen or not collapsed. Many of these projects were pursued in order to produce more efficiently, even in these difficult times. This is a sign that industrial companies are continuing to push ahead with automation and digitalisation and that we will emerge from this period stronger, at least in this respect.

How do you intend to take Weidmüller growth story forward?

In our core business for terminal blocks, Weidmüller is strengthening its position by establishing digital services and further solutions and components for automatic assembly and marking. This involves making the workflows and processes more efficient for panel builders and assemblers by harmonising the production workflows.

Weidmüller is pursuing its vision to shape future panel building through the "Smart Cabinet Building" initiative, in cooperation with other companies. At the same time, Weidmüller is further expanding its portfolio in the area of the Industrial Internet of Things (IIOT) – with solutions for acquiring, forwarding, processing and visualising data. Last year, the company already announced its intention to invest more heavily in the area of IIoT. The outlook for 2020 and 2021 is of course challenging due to the current situation. IPF

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"COVID 19 has forced companies to accelerate digital transformation"

With activities set to rise in sectors like power, automotive, transportation, etc, the demand for solid state relays (SSRs) is expected to grow in the near future. The growing manufacturing sector is also expected to drive the market in India. These electronic relays help overcome the disadvantages of mechanical relays, says **Rupali Jadhav Menon, CEO, SATRONIX India Pvt Ltd** - one of the leading players in the SSR sector. As there are no moving parts, SSRs have a life span of millions of switching operations thereby eliminating wear and tear.

In this interview with IPF, Rupali Jadhav Menon elaborates on the advantages of solid state relays and importance of skill development for India to meet the talent demands of the future.

What types of products & services you offer to the industry?

SATRONIX is a brand synonymous with solid state relays (SSR) DC-AC, DC-DC relays upto 205 Amps, digital analog solid state relays, 3-phase SSRs upto 205 amps, 3-phase/2-phase/1-phase digital SCR power control modules for heating applications, solid state interface modules with various configurations, capacitor switching modules for APFC applications, digital soft starters from 7.5HP-150HP for induction motors.

We are into manufacturing since the last 40 years and have a global presence. All products are CE marked under LVD and EMC directives. ROHS compliant.

How is your company helping customers (or industries) to modernise?

We are in the process of helping industries convert from electromechanical relays which are old school to solid state technology. These electronic relays help overcome the disadvantages of mechanical relays helping them automate their set up. One of the biggest advantages of solid-state relays over an electromechanical relay is its ability to switch loads at

zero crossover thereby eliminating the arching, electrical noise and contact bounce associated with conventional mechanical relays and inductive loads. They also have a life span of millions of switching operations thereby eliminating wear and tear since there are no moving parts.

What is your research and development (R&D) focus?

Continual R&D is the pulse at SATRONIX. We are constantly upgrading our product range. We took our range of digital analog solid state relays to the next level adding some monitoring features to detect fault conditions. Also, the output of the digital analog SSRs is now 100% linear i.e. the mA current/input voltage vs AC load is perfectly linear. It also has a soft start feature incorporated in it.

The market response to the product is very good. We continue to export these to a steady stream of overseas customers.

What are the key challenges before the industry today?

Today traditional business models have become outdated. It is the era of digital transformation, where companies around the world are embracing modern technologies like cloud computing, artificial intelligence (AI), The internet of Things (IOT) and block chain.

Skill development and employment of future workforce of more than half of Indian workers will require re-skilling to meet the talent demands of the future. The education system focuses on gaining conceptual knowledge rather than tangible skills which ensure employability. In house training of the automation set-up will help bridge this gap. Also, one example is the National Task Force for Closing the Skills Gap in India launched in October 2018 by the Ministry of Skill Development and

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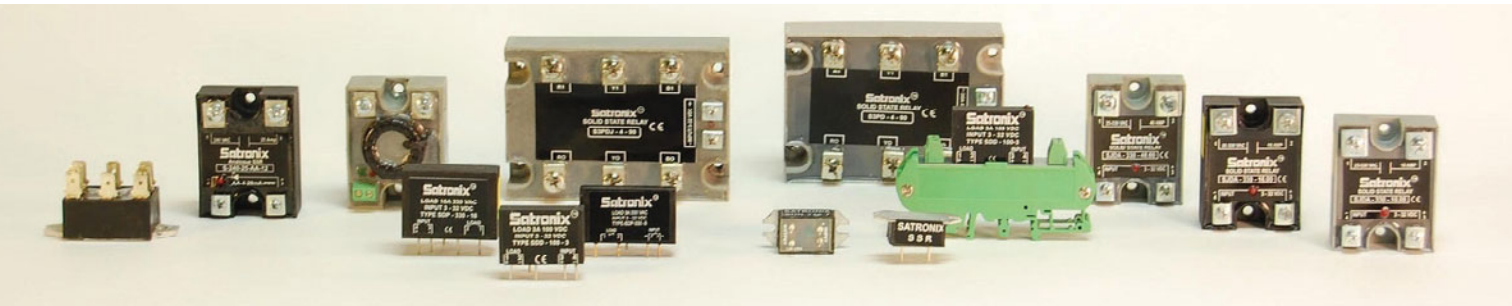

Entrepreneurship in collaboration with the World Economic Forum. The task force will bring together leaders from business, government, civil society and education training sectors to develop an action plan to address skill gaps in India by ensuring that education and training systems keep pace with the new demands of the labour markets.

Why is automation and other modern manufacturing technologies important for gaining competitiveness in the marketplace?

Technologies like robotics, 3D printing, AI, VR & AR, IIoT, etc can help the modern-day manufacturing sector in lowering costs. India has a population of nearly 1.35 billion people spread across hundreds of thousands of large urban centres, small towns and rural clusters. As said earlier the challenge lies in skilling or re-skilling a large number of people which will increase employment. We should not lose out on the opportunity that the current COVID-19 situation has opened up as India has the potential to become a large manufacturing hub next to China. Orders at SATRONIX have already quadrupled and are increasing day by day. Our exports too have gone up.

Do you expect automation and digitalisation will gain momentum due to COVID?

The COVID-19 pandemic has forced companies to accelerate digital transformation to stay functional in the midst of an unprecedented health crisis. As the global workforce shifted to a remote work model, a change that would typically take years happened practically overnight. This kickstart offers a great opportunity for leaders to push digital agenda forward. However, the pandemic has also taken a steep toll on the workforce, so it will take stamina to keep up the momentum as we navigate the complexities of the new normal. The crisis brought to fore the loopholes in processes and it only made way to correcting them. I recommend measuring the outcomes, behavioural and systemic changes that result from our work, such as improved customer satisfaction, employee engagement or sustainability.

Can SMEs cost-effectively implement automation? Are low-cost automation solutions available to them?

Automation can be cost-effective to SMEs if the whole process is broken up and partially automated in-house and the rest can be outsourced. There are many service providers who cater to SMEs. Organisations with a hybrid human-digital workforce require flexible, accurate document intelligence solutions that can serve both types of workers.

Process automation applications, like RPA (Robotic Process Automation), create a new category of opportunities for efficiency and productivity improvement, ie incremental automation. When we examine any document process, each touch action or review by a worker is lost time, a lapse in productivity and a hit to an organisation's overall efficiency. If we can methodically find the document/material processing choke points for both physical and digital workers and eliminate them one by one, the sum of those incremental can be massive.

Will COVID 19 make industries smarter and more efficient & productive?

Yes, industries will have better processes and become smarter and more efficient due to automation post COVID episode.

The COVID crisis may galvanise robots. Within the segment of industrial robots, there is a sub segment that is growing even faster, i.e. collaborative robots (cobots). Unlike the heavy giant robots that one generally sees, the cobots are small ones, can stand alongside a worker can be easily moved from place to place and shop floor workers can program them for simple, repeated tasks. These are not necessarily cheaper (though they are likely to become) than conventional industrial robots but their size and ease of doing business with them make them darlings of factory managers.

What are your growth plans?

Since demand is increasing, we plan to increase stocks and continue on the R&D path that we are usually on. We also plan to focus more on the export market and the evolving Indian scenario. IPF

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THREE PHASE SSR

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"Cobots help in utilising employees' talents to their maximum potential"

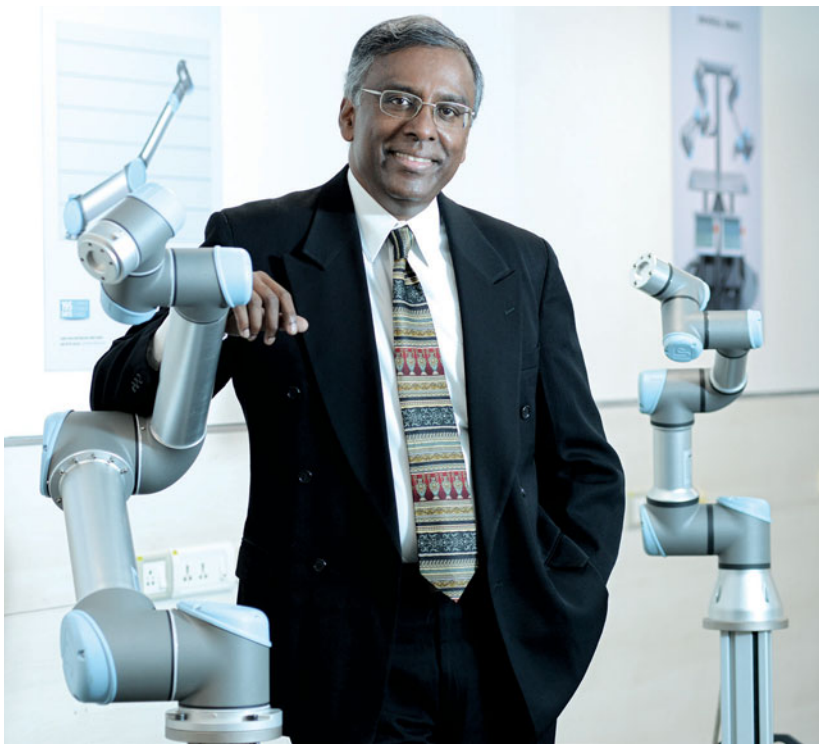
Penetration of robots in India is very low - about 4 robots per 10,000 employees compared to global average of 99. Deployment of traditional robots is often cumbersome, expensive and difficult process. With their flexibility and easy operation, collaborative robots (cobots) can be the perfect solution for Indian manufacturers, including micro, small and medium enterprises (MSMEs). Cobots have the potential to empower Indian manufacturers by helping them increase productivity levels and reach global standards of quality while upskilling their workforce.

