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THE MACHINIST

ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

RNI No 71129/98

Volume 13 Issue 7 ● July 2018 ● Rs 75

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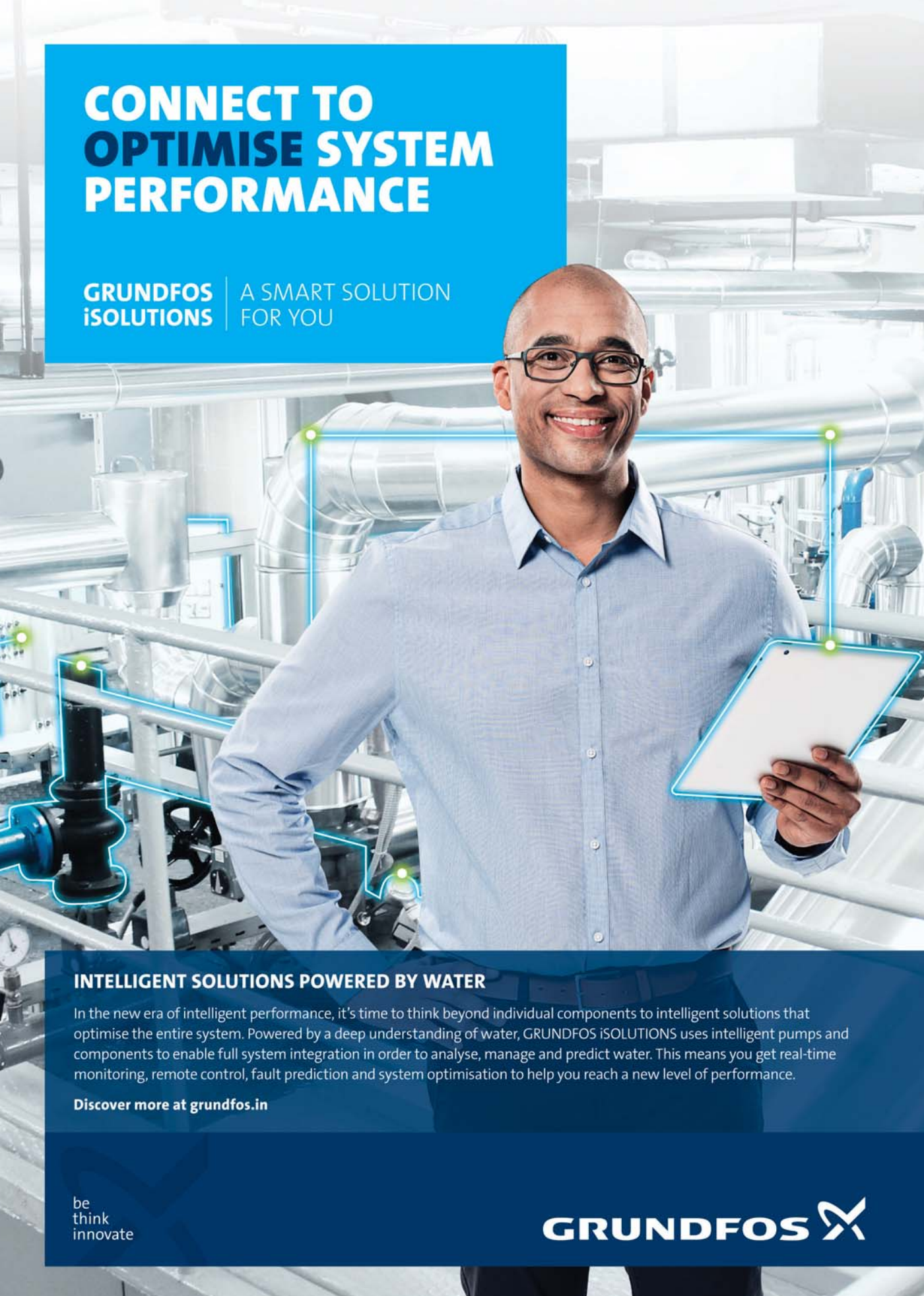
INSIGHT
Skilling India

CONSUMER DURABLES
Focus on localisation

Wings of Ambition!

***Aravind Melligeri** wants to build Aequs into a US$300 million company by 2022*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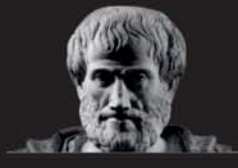

We are what we repeatedly do.
Excellence then, is not an act, but a habit.
Aristotle

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Fuelling entrepreneurship!

When you generally think of the term Startup, the typical imagery that you perceive is of young people starting something in the e-commerce or services segment. And it's not difficult to understand why. Getting capital as well as people is relatively easy when it comes to these industries. Also, it's equally simple to obtain the required approvals and licenses in these sectors. That's unlike manufacturing! In fact, starting up a manufacturing business is neither easy nor simple. Sustaining it and becoming successful is even more difficult. That's why, hard core entrepreneurs are rare in Indian manufacturing! Most of the successful manufacturing organisations that we see around were started many decades ago by such rare people. And such people are harder to find today.

"THE COST OF CAPITAL NEEDS TO COME DOWN DRASTICALLY FOR ENTREPRENEURS AND SMES."

This issue's cover story deals with an entrepreneur, who's building a global aerospace ecosystem from India. Global, aerospace & ecosystem – all these three elements – require great patience, competence, people, and lots of money! Incidentally, this entrepreneur has put in a lot of emphasis on capital with regards to the major challenges faced by him and other entrepreneurs in this industry. In fact, he highlighted the fact that manufacturing entrepreneurs in countries like Vietnam, Malaysia and Thailand have better and easier access to capital and that gives them a competitive edge in the global market. If India truly needs to see the marriage of 'Make in India' with 'Startup India', the cost of capital needs to come down drastically for entrepreneurs and SMEs. Capital also needs to become accessible in terms of processes and paperwork. Only then can we see more young people becoming creators of jobs rather than being seekers of jobs!

Editor & Chief Community Officer

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Volume 13 Issue 7 July 2018

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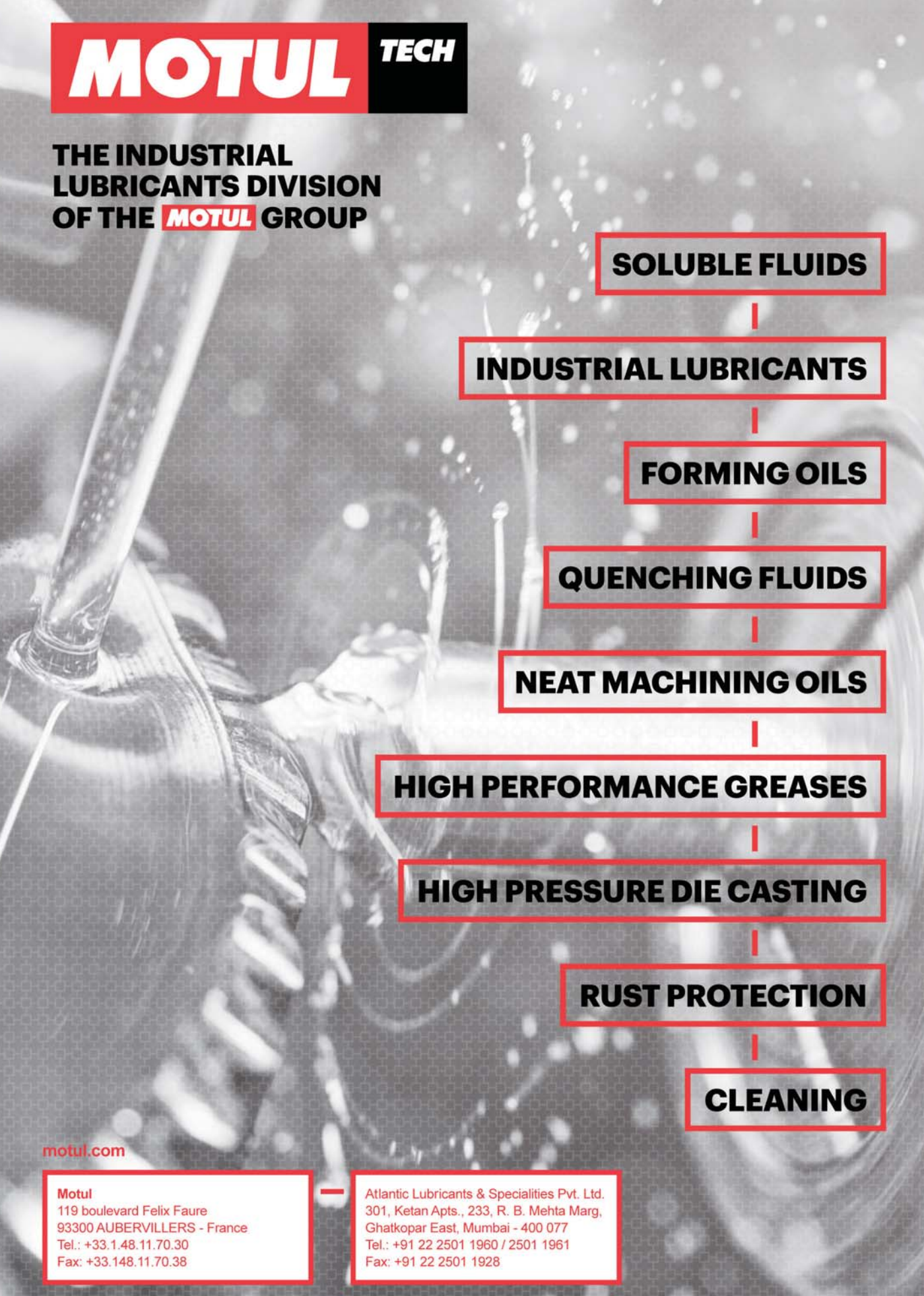
Printed and published by Joji Varghese for and on behalf of owners Worldwide Media Pvt Ltd (CIN:U22120MH2003PTC142239), The Times of India Building, Dr DN Road, Mumbai 400001. Printed at JRD Printpack Private Limited, 78, Resham Bhavan, 7th Floor, Veer Nariman Road, Churchgate, Mumbai - 400 020. Editor: Niranjan Mudholkar. Published for July 2018.