In this interview with IPF's Rakesh Rao, **Pradeep David, General Manager - South Asia, Universal Robots A/S,** highlights changes in manufacturing sector and how cobots can prove useful to raise efficiency working closely with humans.

How is Universal Robots serving the manufacturing industry?

Universal Robots (UR) has reinvented industrial robotics with lightweight and flexible robot arms called collaborative robots (cobots), which are built on the concept of Human Robot Collaboration (HRC). UR makes robot technology accessible to manufacturers of all sizes and across a range of industries, including but not limited to automotive, electronics, FMCG, and even pharma.

Universal Robots' latest e-Series range has cobots which are complete with a built-in force torque sensor, 17 adjustable safety functions (including stopping time and stopping distance), and Cat. 3 PLd certified safety. These are the UR3e, UR5e, UR10e, and UR16e, each named after their payload of 3 kg, 5 kg, 10 kg, and 16 kg, respectively. They also have varying arm lengths, or reaches, to suit different applications such as machine tending, palletizing, packaging, quality inspection, and pick & place. Apart from these, UR's standard range of cobots includes the UR3, UR5, and UR10.



To make it easier than ever for manufacturers to automate as soon as possible, UR also has the Universal Robots+ platform of software and accessories that are tested and certified to work seamlessly with its cobots so that customers can rapidly and easily Plug & Produce for various solutions including inspection, palletizing, and polishing.

UR also provides certified, free cobot training with Universal Robots Academy, broadening users' understanding of cobots and their endless range of use cases. Regardless of one's level of robot experience, anyone can quickly learn cobot programming from the comfort of their home by signing up for free on UR Academy.

How is Universal Robots equipping Indian industries in

their path towards modernisation?

Industry 4.0 has led to us experiencing many new technologies in previously untapped sectors, and one of the fastest growing ones is Human Robot Collaboration. Unlike traditional robots, cobots are built on the HRC concept and have advanced safety features allowing them to work alongside humans in the same physical environment. The dull, dirty, dangerous and repetitive tasks can now be re-assigned to cobots, enabling human employees to work on more value-driven tasks. Cobots are, thus, empowering Indian manufacturers by helping them increase productivity levels and reach global standards of quality while upskilling their workforce.

Cobots are proving their convenience to industries of all sizes, including SMEs and MSMEs. One of our clients, Shruti Engineers took a step in the direction of Industry 4.0 by deploying a UR10 cobot to drive efficiency and quality. The cobot's easy-to-learn programming and high flexibility helped the 10-person MSME stay ahead in the manufacturing business, with many small and medium enterprises in India following the same route.

Any new offerings from UR in recent months?

Universal Robots launched the newest cobot model UR16e in 2019. The utility of this collaborative industrial robot is unmatchable as it is built for heavy duty tasks like machine tending, material handling, packaging, material removal, and screw and nut driving applications. It handles an exceptional 16 kg of payload that is especially useful for carrying heavy end of arm tooling and can lift multiple parts in a single pick, making tasks much more efficient by achieving shorter cycle times. With its heavy-duty payload, this cobot addresses the needs of manufacturers who require a higher payload for their operations. UR16e is also offered as an OEM robot system.

What are the advantages of cobots over conventional robots?

Although India is a populous country, manufacturers – especially SMEs, face a very unstable and fluctuating labour supply, made worse during the COVID 19 pandemic. Many SMEs have always been facing issues with the size of their shop floor, and the pandemic has added onto this by enforcing stricter operating principles such as social distancing. Manufacturers who have deployed traditional robots face the additional requirement of skilled labour to handle new automation solutions, and have to deal with much higher maintenance costs due to the protective fencing around them.

Collaborative robots have proven to be a solution to all of these problems, as their easy programming makes their utilization easy for first time users. These cobots do not require any protective fencing (subject to application risk assessment), saving space for manufacturers while enabling labour to continue their work.

Collaborative robots have proven to be a solution to all of these problems, as their easy programming makes their utilization easy for first time users. These cobots do not require any protective fencing (subject to application risk assessment), saving space for manufacturers while enabling labour to continue their work. Cobots are exceptionally useful if manufacturers are facing labour issues, as they can assign tasks that are dull, dirty, or dangerous to these niche robots. Additionally, since cobots can work along with humans, they also enable distancing on the factory floor to prevent the risk of COVID 19 contagion. For example, at Dell's Chennai facility, a cobot works along with a person to package delicate PCs, a task which ordinarily required two people to work closely together.

Another huge challenge for manufacturers is that traditional robots are cumbersome to operate and deploy, and many manufacturers do not have enough money and space to automate entire lines. However, cobots allow for partial automation - manufacturers can automate a single task at once by identifying where the bottlenecks are specifically. Cobots also enable flexible automation, as they are not heavy fixed installations and instead can be moved around for different applications to different lines. Manufacturers can identify where exactly the demand is and install cobots to automate these specific tasks, helping in high mix low volume production. This partial and flexible automation eventually saves both time and money for manufacturers.

Where does India stands in terms of adoption of robotics? Can cobots help India gain competitive edge in the global marketplace?

Many ambitious government initiatives like Make in India and Atmanirbhar Bharat aim to put India on the map as a global manufacturer. However, Indian manufacturers must take inspiration from the world's leading manufacturers and switch to using more technologically advanced solutions to reach global standards of production. In a study from 2019, the International Federation of Robotics (IFR) found that the average number of robots per

10,000 employees is about 99, with Asia being the world's largest industrial robot market. However, India falls at about 4 robots, 25 times behind the global average.

Indian manufacturers are hesitant to deploy traditional robots due to their cumbersome, expensive and difficult to deploy nature. With their flexibility and easy operation, cobots can be the perfect solution for Indian manufacturers. As awareness about the benefits of cobots grows, more factories will start using collaborative methods, bringing India at par with the world's leading automated nations.

Why automation solutions like cobots are important for Indian manufacturers for faster recovery from the effects of COVID 19?

The COVID 19 pandemic has given a rise to many new ground realities such as plant closures, partial layoffs, staggered shifts due to social distancing, labour shortages and stringent hygiene measures. In time of uncertainty, manufacturers must be able to implement effective changes in production and deploy the right automation solution as quickly as possible to stay competitive in the market. Automation and digitalisation solutions like Human Robot Collaboration can play a big part in helping industries to recover post-coronavirus, as installing cobots will help manufacturers make a speedy recovery and get back on track from the impact due to COVID.

Is automation cost-effective to SMEs? Is incremental automation a solution?

Automation can be very helpful, but it is important for manufacturers, especially SMEs to choose the processes they wish to automate. Many global companies like Tesla have shot themselves in the foot by trying to over-automate their factories and creating inefficiencies. The optimal level of automation requires a balance of human and machine skills. Human skill is underrated, and partial automation like collaborative robots gives the perfect opportunity for employees to utilise their talents to their maximum potential. Cobots enable companies of all sizes to truly optimise quality and productivity in the shop floor.

Incremental automation can be a great solution, as manufacturers can choose to automate a single process instead of an entire solution. By starting with one automated process, SMEs have the option of deploying more cobots for other processes if they are satisfied with the results. This has proven to be a cost-effective measure for many of UR's clients such as Shruti Engineers, CATI and Krishi Group. New Engineering Works in Jamshedpur started their automation journey by deploying 1 cobot for machine tending operations, and installed 6 more over the next year to handle further repetitive tasks after gauging the value that cobots brought to the table.

How is Universal Robots helping customers to make their factories/ plants smarter?

Future-forward technology like cobots and the concept of HRC is slowly but surely gaining popularity in India. Universal Robots helps empower manufacturers by providing them with automation solutions that are safe, flexible and easy to use, helping them become smarter and more effective. UR offers a line of collaborative robots with varying reach and payloads, enabling manufacturers to pick out the right fit for their factories. UR Academy provides people with a platform for learning how to program a cobot. A factory's work force can easily learn how to program a cobot in just a day, thus upskilling them and enabling them to perform much more value driven labour. UR+ is an ecosystem which allows for Plug & Produce solutions - making factories smarter by utilising the right kinds of automation solutions.

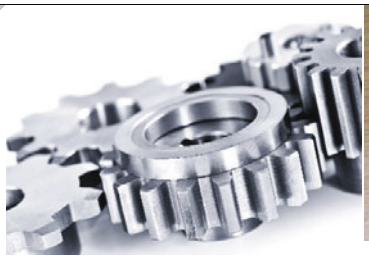
Do you think industries will become smarter, more efficient & productive due to automation post COVID episode?

The COVID-19 pandemic has exposed vulnerabilities in almost every industry. To combat its huge impact and ensure a speedy recovery, industries will have to become smarter and more efficient. Manufacturers must implement quick changes to their line of production, and use the right automation solution to ensure that COVID regulations are met without sacrificing the production levels and quality. Industries must keep a protective armour for themselves which will help them swim and not sink in any such future crisis, and the best way forward is to invest in solutions like collaborative robots, which make best use of the potential of both, man and machine.