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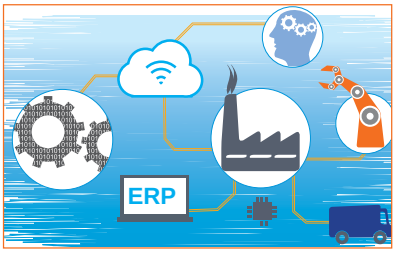

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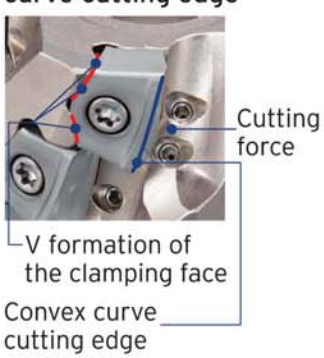

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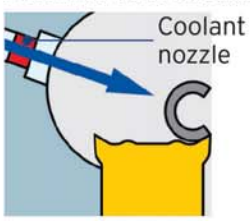

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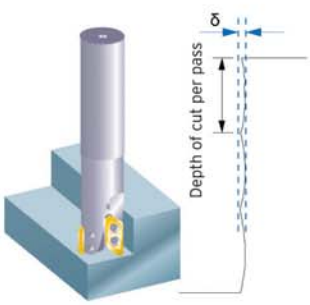

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YOUR GLOBAL CRAFTSMAN STUDIO

Volkswagen Group to invest EUR one billion in India

VOLKSWAGEN GROUP is investing one billion euros into the implementation of the project, primarily between 2019 and 2021. To ensure closest-possible proximity to the market, a project centre is being set up in India where, for example, vehicle development will take place. As announced earlier, Škoda Auto will be responsible for leading Volkswagen Group's planned model campaign on the Indian market. Details of the 'India 2.0' project were announced in New Delhi yesterday.

Škoda Auto CEO Bernhard Maier said, "Experts predict that in the next few years India is going to become the third-largest automotive market worldwide. With our 'India 2.0' project we are now creating the right conditions for sustainable growth there. Our objective is ambitious, but achievable: together with the Volkswagen brand, we are seeking a market share of up to five per cent in the long term, depending on market and segment development."

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Samsung opens world's largest mobile factory

PRIME MINISTER NARENDRA MODI has inaugurated Samsung Electronics' new mobile phone manufacturing facility – The World's Largest Mobile Factory – in Noida, Uttar Pradesh, India. Samsung India also launched its 'Make for the World' initiative, whereby it aims to export mobile handsets produced in India, to overseas markets. With this facility, Samsung will double its current capacity for mobile phones in Noida from 68 million units a year to 120 million units a year, in a phase-wise expansion that will be completed by 2020. Samsung has been manufacturing mobile phones in India since 2007, and is the only brand that is truly made in India. Samsung India has been populating Printed Circuit Boards right from its inception and is aligned with the Government of India's Phased Manufacturing Programme goals. On June 7, 2017, Samsung had announced an investment of Rs. 4,915 crore to add new capacity at the Noida plant, under the UP government's Mega Policy.