What are your growth plans?

As the world's leading cobot manufacturer, Universal Robots has sold over 46,000 cobots till date. Some of India's largest companies like Dell, Bajaj, L'Oréal and Continental use our cobots - the large players in nearly every major industry are cobot users. Our target has always been to democratize automation and we aim to continue to reach more and more SMEs and MSMEs, as these manufacturers can benefit greatly from deploying cobots as an easy automation solution. As the pioneers of Human Robot Collaboration, our goal is so continue creating awareness about the idea of HRC to all Indian industries – be it small, medium, or large enterprises. IPF

SMT



Surface Modification Technologies Pvt. Ltd.

Designers of Surface Engineering Solutions

We deliver surface enhancement solutions using Physical Vapor Deposition (PVD) coating processes customized to individual requirements. We have been catering to a wide spectrum of industries since 2004; offering both standard as well as tailor-made coating solutions to augment the performance of various cutting tools, dies, moulds as well as components used in engineering, pharmaceutical and aerospace industries. Our dazzling bouquet of glittering decorative coatings blend with and thereby complement the needs of various segments of decorative industries. State-of-art glittering colour coatings thus add a jewel to SMT's crown.

Through unmatched knowledge of processes and technologies involved, SMT has thus emerging as one of the key players in the Indian Surface Engineering Industry. Our in-house R&D centre is always passionate and up-beat about undertaking challenges and as a direct result we are able to meet the specific requirements of upcoming markets.

SMT has three Coating Centres, Two centres are at Mumbai & Pune (West Zone) and other at Bangaluru (South Zone) equipped with sophisticated and advance PVD coating machines.

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"Go green and be smarter will remain the mantra of future"

Surface Modification Technologies, with its surface engineering solutions, help industrial customers to make long lasting tools and high-speed compatible components - the basic need of modern industry to improve productivity. According to **Dr Umesh Mhatre, Director, Surface Modification Technologies Pvt Ltd (SMT),** surface engineering is going play very crucial role in near future. In this interaction with Rakesh Rao, Dr Umesh Mhatre explains, why automation and digitalisation, along with renewable energy sources, will gain momentum.

How is SMT serving the industries?

SMT is a leading surface engineering company in India. We deliver metal surface enhancement solutions using Physical Vapor Deposition (PVD) coating processes customised to individual requirements. We have been catering to a wide spectrum of industries since 2004 offering both standard as well as tailor-made coating solutions to augment the performance of various cutting tools, dies, moulds as well as components, used in the engineering, pharmaceutical, textile & aerospace industries. Our dazzling bouquet of glittering decorative coatings blend with and thereby complement the needs of various segments of decorative industries. State-of-the-art glittering colour coatings, thus, add a jewel to the SMT crown.

Why are surface engineering solutions important for modern manufacturing plants?

Long lasting tools and high-speed compatible components are the basic need of modern industry for higher production rate and standardise as well as sustainable operations. Today Surface Modification Technologies is offering wide range of surface engineering solutions to variety of such industrial sectors to improve the service life of their tools and components and to

withstand the extreme working conditions. Apart from this, our products are helping industry to provide an alternative to strict regulation over the usage of Cr6 in industry. Automotive, medical instruments, pharmaceutical, textile components and tools and watch industry are the current users of our surface engineering services.

Have you launched any new products recently?

We do have new products for agriculture and textile industries. Due to the impact of COVID-19, we were unable to launch these new products. These new coating range will be available in 2021.

What kind of challenges are industries facing today? Can automation provide solutions to some of them & how?

Industry and challenges are like hand in glove. As industrial platform continues to change, new challenges arise. In the midst of the fourth industrial revolution, these challenges are more intense. Lack of awareness, skilled labour gap, improving efficiency of manufacturing plants, higher rejection rate due to human errors, coping with new technological advantages, environmental concerns are some of the important challenges in current industrial platform.

These challenges compelled industry to invest in solutions that will help them increase their productivity with minimal assets. Now, it is well proven that Industrial automation acts as an enabler to increase reliability and efficiency, thereby improving return on investment (ROI). Hence, automation will remain the major and common answer to overcome many of these challenges that industry is facing today.

Can automation be cost-effective for SMEs?

Cost-effectiveness is relative term and it is industry specific. But, in general, yes, I believe that as the industry continue to grow, SMEs will absorb the cost of automation. It is to their advantage anyway. Automation market is growing, more and more players are coming to this market with cost effective solutions. Hence, in due course of time, low-cost automation solutions will

also be available in near future. Even an incremental automation is beneficial. It is good step towards Industry 4.0 revolution.

What kind of products and services are you planning to develop for making factories/ plants smarter?

Being a surface engineering technology company, SMT is planning to design tailor made surfaces using state-of-the art PVD technology. Along with our coating services, our dedicated research and development group planning to help our engineering industry to offer our services to understand the materials, their appropriate treatments and sustainable working life using modern analytical techniques.

Will COVID episode make industries smarter, more efficient & productive?

In this globalized business scenario, there is no option but to become smarter and efficient. This is the only way to be in the race on the platform of industry 4.0. COVID episode gave some space to think and plan our future industrial ventures. It is the beginning of new future that will be completely based on digitization and automation with renewable energy sources. "Go green and be smarter" will remain the mantra of coming future.

What are your growth plans?

Being service industry and technology company, we have plans to venture into multi-location surface engineering platforms in India to explore the possibilities of new business and opportunities. Surface engineering is going play very crucial role in near future and I am very sure that our knowledge and expertise in this area will remain our strong support to achieve sustainable growth in this industrial revolution and then after. IPF

COMMUNICATION FEATURE

Balaji Switchgears offers smart solutions for automation

Today's world requires smart solutions for their machines and installations. The traditional technology is obsolete now in the market because in today's generation every manufacturer is looking for efficient and effective installations that can reduce the production cost and down time. Nowadays every machine in every plant has communication capable products which gives end-to-end data and full analysis. They reduce the working cycle of the machine or maybe the preventive maintenance with that machine or the installation could require. This not only helps a particular enterprise in reducing their downtime but also help in saving a lot of amount from their OPEX.

Balaji Switchgears, with its cutting-edge technology partners, offers a variety of smart solutions for any electrical and automation installation. It may be Industry 4.0

IoT solutions for modern architectures or simple varied add-ons for your existing installations, our ranges can complement both type of systems.

With Schneider, our smart solutions under the EcoStruXure banner helps any OEM to upgrade and communicate their machines making it hassle-free. These installations help its users witness various parameters which not only gives a clear picture of the production and efficiency of the machine but it also gives an advantage of knowing that when will the machine need some maintenance in future. This is very much needed in today's time as the facilities cannot afford a downtime, and with predictive maintenance,

data and analysis can be bypassed at any point in time.

From a simple machine to a complete complex plant, EcoStruXure can be your perfect guide. In addition to our new range of "TeSys Island" starters can help an installation to reduce its total number of IO'S and have a discrete architecture making a simple DOL Starter to be communication capable and predictive without any major cost. This makes your connections not only reliable but trustworthy as well as you get access to uncountable data which would not only help you to save cost but would also ensure that your machines are always running. IPF

For more details, Saloni Garg, Asst. Manager-Sales, Balaji Switchgears Pvt Ltd, on Mob: +91 95603 01491, or Email: garg.saloni@balajiswitchgears.com

"Manufacturing has immense scope for modern technology application"

With industries realising the significance of the new age technologies and its benefits in the domains of enhanced productivity, better quality, predictive maintenance and others, companies are keen to adopt it. **Abhishek Bohra, Partner, Bohmen Industries** delves into how smart manufacturing benefits and modernising Indian industries.

Which new product have you launched recently?
We have recently launched a series of precision snap action Limit switches, Type BPS, which offers versatile actuation, mounting options, robust mechanical action and compact size for use in all industries. These products are already adopted by railways, panel manufacturers and automation industry etc.

Manufacturers, across the industries, are looking to reduce the cost and increase productivity. How do you help customers to achieve the same?
Manufacturers across the globe influence the fixed costs of acquisition and installations as well as maintenance (breakdown repairs and downtime) while determining their inputs. This culture has slowly taken root in India as well. As a manufacturer we focus on the role our product needs, to fulfill on any machine and ensuring it does so reliably, and while doing so, making it as efficiently as possible so that the customer gets it at a very competitive price; thereby controlling the above factors for them.

How does Bohmen Industries help manufacturers in their journey towards modernization?
In today's manufacturing scenario, we have to match with global standards to compete with other manufacturers for our share of the

business. Most equipment manufacturers are exporting all over and they need a supply chain confirming to their eventual standardised specifications. We have attained the globally accepted CE mark for our products and are in the process of confirming the same to UL and CSA ratings to satisfy these requirements.

How are today's manufacturing plants different from yesteryear?
One has to be with the times to survive in any business. Manufacturing by far is the most adoptive industry as the scope for application of modern technology is immense. However, One would invest in modernisation only when there is assured demand, statutory environment supportive of such planning, available workforce to handle modern processes, and supporting services to maintain such infrastructure.

Post 1991, India and it's entrepreneurs have grabbed every opportunity to step up their efforts. In the current regime, this seems to be even more visible. With a positive approach, there seems no looking back for India.

How are the new age technologies changing the manufacturing landscape?
Every technological advance has its own impact on the present practices. Robotics have simplified labour intensive processes. 3D printing has reduced design flaws and eventual tooling and reworking costs. Cloud computing has helped decision making and problem solving for manufacturers in real time apart from improving sales and marketing efforts.