Indian manufacturing improves fastest in June 2018; PMI up from 51.2 to 53.1

INDIA'S MANUFACTURING conditions improved in June at the strongest pace since December 2017, supported by the sharpest gains in output and new orders in 2018 so far. Reflecting greater production requirements, firms were encouraged to engage in purchasing activity and raise their staffing levels. On the price front, input cost inflation was the sharpest since July 2014, whilst output charges rose at a stronger pace. Business confidence eased to the weakest since last October. The Nikkei India Manufacturing Purchasing Managers' Index® (PMI®) rose from 51.2 in May to 53.1 in June. This was consistent with the fastest improvement in the health of India's manufacturing economy in 2018 so far.

Manufacturing production rose in June, thereby extending the period of expansion to 11 months. Moreover, the rate of growth was sharp and the most pronounced since last December. Panellists linked greater output to favourable demand conditions. Output growth was reported across all market groups. In tandem with the expansion in output, new business placed at manufacturers in June rose to the sharpest degree in 2018 so far. There were reports that strong underlying demand supported new client wins.

New orders from overseas rose for the eighth consecutive month. Moreover, the rate of expansion was solid and accelerated to the fastest since February. Anecdotal evidence pointed to stronger demand from key international markets.

Despite strengthening demand conditions, business sentiment was at the weakest level seen since last October. Optimistic projections for output reflected expectations that demand conditions will improve over the next 12 months, according to anecdotal evidence.

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NEWS

GST leading to tax base expansion; tax collection on rise

THE GOODS AND SERVICE TAX (GST) has resulted in formalization of economy and consequently information flow would eventually augment not only the Indirect Tax collections but also Direct Tax collections. In the past, the Centre had little data on small manufacturers and consumption because the excise was imposed only at the manufacturing stage while the States had little data on the activities of local firms outside their borders. Under the GST, there will be now seamless flow of availability of common set of data to both the Centre and the States making Direct and Indirect Tax collections more effective.

There are early signs of tax base expansion. Between June and July 2017, 6.6 lakh new agents, previously outside the tax net, sought GST registration. This is expected to rise consistently as the incentives for formalization increase. Entire Textile chain is now brought under tax net. Further, a segment of land and real estate transactions has also been brought into tax net "works contracts", referring to housing that is being built. This in turn would allow for greater transparency and formalization of cement, steel and other sales which earlier tended to be outside the tax net. The formalization will occur because builder will need documentation of these input purchases to claim tax credit.

Maha CM visits Hyperloop facility in the US

CHIEF MINISTER OF MAHARASHTRA, DEVENDRA FADNAVIS, and representatives from the State Government including the Pune Metropolitan Region Development Authority (PMRDA), visited Virgin Hyperloop One at their full-scale hyperloop test site in the Nevada Desert – building upon the historic Framework Agreement signed in February to build the first hyperloop in India. Justin Fishner-Wolfson and Nick Fox were in attendance as well, representing Virgin Hyperloop One's Board of Directors. The Pune-Mumbai hyperloop project has currently reached the midpoint of the in-depth feasibility study, which is on track to finish this summer.

"This was a very fruitful discussion and we should be able to start moving on this project very fast," said Shri. Devendra Fadnavis, Hon'ble Chief Minister of Maharashtra.

India's electricity demand from EVs to reach 69.6 TWh

THE OVERALL ELECTRICITY demand from electric vehicles (EVs) in India is projected to be around 79.9 gigawatt hours (GWh) by 2020 and is expected to reach 69.6 terawatt hours (TWh) by 2030, noted a recent ASSOCHAM-EY joint study.

"The overall EV demand is expected to help utilities earn an estimated US$ 11 billion (INR700 billion) in revenue by 2030," according to the study titled, 'Electrifying India: building blocks for a sustainable EV ecosystem,' jointly conducted by The Associated Chambers of Commerce and Industry of India (ASSOCHAM) and Ernst & Young LLP (EY).

The report added that increasing adoption of EVs across India will be instrumental in transforming the country's power sector. "The surge in electricity demand from EVs will help recover the slow demand growth."

It also said that arrival of electric mobility is expected to help the P&U (power and utilities) sector realize net cost and revenue benefits from both demand and the supply side.

Need of phased plan for local manufacturing of electronic components

THE MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY (MEITY) should come up with a phased manufacturing plan to encourage manufacturing of electronic components other than mobile phones, suggested a recent ASSOCHAM-NECTI joint study.

"As domestic value addition has increased for mobile phones, similar plans are needed to encourage manufacturing of components which are the core ingredients in the overall increase of domestic value addition," noted the study titled 'Electricals & electronics manufacturing in India,' jointly conducted by The Associated Chambers of Commerce and Industry of India (ASSOCHAM) and NEC Technologies India Pvt. Ltd.

Noting that India lags in component manufacturing, which is the most fundamental block in electronic devices, the report stated that country should focus on reducing component imports and increasing local value addition to become a manufacturing hub.

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A list of key events happening between August 2018 to June 2019, both nationally and internationally.

Busworld India 2018 **August 29-31, 2018** Bengaluru, India *www.india.busworld.org*	**Surface & Coatings Expo** **Aug 31–02 Sep 2018** Chennai, India *www.ciisce.in*	**Agri Tech India** **Aug 31–02 Sep 2018** Bengaluru, India *www.agritechindia.com*	**Automation Expo** **August 29–September 1, 2018** Mumbai, India *www.automationindiaexpo.com*
IMTS 2018 **September 10–15, 2018** Chicago, USA *www.imts.com*	**Renewable Energy India Expo** **September 18–20, 2018** Greater Noida *www.renewableenergyindiaexpo.com*	**Wire India Show** **November 27–29, 2018** Mumbai, India *www.wire-india.com*	**Metallurgy Show** **November 27–29, 2018** Mumbai, India *www.metallurgy-india.com*
TechIndia 2018 **August 29 –31, 2018** New Delhi, India *www.techindiaexpo.com*	**IMTEX 2019** **January 24 –30, 2019** Bengaluru, India *www.imtex.in*	**Taipei International Machine Tool Show** **March 4–9, 2019** Taipei, Taiwan *www.timtos.com.tw*	**intec Coimbatore** **June 6–10, 2019** Coimbatore, India *www.intec.codissia.com*

OUR INHOUSE UPCOMING EVENTS

The Economic Times BMC BEST METAL CUTTING BRANDS 2018

September 2018, Bengaluru

The Economic Times POLYMERS Global Conference on Plastics in Automotive

October 2018, Pune

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MERCEDES-BENZ INDIA APPOINTS NEW MD & CEO

Mercedes-Benz has appointed Martin Schwenk as the new Managing Director and CEO of its India operations effective from November 1, 2018. Martin Schwenk will replace Roland Folger, who will assume a new position for Mercedes-Benz's Thailand & Vietnam markets.

Martin Schwenk who will take the new responsibility of heading Mercedes-Benz India has an Engineering degree from the University of Stuttgart and started his career at Daimler in 1992, through the Mercedes-Benz Trainee Program.

Afterwards, he has taken various important positions in Finance and Controlling in several locations, including Germany, South Africa, Austria and United States.

Martin Schwenk, currently the Chief Financial Officer of Beijing Mercedes-Benz Sales Service Co. Ltd. in China stated, "Having worked across in different countries and functions, I am extremely excited for my forthcoming responsibility to head the dynamic India market. India's rich cultural diversity, the young population, the diverse customs, different languages and topography together with its importance as a future economic power house; makes it a compelling market to grow the business. It is a privileged opportunity for me to head the business of the most iconic and successful luxury motoring brand, in one of the most vibrant markets in the region.

MANFRED GINGL JOINS IAC GROUP AS CEO

International Automotive Components Group (IAC) announced Manfred Gingl has been named chief executive officer (CEO) of International Automotive Components Group, effective immediately. President Natale "Nat" Rea, who served as interim CEO, will continue to serve as President.

"We are excited to have an executive as accomplished and respected as Manfred lead IAC and execute our strategic plans to grow the company," said IAC Group Chairman Stephen J. Toy, the senior managing director and co-head of WL Ross & Co. "He is a proven leader with more than 40 years of automotive supplier and aftermarket industry experience and global perspective that will be instrumental in moving our company forward in this rapidly evolving industry."

Gingl brings a wealth of leadership experience and operational expertise to IAC. While spending the last several years exploring disruptive mobility technology, his most recent experience in automotive was as CEO of Magna Aftermarket from 2008 to 2010, after having served as executive vice chairman of Magna International from 2002 to 2007. Prior to that, he served as president and CEO of Tesma International from 1992 to 2002, a company that was formed after he guided Magna's powertrain business through an initial public offering.