Use of augmented reality and virtual reality media enables ease of knowledge sharing with partner manufacturers and vendors as well.

At Bohmen Industries we are always open to new ways of doing things. Adopting new technology goes hand-in-hand with availability of HR to run the scheme of things and a market that understands the benefit arising from the use of such technologies. Investment in upgrading to smart tools is always an added advantage for operations.

For India, it is still a very long road ahead because there are pressing infrastructural requirements which are being attended. Once these are addressed by the concerned, focus will shift to becoming the SMART manufacturing hub. IPF

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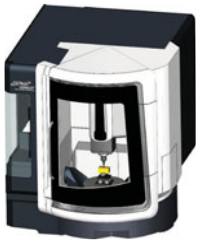

Hourly Machine Cost $
(total burden)

0 50 100

Number of Machine Tools

5

Weekly Machining Hours

80

Estimated Reduction in Machining Time
Reduce machining time by as much as 15-25% or more

25% (typical reported savings)

ANNUAL MACHINE SAVINGS
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FORCE OPTIMIZATION - CUTTER SAVINGS CALCULATOR

Hourly Cutter Cost $
(average cutter cost/cutter life hours
e.g. $100/1 hour)

0 50 100

Number of Machine Tools

5

Weekly Machining Hours

80

Estimated Increase in Cutter Life
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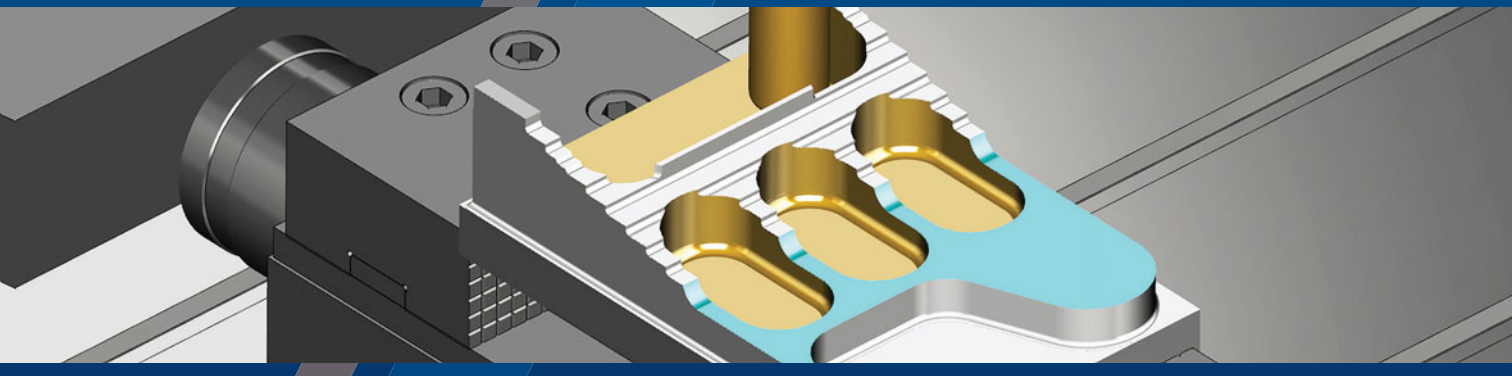

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"Companies can raise productivity using self-clinching fasteners"

Self-clinching fasteners are fast emerging as product of choice in the manufacturing industry as they are reliable solution offering reusable and permanent load-bearing threads. These fasteners - often installed during the fabrication process - are ideal for applications that involve thin sheet metals that require good pull out and torque loads to provide safe fastening. In this interview, **Biswajit Mitra, Managing Director, Techtran Electronics India Pvt Ltd,** explains advantages of self-clinching fasteners and how companies can increase productivity and save money.

How is Techtran Electronics serving the Indian manufacturing industry?

We established our operation in 1996, when the very concept of self-clinching technology was unknown to our domestic industries. We started to teach the inherent advantages of self-clinching products and slowly they have started to use our products. Our products are specific for the basic drawing, replacing welding parts and our process starts from designing of the product to R&D of any manufacturing industries. We are serving automotive, power supply, telecom, electronics, solar panel and other electrical industries.

What are the advantages of self-clinching fasteners?

As I mentioned, our product is basically replacement of welding fasteners, so we are helping customers to change their design suitable to use our product. As a result, their production capacity goes up and reduces the total applied cost by reduction of fixed and variable costs. In large volume production, we are also providing automated solution for faster production without any quality issue since human involvement is very less in our installation process.

I have visited one automotive ancillary product manufacturing industry. When I entered into the shop floor, 15 spot welding

machines were working and the entire shop floor was full of fumes due to welding process. Workers were complaining about their breathing difficulty due to fumes and toxic gas. Then, I asked their design department regarding the performance of each weld-nut and weld stud. Our R&D team changed some specs as per required performance from our catalogue standard part and made the clinch stud and clinch nut suitable to their application. Then we tested it in their product and received the same performance without any problem.

Since, our installation process is very simple compare to welding, we have replaced all the spot welding machines by two clinching machines in the shop floor. The production capacity has gone up from 200 to 700 component per day. The entire shop floor has become clean, no fumes, no toxic gas and the company has utilised only two workers to operate the machines and balance 12 employees have been utilised in other job. To change from welding to self-clinching, they have saved money on every level of production. At the same time, the quality of product has become global standard.

What kind of challenges are industries facing today?

Since our products are cent percent imported, the cost of machines and fasteners attracts certain percentage of freight and import duty. For domestic market, the extra costs definitely pinch the small companies. But large companies benefit immensely due to simpler process of production. Apart from that till now not a single domestic company has come forward to manufacture self-clinching products the demand of which is going up due to its advantages. Since our industries are totally dependent on imported products, the currency fluctuation has an impact from time to time.

We do have automatic machines to install our fasteners which has the capacity to install large volume of production and without any error. But again, it is only possible for large manufacturing company because of capital investment.

Will COVID fasten adoption of automation in the country?

The labour cost in India is still

cheaper compared to other developed counties in South-East Asia. Unless the volume of demand is very high, most of the manufacturers will remain in manual operation instead of fully automated process. If anyone wishes to implement complete automation in their production line, the business volume has to justify to calculate the ROI.

I don't think, COVID has any impact in any change in manufacturing process. Some of the industries are suffering for different reasons.

What should India do to attract foreign investment in manufacturing sector?

Indian industries are now able to compete in international market due to high quality of product at cheaper price. Therefore, a lot of global multinationals are shifting their manufacturing base from other countries to India. We have an added advantage since large percentage of our work force can speak English. To capitalise on this trend, Government should give more emphasis to extend more facilities like faster clearance process, provide cheaper land and some tax holiday at least first few years. Even some of the states in India has changed their own policy to attract overseas investment.

The labour cost in India is still cheaper compared to other developed counties in South-East Asia. Unless the volume of demand is very high, most of the manufacturers will remain in manual operation instead of fully automated process.

Are the Government's schemes to support SMEs showing result on the ground?

Government has announced measures only in respect to manufacturing sector, nothing specific about the protection of service provider like us. Actually, we need protection from the Government in respect to change in rules and regulations. For example, various overseas companies are opening liaison office in India and doing the marketing of their products and supply directly from overseas office. This has an adverse effect on local supplier. I think, visa regulation and permission to stay in India should be scrutinised under strict norms.

Are you seeing recovery in the second half of 2020-21?

Under the present situation, we are only looking at short term growth to recover our loss of business. If manufacturing sector improves, then we can think about our long-term growth plan. I hope, the last quarter of 2020 will give us some impetus to think about our long-term growth plan. IPF

COMMUNICATION FEATURE

NTPL serving industry since 1975 with standard & customised products

Prof Manindra Nath Basu Ray better known as Prof Manindra Nath Ray, an eminent Applied Physicist founded Neo Tele-Tronix Pvt Ltd better known by the brand name NTPL in 1975.

NTPL factory is located near Rajpur Rathtala, Kolkata, West Bengal. NTPL apart from Indian market has successfully made its footprint across different part of the globe supplying different types of testing and measuring equipment, special types of transformer, inductor and automated testing systems as per the testing

requirement of the customers.

NTPL's vast product range includes high voltage test and measurement system, partial discharge test setup, capacitive Tan Delta test set, impulse test set, surge and surge comparison tester, specialised test set, primary & secondary current injection set, relay test set, transformer test set, test set for motor, generators, cables, insulators etc.

Neo Tele-Tronix is dedicated to develop innovative product with an active R&D unit to reach the needs of our customer with present technology. Apart from this, NTPL provides industrial training on high voltage engineering, basics of switchgear & power system protection to professionals, industry personnel and engineering students. IPF

"Skillset requirements are changing due to new manufacturing practices"

HARTING India Pvt Ltd is a wholly owned subsidiary of the Germany-based HARTING Technology Group, one of the world's leading providers of industrial connection technology for three lifelines of Data, Signal and Power. HARTING Technology Group has 14 production plants and 44 sales companies across globe. In the country, HARTING has pan-India presence with 4 sales offices including a corporate office and 1 manufacturing plant in Chennai. HARTING India produces vast range of connectors & customised solutions for electrical and electronics segments catering to various industries as well as hardware and software for customers and applications in automation technology, mechanical and plant engineering, robotics and transportation engineering.

In this interview, **Dr Girish Rao, Chief Executive Officer, HARTING India Pvt Ltd,** emphasises on importance of modern manufacturing technologies to gain competitiveness in the marketplace.

How is your company helping customers (or industries) to modernise?

HARTING has been helping its customers in modernising their components, machineries and manufacturing process stages and digital ecosystem. We help our customers to get more from less. Our products are designed keeping in mind smart manufacturing comprising modularity, miniaturisation, digitalization and identification.

Have you launched any new products since Jan 2019? How has been the response from the market?

We have launched more than 15 new products and 20 products updated with new version since 2019. The response from the Indian market has been excellent, especially in areas like transportation, machinery, robotics and PCBs.

What kind of challenges are industries facing today? Can automation provide solutions to some of them & how?

Indian industries have a diverse manufacturing practice. For the last few years, the industries are facing an uncertain market due to various issues like policy changes, tax and environmental norms. These situations are pushing industries to modernise, save cost and manage labour.

Low cost and right automation for labour intense, medium and small enterprises are challenging and open for innovation at this front. The whole labour market and skillset are changing due to new manufacturing practices and automation. New technology, inventory management, supply chain, global competition and acquiring new markets will be major challenges for industries.

Do you expect automation and digitalization will gain momentum due to COVID?

COVID has made the industries realize the need for automation and digitalization. Majorly the manual and labour intense stages like shop floor, inventory and supply chain are top priority for automation. Datacenter, remote automation and ecommerce and few more industry applications following the list to adopt the new technologies.

SMEs can simply integrate Robotic Process Automation (RPA) with their existing machines, systems and processes without making any big changes with low investment. HARTING provides innovative connectivity solutions for automation, digitalization, IIOT and all the other modern technologies to OEMs, system integrators and end-users.

Can automation be cost-effective to SMEs? Are there low-cost automation solutions available to them?

The automation requirements may

differ from company to company in SMEs. Especially, mass manufacturers of small components can mostly benefit. Active participation from SMEs, technology providers, industry associations and financial institutions will help the sector to develop more low-cost automation solutions.

What kind of products and services are you planning to develop for making factories/ plants smarter?

HARTING is coming up with many new solutions in modular and miniature connectors for smart components, machineries and factory automation. With diverse configuration, high capacity, upgradeable, compact and flexible design suitable for many industrial applications will be the major focus in smart factory. Also, HARTING will provide consulting services in machine learning in selecting hardware and software for automation and Industry 4.0, digitalization and IIOT.

Do you think industries will become smarter, more efficient & productive due to automation post COVID episode?

Yes, post COVID, automation will have a greater advantage and play a major role in making industries smarter. The urgent need to save cost, utilise resources efficiently, increase productivity and meet growing competition will influence the need of automation.

What are your growth plans?

HARTING will focus more on machinery and robotics by providing different connectivity solutions. We will focus more on miniaturisation and introduce connectors that are small, powerful and multiport. We are expanding our R&D capabilities and adding more markets to HARTING India. SME market is one of the major focus in the upcoming years. More localised products, application and industry-wise new connectors suitable to India will be designed and manufactured to compete with local players. IPF

TECH BYTE

A robot's range quickly extended with 7th axis from igus

Igus now offers a directly ready-to-connect 7th axis, so that a robot can move over a distance for several metres. The new complete system consists of a maintenance-free drylin ZLW toothed belt axis with corresponding adapter plate, switch cabinet, cables and software integration. For easy integration of the axis of the robot, igus has developed two adapter kits for robolink and Universal Robots (UR) robots. They enable fast and, above all, cost-effective low-cost automation.

Robots insert workpieces into a milling machine, dispense chocolate bars from vending machines and place crates on pallets, which are then stacked. But how can they move vertically, horizontally or overhead in a flexible manner? The answer is a 7th axis. Specifically, for linear adjustment, igus has developed a lubrication-free, lightweight flat axis with a stroke of up to 6m and a positioning accuracy of 0.5mm with the help of its drylin linear construction kit. To ensure that the axis can be easily combined with a robot, igus now offers overall solutions for UR3, UR5 and UR10 robots (Universal Robots), robolink DP robots and DCi robots.

With the help of a 7th axis from igus, UR robots can move flexibly over for distance of several metres

"A customer who acquires the new complete system receives, on the one hand, an adapter plate for easy attachment of the robot and the energy chain to the axis and, on the other, the corresponding integration solution, in other words the switch cabinet with cables, motor controller and the respective software solution," explained Alexander Mühlens, Head of Automation Technology at igus GmbH. "If a robolink robot is used, the 7th axis can be easily controlled by means of the igus robot control software. For UR robots, we supply an UR-CAP as a direct integration solution, including all the electrical modules needed." This means that the robot can be installed and put to work within just a few minutes.

The 7th axis is supplied by igus as a complete system that is ready to connect immediately, consisting of a drylin ZLW-20 toothed belt axis in the desired length exactly to the millimetre, plus the connecting cables, the switch cabinet, the power electronics, the software integration and the corresponding adapter set. Alternatively, the adapter set is separately available consisting of adapter plate and control system. IPF

"COVID 19 has made firms realise the importance of security seals"

Sharda Merchandise Pvt Ltd (SMPL) is the manufacturer and innovator of tamper resistant plastic, metal and adhesive security seals. SMPL's security seal solutions are used by some of the world's most recognised brands across Asia, Europe, America, Australia and the Middle East, within a wide range of industry sectors such as utilities (electric, gas & water), utility meters (smart, electric, gas), pharmaceuticals (bulk drugs, drug intermediates), fine chemicals, coal, steel, FMCG, postal department, courier, transportation (road, rail, airlines, ships), logistics, banking (ATM, cash bags & cash carrying vehicles), airline and flight services, oil & gas, healthcare, fire safety (fire extinguisher), elections (EVM, ballot boxes), retail management etc.

In this interaction with IPF, **Kunal Banka, Director of Sharda Merchandise Pvt Ltd,** highlights on menace of theft and adulteration of consumer products and how companies can prevent it with tamper resistant security seals.

Why are security seals important for industries? Which industries are driving the demand for security seals?

Tamper resistant security seal is a tool used to protect and provide security to containers, trucks, tankers, chemical drums, utility meters, airline food trolleys, duty free trolleys against tampering to prevent theft, adulteration and contamination, either accidental or intention. The use of security seals is increasing for last few years in view of rise of theft, adulteration, contamination in goods and theft of utilities such as electric, gas and water. Post Covid 19 pandemic, manufacturers have realised the need of safety and security of the products in transit to meet customers' expectations.

With companies/factories becoming modernised, how can security seals help them in preventing theft and protect their revenue?

Security seals are inexpensive way to provide highest protection level to goods or utility services and protect profitability and revenue losses. We

are innovative manufacturers of security seals investing on R&D. Based on the feedback of our customers, we regularly upgrade our existing products and develop new security seal solutions. We build customised solutions to cater to a more stringent need of our customers to safeguard their goods and services.

How can security seals be made smarter, intelligent?

Our core expertise lies in constant innovation in expanding our knowledge of the products, their design features, integrity, quality and critical applications. We are constantly developing and introducing advanced and more complex range of security seals, that are smarter and intelligent, to provide stronger and reliable security solutions to our customers. Our latest innovation has been Revguard - a tamper resistant security seal for smart meters, prepaid/AMI meters, which is impossible to defeat. It is provided with DPM barcode for digital reading and recording of serial numbers, a hidden security mark to identify genuine and integrity of the security seals besides being manufactured from advanced materials that can withstand long term exposure to hostile environment.

Similarly, we have developed another smart seal for packaging of bulk drugs and drug intermediates packaging to provide highest protection to prevent adulteration and contamination in transit. Another advanced security product has been launched Snap-lok water meter connection nut lock to secure water meters as government is implementing its plan for conservation of water and minimising wastage of water

particularly in urban areas. The security lock secures the water connections to water meters to remove theft of water.

What kind of challenges are industries facing today?

Uncertainty is the biggest challenge during COVID-19 critical situation. Another challenge we face is our potential customers prefer cheaper security seal over the advanced reliable security seals, because of poor knowledge about the security seals. For example, general security seals with similar shape and size are available in the market whereas, sophisticated, advanced security seals are unique and are manufactured by leading manufacturers that are not available in market and cannot be replaced with fake or duplicate security seal for malpractice.

We have set standards for each of our security seals and never compromise on quality just to secure a sizeable business. Even government tenders prefer L1 price security seals which meet minimum required standard in place of highest security level. This results into poor security. You will find that most of the electricity distribution companies are losing huge revenues year after year because of it.

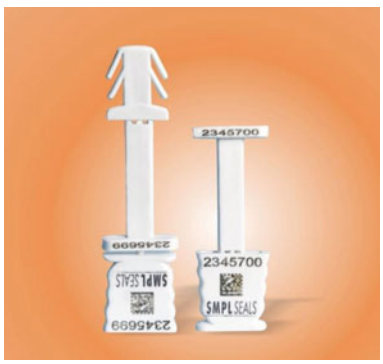
We are trying to educate the customers to understand the role of security seals and benefits of using advanced range of security seal in their systems.

Has COVID 19 changed the perception of companies towards security seals?

Due to Covid 19, supermarkets, FMCG and pharmaceutical industry have realised the need of security seals to protect their goods in transit and have started using the same. Many companies have also realised the safety and security standards and are switching over the quality, robust and advanced security seals.

Revguard tamper resistant security seals for smart meters. prepaid, ami meters

Snap-Lok water meter connection nut lock



Drum-Secure high security tamper evident security seal for pharmaceutical (bulk drugs, drug intermediates, API)

High security bolt container seal compliant to ISO 17212:2013 Class 'H'

We are getting new customers who are quality conscious and still trying to educate the price sensitive customers.

Has the market condition improved in the second quarter of 2020-21 compared with the first quarter?

Demand will hopefully increase in the third quarter of this financial year in comparison to the first two quarters but still it may not be much remarkable. We presume boost in sales of security seals in next two quarters.

Securegrip Tamper Resistant Security Seals For Multi Applications

What is your outlook for the market? Are there any plans for expansion?