"I am very excited to be back in the automotive industry and to take the helm of this global leader in interior systems and solutions," said Gingl. "I am eager to build upon IAC's growth and reputation for innovation and strong customer focus. It's an exciting time to be in this industry as the world moves toward autonomy and reimagines the future of mobility. IAC is embracing megatrends such as autonomy, ride sharing, connectivity and cleaner driving by developing exciting solutions that will meet the many demands of the cockpit of the future."

JOHN GUGEL TO HEAD HONEYWELL UOP BUSINESS

Honeywell has announced the appointment of John Gugel as president of Honeywell UOP, a leading supplier of process technology, catalysts, engineered systems, and technical and engineering services to the global petroleum refining, petrochemical, chemical and gas processing industries.

With more than 25 years serving in numerous roles at Honeywell UOP, Gugel is an established leader in the oil and gas processing industries. He succeeds Rebecca Liebert, who had been president of Honeywell UOP since 2016. Gugel reports to Rajeev Gautam, president of Honeywell's Performance Materials & Technologies division, and who also served as president of UOP from 2009 to 2016.

Prior to his current role, Gugel served as vice president and general manager UOP's Process Technology and Equipment business, and prior to that, held the same role as head of UOP's Gas Processing and Hydrogen business. He earned bachelor's and Masters degrees in civil and environmental engineering from the University of Wisconsin at Madison, and an MBA from the Kellogg School of Management at Northwestern University.

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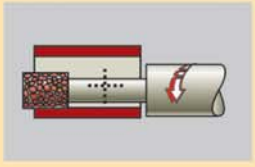
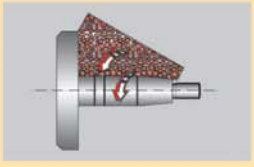


FIG-200 SPL CNC
BIG BORE GRINDER

FIGT-300 CNC
FOUR STATION TURRET

FIGE-150 CNC
ID / OD GRINDER

CNC Cylindrical Grinding

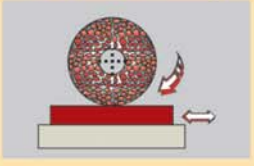


AWH-1500 CNC
LONG SHAFT GRINDER

AWH-2000 CNC
HEAVY DUTY GRINDER

SWH-400 CNC
AUTO LOADING

Surface Grinding



SG-106 CNC
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SGR-60
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SG-63
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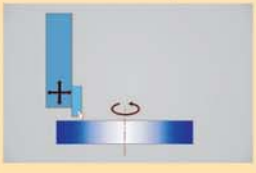
Vertical Turning Lathe



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Delivering **engineering excellence**

There is a great push from the Indian government to position the country as a low cost, high quality aerospace manufacturing hub and accelerate R&D services through new policy initiatives, says **Steve Gerber,** Sr. Vice President, Strategic Accounts, QuEST Global.

By Niranjan Mudholkar

Gerber sees huge opportunity for engineering and R&D services in India.
Pic for representation only. Courtesy: QuEST Aerospace

Q. You joined QuEST Global in February of 2009. How's been the journey since then?

The journey so far has been exciting and fulfilling. Over the past decade, I have seen QuEST grow from 1400 to more than 10,000 employees and expand from four to seven verticals.

As an engineering service provider, QuEST's expertise lies in solving customer challenges through innovative solutions. Driven by a great culture and values, QuEST does a great job of adapting capabilities to address customer needs and its fulfilling to be part of an organization that does this so well.

Q. How would you look at the aerospace industry's evolution in India in the same time span as your journey with QuEST?

In the last ten years, the aerospace industry has grown at a rate not seen before both in the commercial and defense space. With India and China expected to witness the highest growth potential, it is estimated that the industry will continue to expand over the next decade.

In India, both commercial and government defense purchases are growing at an accelerated pace. There is a great push from the Indian government to seize this opportunity and position the country as a low cost, high quality manufacturing hub and accelerate R&D services through new policy initiatives like easing of investments, offset clause in defense regulations and overhaul of taxation.

At QuEST, we see huge opportunity for engineering and R&D services in India. We have built our technology capabilities and expanded our capacity to meet the rising demand. Over the last decade during my tenure, the company has evolved from a basic deliverable provider to a full-service engineering partner. From modeling and drafting to integrated product development, we are supporting our customers across functions that directly drive business metric. As an approved defense partner in India for OEMs, we are engaged in several offset projects and we will continue to invest in this area.

> We are leveraging digital technologies like augmented reality and IoT based inventory tracking to maximize uptime with aftermarket services.