The popularity and usage of security seals has been rising in diverse applications. Many industries are realising the need of security seals that are stronger, reliable and foolproof to provide safety and security to their products. These thefts have direct impact on their profitability and adulteration and contamination, damaging their brand image in the market.

We have plans to increase the production as the demand grows and we are already working towards production development to meet the expected increase in the next financial year.

IPF

A Jem of a Shop

Seattle area full-service contract manufacturer Jemco Components and Fabrication finds VERICUT machine simulation software critical to avoiding five-axis machining center crashes.

The term "one stop shop" is admittedly cliché, but once in a while you come across a manufacturing company that truly fits the bill. Jemco Components and Fabrication Inc is one of these. This family-owned business in Kirkland, WA offers prototype and production machining, sheet metal fabricating, contract assembly services, laser marking and etching, and a host of finishing options, and has been doing so for three decades and two generations.

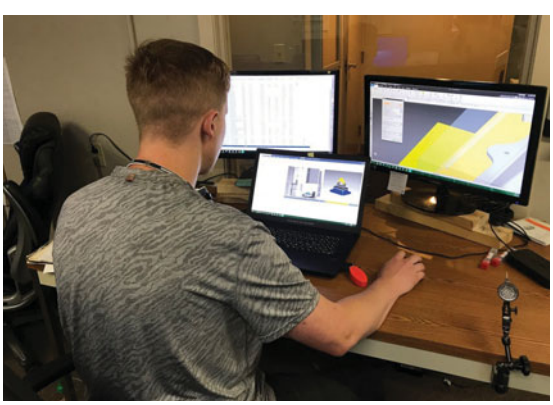
Raising the stakes

Two years ago, however, the stakes grew higher. As the company's level of five-axis machining grew, management decided that an alarming number of "little crashes" could quite easily turn into one big crash, quite possibly damaging an expensive machine tool and at the very least disrupting deliveries to any one of its customers in the aerospace, military, medical, or energy industries.

With more than two dozen five-axis machining centers on the line, Jemco Vice President Travis Moore and his team began looking for an alternative to the traditional "push the green button and pray" program prove outs.

"A number of companies tried very hard to sell us on their simulation software, telling us how their solution would address all of our needs, but after a lot of research and talking to a number of people, we found that VERICUT was the only software with true G-code simulation," Moore says.

Since 1988, VERICUT from CGTech, Irvine, CA, has been the leader in CNC toolpath and machine simulation. Because it reads the actual code used by the machine controller, it picks up where CAM systems leave off. Every workpiece, fixture, toolholder, and machine component can be accurately modeled, leaving nothing to chance. Gouging and uncut areas are clearly identified. Setup times are reduced, and because complete visibility to the machining process is achieved, opportunities for process improvement are greatly enhanced. Best of all, collisions are virtual rather than spark-filled and noisy.



Straddling the manufacturing fence

Moore's parents started the company when he was a child. Their decision to pursue sheet metal fabrication and precision machining under the same roof was made on day one with the purchase of a Finn-Power turret punch and an Okuma Cadet machining center. It was apparently the right decision, because Jemco has become quite successful at both types of metalworking.

The fabricating side of the 70,000 sq. ft. shop is now home to Amada press brakes, a Mazak OptiPlex 4kW laser cutter, Finn Power punch presses with sheet loading capabilities, and TIG, MIG, and spot-welding equipment. There are laser markers and fastener machines, and Jemco has strategic partnerships with a variety of metal finishers. There's little they can't produce.

The machine shop is even more impressive. Altogether Jemco has just shy of 40 CNC lathes and machining centers on its production floor. Equipment builders include Haas, Okuma, Mazak, and others, but topping the list is a pair of DMG Mori NMV1500 five-axis vertical machining centers - one sporting a 40,000 rpm spindle - and serviced by a 34-pallet robotic cell material handling system.

"We try to be really diverse," he says. "My Dad saw from the very beginning that there was value in having a one-stop shop. There are plenty of complex fab parts that

require milling, and he felt that managing both was something he could do fairly easily. It's been smooth sailing ever since."

Calm waters

Part of that smooth journey has been due to VERICUT, at least recently. "All those little crashes we were seeing have died down to nothing," he says. "That's saying a lot, because most of our production quantities are small - say between two and two dozen pieces - and we therefore set up many jobs each day. And as anyone in this business will tell you, the more times you're setting up, the more opportunities you have to mess up. I strongly tie our lack of crashes to VERICUT."

Lots of jobs also means lots of programmers - in Jemco's case, there are seven, each with his or her own way of doing things. Chuck Macomb, CNC Programmer, says VERICUT helps him answer the many questions that arise when generating toolpaths for a machining center that cost more than most people's house.

"Is there any interference between the toolholders and the vise? Did the program cut the part right? Is the spindle going to bump the workpiece? Did each axis go the direction you expected it to? There are all kinds of problems that can occur, but because the CAM software doesn't see the same thing the machine sees, there can be occasional surprises. VERICUT eliminates the wondering."

Agrees Tony Maldonado, CNC Programmer, Jemco. "We use Siemens NX for our CAM platform here," he says. "It does a good job on most parts of telling you if you're going to crash or violate the part in any way, but you have to pay close attention to see it. Sometimes things are moving so fast that it's easy to miss something, and that's where VERICUT comes in. You can see any areas that you missed during programming, any gouges, and especially any crashes." IPF

TECH BYTE

InnoVista Sensors offers logic controller Millenium 3

The Bangalore-based InnoVista Sensors India Pvt Ltd offers a wide range of logic controller Millenium 3. The Millenium 3 logic controllers can be used to automate a device requiring between 10 and 50 I/O. Its logic functions can be used in numerous applications including packaging, access control, vending, irrigation, lighting, pump management and HVAC control. It is available in "compact" & "expandable" version for enhanced performance, there are also "resin" & "bare board" version available for special application.

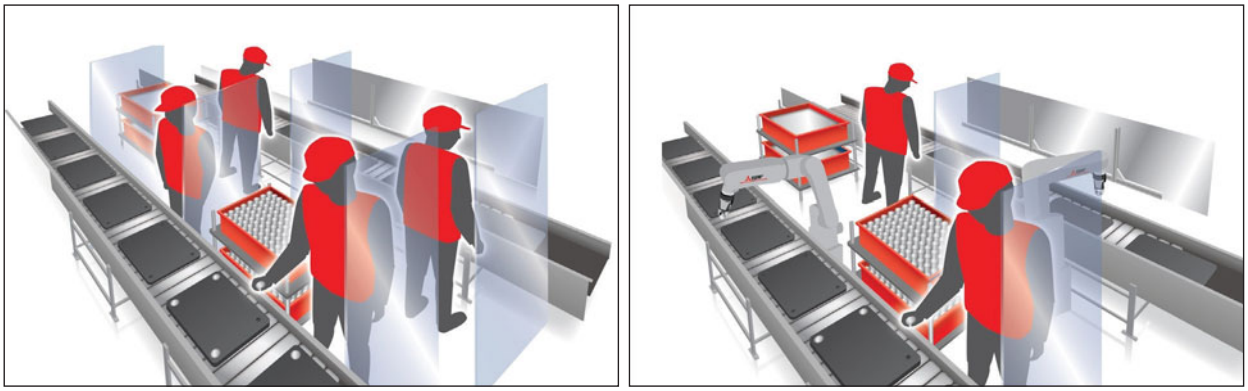
This Millenium controller inputs are compatible with most sensors in the market including temperature sensors, pressure sensors, level detector & flow sensors, onboard 4/6 digital inputs can be used as analog input, High speed input up to 4KHz. Programming by ladder language or function block/Grofect SFC, also offers the option of supervising & connecting your devices by linking the controller to feildbuses (Modbus, Ethernet) or via STN or GSM modem. Its functions are: timing, auto PID tuning, counting, archiving /saving filing, mathematical functions, logic operations, triggering events, web monitoring.

InnoVista Sensors is a worldwide industrial specialist of sensors, controllers and actuators for automated systems. Under Crouzet brand, it offers a wide range of reliable, efficient and customisable components dedicated to the aerospace & defence, transportation and industrial market and segments. IPF

For details, contact InnoVista Sensors India Pvt Ltd, Bangalore, on Tel: 080-67624500/501, 67624511, or Email: india@crouzet.com

Will Cobots and intelligent devices be the new normal in manufacturing?

As a result of COVID 19 pandemic, many manufacturers are focusing on social distancing through shift management, which may result in lower productivity with less people working. Under these circumstances, collaborative robots (Cobots) and IIoT-based intelligent devices can be useful tools for manufacturing companies.



Some plant managers are considering using screens between workers, but this is not a panacea as there can be operational limitations (left). One possible solution is the increased use of industrial collaborative robots (Cobots) like Assista (right).

Social distancing, protecting your employees, restarting operations and machines, catching up on supply chain gaps. Just like society as a whole, manufacturers are experiencing a lot of additional challenges they didn't expect, and to top it all many are facing reduced budgets. So how do you navigate the new manufacturing norm?

"Manufacturers are now trying to adapt to the changes in conditions, especially in two major aspects," said Hajime Sugiyama, Industrial IoT Evangelist of Factory Automations Systems Group, Mitsubishi Electric Corporation. "For example, how do you implement social distancing in a factory?"

It's a very interesting question which has more permutations than most people initially consider. Starting with the individual we can all imagine the use of face guards and masks, and indeed many industries have traditionally used such PPE (Personal Protection Equipment), but this was driven from a hygiene or clean environment standpoint for industries producing such things as food, drugs or even sensitive electronics and semiconductors. But such PPE is not necessarily desirable in all industries. For example, in hot or humid environments the act of wearing a mask may actually increase risks of heat exhaustion, so care must be exercised in truly understanding the worker's environment. Some plant managers are considering using screens between workers, but this is also not a panacea as there potentially can be space and restricted movement issues as well as possible problems around access to emergency devices (E-STOPs) or reporting/controlling devices or simply visibility challenges.

One possible solution is the increased use of industrial collaborative robots (Cobots) like Assista. Typically, these "light" devices can be quickly deployed, are human friendly and so flexible that they can be quickly trained to do a variety of tasks, i.e. you do not need to have extensive robotics expertise.

Stepping back from the individual challenges, Sugiyama goes on to say, "Many manufacturers are focusing on social distancing through shift management. For shift management, you need to balance work shifts so that fewer people are working together at the same time to prevent a pandemic situation inside the factory. But this presents a whole new set of challenges."

While balancing shift patterns provides factory managers with a level of operational redundancy, i.e. if one shift needs to be "suspended" due to infection, the second and/or third shifts can continue business as

usually after the plant has had a thorough cleaning, it is a natural consequence that less people working will naturally lower the productivity. So how do you counter that?

Let your Cobot take the strain

"Building extensive automation solutions takes a great deal of time, budget and planning," says Sugiyama, "and in these times when manufacturers want to get up and running quickly and flexibly all three resources are likely to be in short supply."

So, what's the alternative? One possible solution is the increased use of industrial collaborative robots (Cobots) like Assista. Typically, these "light" devices can be quickly deployed, are human friendly and so flexible that they can be quickly trained to do a variety of tasks, i.e. you do not need to have extensive robotics expertise. And probably a key deciding factor is that on the whole they are very cost effective. Enhancing the cobot solution further with AI driven environmental management software as seen with solutions such as e-F@ctory Alliance partner Realtime Robotics reduce programing burdens even further and offer live travel path adaption so that the robot can dynamically navigate around obstacles such as humans, other robots and alike. "It's clear one solution will not fit all, so flexibility to adopt the right social, 'mechanical' and collaborative solutions will be the norm. An additional area of consideration is remote access," claims Sugiyama.

Remote is not just for homeworkers

Returning to full operations, restarting processes and lines often reveals underlying problems which were not previously visible and creates a maintenance nightmare of unquestionable proportions. Remote access is a key benefit but if the device you are accessing is not intelligent, the value is drastically reduced as the amount of information is restricted. However, if you are lucky enough to be using intelligent automation devices which have degrees of self-determination and extensive diagnostics resolving maintenance issues can be accelerated. But aren't all automation devices intelligent?

As an initial quick fix to social distancing in a factory, individuals could use face guards and masks

Sometimes the answer is simply a partition screen, other times it is an investment in a cobot, but the watch words are flexibility, scalability and results focused. So maybe the new norm is actually reminding us to identify what is important.

"While the essential product performance/function maybe similar, you would be mistaken if you thought that all products are equal for example, it is not really true to say 'a drive is a drive, is a drive,'" states Sugiyama.

As an example, many traditional users of Mitsubishi Electric's inverters will be familiar with simple features such as a 3-wire fan, the significance of which only becomes apparent in times like now. The benefit being the ability to diagnose the health of the cooling fan – which in turn helps extend the life of the inverter. In more recent products, there are unique environmental sensors on the circuit boards to detect effects of corrosive or polluted atmospheres which is complimented by the merging of communications, intelligence and AI through the inverter hardware and partner software to provide advanced maintenance diagnostics.

Sugiyama explains, "Advances in product technology are not limited to the 'external function' of the device but also in how its operational life is managed and that means maintenance and performance KPIs – but such knowhow cannot remain locked up inside the product and really excels when it can be remotely accessed by the maintenance teams."

IIoT, Industry 4.0, etc have already been talked about for years, but at their core is the process of communication, extraction of data and subsequent analytics. However, often when plant managers consider remote access solutions they quake in their shoes as they contemplate a large, extensive SCADA system and all its associated paraphernalia. It is true these comprehensive systems are excellent for capturing vast amounts of data, providing alarming and analytics and reviewing historical data but as mentioned earlier they do take time to correctly plan and install. Other, quicker solutions can be remotely, but directly, connecting to an HMI device on the shop floor to mimic the local screen or accessing data over a wireless interface to finally the more recent trend towards utilizing Edge controllers.

So, what is the new normal?

Actually for Sugiyama he sums it up as "A practical approach is critical. Sometimes the answer is simply a partition screen, other times it is an investment in a cobot, but the watch words are flexibility, scalability and results focused. So maybe the new norm is actually reminding us to identify what is important." IPF

FLIR launches 4 advanced thermal imaging cameras under Exx-Series

The E96, E86, E76 and E54 feature enhanced thermal resolution and provide on-camera routing capability for more efficient inspections. Through March 31, 2021, customers who purchase an Exx-Series camera will receive a free three-month Thermal Studio Pro and Route Creator trial bundle.

FLIR Systems Inc has added four new products to its Exx-Series of advanced thermal imaging cameras: the E96, E86, E76 and E54. Compared to predecessor Exx-Series cameras, the new cameras offer enhanced thermal resolution for more vibrant, easy-to-read images and on-camera routing capability to improve field survey efficiency. The new Exx-Series cameras are designed to help professionals detect the early signs of building issues, identify hot spots, troubleshoot electrical and mechanical systems, and prevent problems before they cause damage that leads to expensive repairs.

The E96, with a 640x480 resolution and eight-times digital zoom, is the most advanced Exx-Series thermal camera to date. It delivers improved measurement results over the greatest distance to target, so professionals can safely diagnose electrical faults or locate hidden anomalies at very high temperatures up to 1500°C (2732°F), including in harsh industrial environments such as steel mills or kilns, to help keep the workplace running smoothly.

For the first time, FLIR Inspection Route is now offered as a

standard feature on every Exx-Series camera and is complemented by the FLIR Thermal Studio Pro software with Route Creator plugin, sold separately as an annual subscription. The complete routing bundle enables professionals to create and export custom inspection and pre-planned routes, ideal for large or multi-location electrical or mechanical projects.

"The new Exx-Series advanced thermal imaging cameras enable building professionals, inspectors, engineers, researchers, and facility maintenance personnel to do more than ever before with a handheld thermal camera," said Rickard Lindvall, General Manager, Solutions Business at FLIR. "With improved thermal resolution and on-camera routing capabilities, the Exx Series can help our customers make better, more informed decisions to complete the job more efficiently and effectively."

The E96, E86, and E76 include UltraMax high-definition image enhancement technology and improved contrast with one-touch level and spanning functions to view greater image details. In addition, interchangeable AutoCal lenses offer complete coverage of near and distance targets, with the built-in laser distance meter ensuring the crisp focus needed for accurate temperature measurement.

The new Exx-Series cameras are available globally through authorised dealers.

Through March 31, 2021, customers who purchase an Exx-Series camera will receive a free three-month Thermal Studio Pro and Route Creator trial bundle. The FLIR Thermal Studio Suite is also available separately through an annual subscription in Standard and Pro versions, while the Starter version is offered at no charge.

Founded in 1978, FLIR Systems is a world-leading industrial technology company focused on intelligent sensing solutions for defense and industrial applications. FLIR Systems' vision is to be "The World's Sixth Sense, creating technologies to help professionals make more informed decisions that save lives and livelihoods. IPF

To learn more about FLIR Systems' entire Exx-Series line, visit: www.flir.in/exx-series or write to us at flirindia@flir.com.hk

Robot-guided palletizing systems enable versatile production around the clock

These systems are an efficient way of increasing the flexibility of machine tools. They help minimizing machine downtime during the production of individual pieces and small series and enable reduced-manning production in three-shift operation. In this process, precise interaction between the individual gripping system and the clamping technology components is crucial.

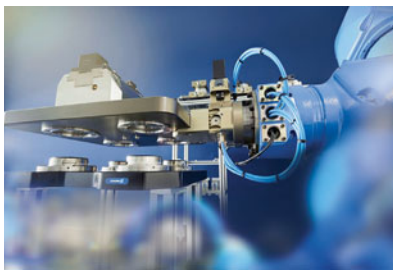
The rapidly growing range in size and product variants as well as an increasing cost pressure are requiring automated process design in production more and more. The maximization of main times and minimization of personnel costs, which in the past only applied to large quantities, has now become possible for small and very small lot sizes. Using robots in particular is considered to be an especially flexible way of increasing efficiency, provided that their peripherals are precisely aligned with the respective requirements.

Quick-change pallet system as a basis

A basic distinction can be made between two types of automated machine loading:

For large series and long processing times, workpieces are generally loaded directly into stationary clamping devices, such as power-operated multi-jaw chucks or power lathe chucks, for example in the compact, high-performance

For small and medium-sized lots, the SCHUNK VERO-S NSA plus palletizing system ensures high process reliability and flexibility



For small and medium-sized lots, the SCHUNK VERO-S NSA plus palletizing system ensures high process reliability and flexibility

SCHUNK TANDEM plus clamping force blocks. The one-piece rigid base body, wedge hook kinematics and long, ground jaw guidances provide for concentrated clamping forces of up to 55 kN. At the same time, they ensure an excellent repeat accuracy of up to 0.01 mm. Therefore the clamping force blocks are also ideally suitable for milling operations with a high stock removal, high number of cycles, and minimum tolerances. Their optimized external contour and minimal gap size prevent the accumulation of chips or dust in the vise.