Q. What factors have contributed to the success of QuEST Aerospace? How much does it contribute to the overall group revenue in terms of percentage?

Whether it's engineering or the right side of the Product Life Cycle, customers are looking for capable partners that can respond and adapt swiftly to their ever-changing needs. As an industry leader, QuEST's mission has always been to look beyond the obvious and deliver transformative engineering solutions.

Over the last two decades, we have been delivering best-in-class engineering services as well as adding value to customer offerings through innovation. Our approach has always been to win customer trust and work together to solve industry challenges Given our willingness to develop technologies and harness necessary skills to address market demands and improve time to market, we are delighted that customers regards us an extension of their own team. Aerospace represents the largest and most significant part of the QuEST portfolio, contributing to nearly 40 percent of our revenue.

Q. Tell us about the technical capabilities of the aerospace vertical. What are some of its key engineering achievements?

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Whether it's engineering or the right side of the Product Life Cycle, customers are looking for capable partners that can respond and adapt swiftly to their ever-changing needs.

is playing a key role in pioneering innovation in aerospace that makes aircrafts safer, faster, more reliable and enjoyable. As a long-term, strategic partner to our customers, we're helping our clients seamlessly transition to digital manufacturing. We enable them to emerge as leaders in the market by accelerating smart product introduction by streamlining design, manufacturing, supply chain, and using advanced technology like Model Based Development (MBD) to reduce time to market.

We are leveraging other digital technologies like augmented reality and IoT based inventory tracking to maximize uptime with aftermarket services. We have developed lean engineering services that evaluate manufacturing non-conformance in real-time, thereby enabling faster production lines. Our process capability has brought reduction of nonconformance disposition lead-time from weeks to hours. By deploying analytics driven root cause identification tools, we have also been able to reduce the generation of non-conformances as well.

The recognition we have amassed from the industry and customers is a testament to our commitment to excellence, quality and innovation in this sector. QuEST has been:

i. Recognized by HfS for excellence in providing embedded product engineering services.
ii. Positioned in Winner's Circle in HfS Aerospace Engineering Services Blueprint
iii. Recognized as a leader amongst Global Product Engineering Services in Zinnov Zones 2017.
iv. Recognized by International Association for Outsourcing Professionals (IAOP) in 2016 as top company for Awards & Certifications and Employee Growth in Leader Size Group.

Q. What are some of the key challenging projects successfully executed by the aerospace vertical recently?

Non- Conformance Disposition Center of Excellence - A lean application of an engineering process, QuEST dispositions 1000's/month in customer non-conformances within hours of receipt. This service was developed to support aero structures, Aero Systems and Aero Engines. Average cycle times have been reduced from a couple of weeks to a couple of hours with a commensurate reduction in cost.

On time Delivery - Our 24X7 support for delivery assurance has enabled on time shipment of our customer's products by reducing delays in supply chain and the production line by 40 percent.

Reduce Redundancy - Our customers expected cycle time reduction by 50 percent with automation. QuEST helped the customer in automating tool path generation for a family of parts that resulted in: Process standardization, Cycle time reduction by 50 percent – 70 percent and defect reduction by 85 percent.

Redesign of Jet-pipe to improve life - An OEM experienced high rate of jet pipe cracks on a military jet aero engine resulting in low MTBF and increased downtime. QuEST redesign of the component resulted in 5X improvement in the expected life, reduced jet pipe weight and cost reduction of 35 percent.

"With India having a large pool of highly skilled and experienced SMEs in the aerospace sector, QuEST leverages local SMEs as a part of its local global model."

Model Based Enterprise - We are working closely with our customers to develop the systems and technologies required to connect the master CAD model to the various manufacturing and supply chain elements to improve first time quality, significantly reduce time to market and enhance production readiness.

Q. How do you perceive the role of SMEs in India's aerospace industry?

SMEs play a big role in developing innovative solutions for the challenges faced by the aerospace industry. With India having a large pool of highly skilled and experienced SMEs in the aerospace sector, QuEST leverages local SMEs as a part of its local global model. We often hire engineers with customer product and process experience to provide a cost effective speedy solution. This approach is a differentiator for QuEST and results in a much faster ramp up to value as well as high quality deliverables from the earliest part of the engagement.

SMEs that have ambition to make a bigger mark in the industry must increase capabilities in digital technologies, supply chain and aftermarket services.