For medium-sized and small series, more and more users decide for an automated clamping solution. This is described in detail below: When clamping devices are automatically changed, the entire clamping device, including the workpieces that have been clamped manually, are handled on workpiece pallets. Robot-supported palletizing systems make this possible in conjunction with an especially fast, highly flexible yet process-stable change of clamping devices. For this process, workpieces and clamping devices are installed on the pallets, arranged in storage racks and successively transferred to the machining center by each robot from the pallet storage rack. The central element in the machine is a quick-change pallet system. In a matter of seconds, this element helps to fix, position and clamp the workpiece carrier pallets on the machine table automatically and precisely according to a reference value. The actual set-up operation takes place outside of the machine during the processing time, making it especially economical.

Automated interface cleaning

The bottom of each individual pallet is equipped with an interface to the quick-change pallet system, through which they are connected to the machine. Special components, such as the SCHUNK VERO-S NSA plus palletizing module, have been developed specifically for robot-supported machine loading. They are extremely flat and can be integrated directly into the machine table, and leave plenty of space in the machine room for the workpiece and for axis movements. With the patented dual stroke system, they can achieve pull-down forces of up to 20,000 N and holding forces of over 100,000 N. The robust modules even ensure a precise hold under the challenging demands of volume machining.

To prevent chips and dirt from endangering the pallet changing

process, a positively driven air flow cleans the flat surfaces and the short taper. This ensures a chip-free flat work surface for the pallet. Entry radii on the clamping module enable quick and secure joining, even with eccentricity or slightly inclined position of the pallet. This way, tolerances of the handling system can be optimally compensated. Afterwards, centering rings apply precise positioning according to a reference value, before the clamping slides ultimately ensure form-fitting, self-locking clamping with a repeat accuracy <0.005 mm.

Lifting pins facilitate automated removal

In order to change the workpiece, a lifting pin raises the pallet by up to 5 mm after machining, thus facilitating the changing process. All process steps, i.e., the “module open”, “module closed” and “pallet present” states are monitored using dynamic pressure monitoring. In contrast to other clamping systems, the SCHUNK VERO-S NSA plus palletizing module does not consume any energy when processing. The workpieces remain safely clamped even if the pressure in the air system were to drop suddenly. For opening the module, a pneumatic system pressure of 6 bar is enough. This saves the use of expensive hydraulic systems and elaborate piping. In order to ensure a long service life, all functional components, such as base body, clamping slide, and clamping rings are made of hardened stainless steel, making them absolutely corrosion resistant.

Special handling systems

In order to ensure a process-stable pallet change in fully automated operation, using special handling modules is recommended, such as the slim SCHUNK VERO-S NSR lightweight coupling with minimal interfering contour. This can be used

With pallet weights from 1 to 1,000 kg, the SCHUNK VERO-S NSR robot couplings cover a huge range of needs. To ensure process-stable pallet change, all modules feature an automatic cleaning function

even in confined spaces and allows for pallet loading extremely close to the machine table. It allows for very flat attachments consisting of a clamping station and pallet. Weighing only 1,600 g (NSR 160), the module allows high maximum moments of up to 1,600 Nm (Mz) or 600 Nm (Mx). In additon, there is also the VERO-S NSR mini miniature coupling with a robot-friendly weight of only 400 g (Mx max 75 Nm, Mz max 200 Nm).

At the opposite end of the weight scale, the VERO-S NSR maxi heavy-duty robot coupling for heavy pallets and tombstones (Mx max 4,000 Nm, My max 4,000 Nm). To ensure process reliable function in challenging environments, the couplings are completely sealed to keep out chips and coolant. In addition, a standard cleaning function ensures a chip-free flat work surface between the pallet and the robot coupling. In addition, steel inlays on the contact points make the couplings extremely wear-resistant.

Modular clamping technology system enables efficient pallet solutions

The clamping pallets can be equipped with a wide variety of clamping devices from the world’s largest modular system for stationary workpiece clamping from SCHUNK, including 1,000 possible combinations. For example, the manually operated SCHUNK KONTEC KSC basic clamping vises are particularly efficient all-rounders for machining raw and finished parts on pallet systems. They combine high clamping forces, convenient operation, and short set-up times. With comparably low torques, they can achieve high clamping forces of 50 kN (size 160), meaning that a separate stamping station for form-fit clamping is no longer needed. As the clamping takes place under tension, the bending load on the base body and thereby the lifting up of the clamping device are minimized, which adds to the accuracy and rigidity of the clamping.

A pre-tensioned center bearing without spindle reverse clearance and specially adjusted slides guarantee an excellent repeat accuracy of +/- 0.015 mm. The fully encapsulated drive and an integrated chip outlet ensure particularly high process stability and minimum wear. The basic clamping vises are available as centric clamping vises or as single-acting vises with a fixed jaw. They offer fast adjustment of the clamping range, a flat design, and low weight – the perfect conditions for unmanned workpiece handling. When several workpieces are to be clamped next to each other in confined spaces, SCHUNK KONTEC multi clamping vises are the ideal solution.

These require a single spanner wrench to clamp parts, remove chuck jaws completely by means of quick change or quickly and flexibly convert the clamping system to different workpieces. Spring-loaded SCHUNK TANDEM clamping force blocks, on the other hand, enable particularly compact structures. For clamping cylindrical parts, the SCHUNK ROTA-S plus 2.0 three-jaw chuck can be used. IPF

Panasonic Smart Factory Solutions helping industries raise productivity

Panasonic Smart Factory Solutions India (PSFSIN) is a division company of Panasonic India Pvt. Ltd. It has its corporate office at Gurgaon and a modern factory at Technopark, Jhajjar in Haryana. PSFSIN has market leadership in India and provides three categories of products and solutions to Indian industry.

Welding Equipment and Robot

PSFSIN is a leading provider of welding equipment and robots in India. With regard to welding machines, we provide MMA, MIG/MAG and TIG machines along with a range of welding accessories. PSFSIN has been supplying welding machines to range of industries like automotive, construction equipment, railways, M&HCV, process industry, ship building, plant erection, infrastructure projects to name a few. Our welding robot in particular is special as it incorporates both power source, controller & manipulator. This gives the customer a choice to buy compact solution hardware in a single window for future needs, for training and for post-sale services. In fact, our Tawers model robots are the most preferred robots in India. Panasonic Smart Factory Solutions also provides total robotic welding system solutions. We work with our customers closely to provide them innovative products, related software and trainings in order to increase their productivity.

Surface Mount Technology Component Placement Systems

PSFSIN manufactures and, provides customers with latest

S Ranganathan, Assistant Manager - Sales, Panasonic Smart Factory Solutions India

technology-enabled Surface Mount Technology (SMT) machines ensuring high speeds, high precision, placing broad range of electronic components like capacitors, resistors, integrated circuits onto the PCB's which in-turn are used in mobile phones, telecommunication equipment, computer & laptop, industrial, medical and automotive equipment. Panasonic Smart Factory Solutions has been maintaining its leadership in Indian market offering the following solutions across the SMT division:

1. Total SMT line equipment – ILNB- Integrated line network box, BHU- Board handling unit, Laser marker, Printer, SPI- Solder paste inspection machine, Pick and place, AOI- Automatic optical inspection machine, Reflow oven.
2. Final assembly test and Odd shape component equipment- Parallel link robot, Laser marking machine, Axial insertion machine, Radial insertion machine.
3. Micro electronics equipment- Plasma cleaner, Die bonder, Flipchip bonder, COG-Chip on glass/FOB- flexible PCB on glass.

Industry 4.0 Smart Factory

PSFSIN enables customers to advance from traditional manufacturing and industrial practices to latest smart manufacturing technologies. Panasonic Smart Factory Solutions uses new-age technologies such as Machine to Machine communication and Internet of Things for increased automation, improved communication and self-monitoring that helps analyse issues without the need of human intervention. Following tools are offered to customers-

1. ASPROVA - Production Scheduler and Production Planning
2. I-Reporter - Paperless Factory Solutions
3. Motion Board - Graphical Representation and Data Visualisation.
4. Pana CIM - Traceability Solutions
5. Supply Chain Management Solutions – Vendor/Supplier Portal (Rekochain) & IoT-based Warehouse Management Solutions (IBWMS)
6. CNC & Molding Solutions — Machine Data Capturing Solutions – OEE/ productivity/availability
7. IWNB – Integrated Weld Network Box – for Panasonic Welding Robots.

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HIGH FREQUENCY SCREENS

Masyc Projects Pvt Ltd offers a wide range of high frequency screens. These "Masyc" high frequency screens are of true balanced mass and rugged design. It has linear oscillation, positive conveying, and no sliding and has long screen cloth life and has much less power consumption. There is no vibration during start and stop and the acceleration / de-acceleration is very smooth. With respect to other screens, for the same capacity high frequency screens are smaller in size, lower angle of inclination which results in economical structural design.

The high frequency screens are single deck structure with a substantial rigid design. The screen body consists of the two side plates with bolted transverse supports & screen mats. The frequency of the screen is mainly controlled by an unbalanced motor which is mounted above the screening surface and directly connected. The "Masyc" high frequency vibrating screens achieves a high efficiency of separation and differ from flip flow screens as it breaks down the surface tension between particles. Since the screen vibrates vertically, the coarser particles are lifted higher and finer particles stay c loser to the screen and this increases the probability of separation.

These screens find usage in various application of fine screening of various minerals, lumps such as sand, minerals, ores, sinter, coal, coke, pet coke, lignite, limestone, dolomite, chemical products, fertilizer, compost, refuse and refuse slags etc.

Masyc Projects Pvt Ltd, an ISO 9001:2008 certified company, is active in bulk material handling systems and equipment segment. It has a dedicated team of highly qualified and experienced professionals. Masyc product range of various conveying systems and equipment suit and match all the requirements in different processing industries like cement, steel, coal, pulp and paper, glass, fertilisers, mining, power, etc. IPF

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