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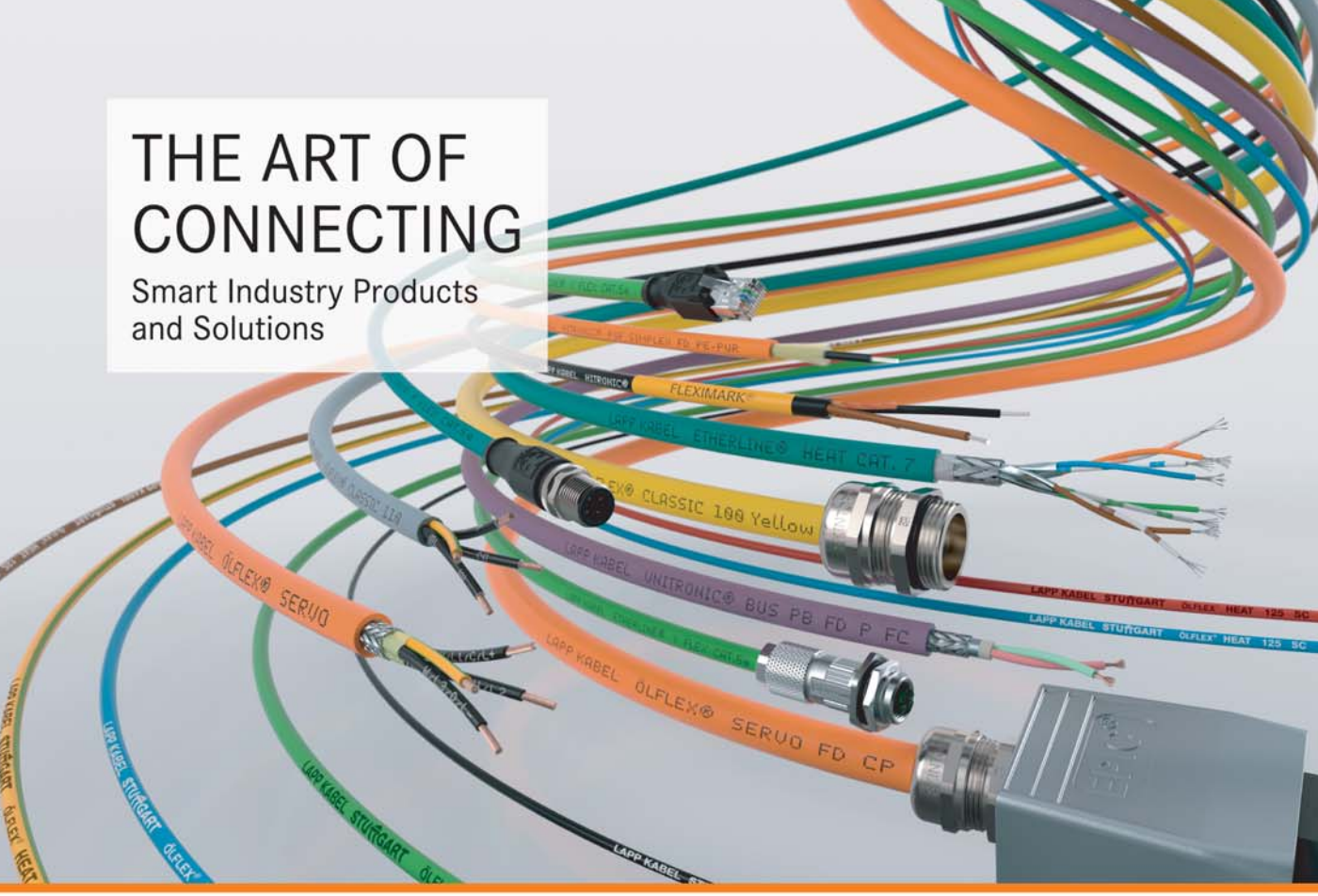

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LAPP

Focus on localisation

Gunjan Srivastava, Managing Director & CEO, BSH Household Appliances reveals the company's expansion plans.

By Swati Deshpande

Please tell us about BSH Appliances' business in India.
BSH stepped into the Indian market in the year 2010. Back then, our major focus was on built-in appliances and washing machines with the premium brand – Siemens. We started off by importing Siemens products to the country. However, after closely studying the Indian market, we launched Bosch appliances across categories and targeted the mass premium market. With Bosch, we entered the washing machines, refrigerators and dishwashers categories as well as developed India-specific appliances.

The year 2014 represented our first milestone in India with the launch of a washing machine in the 7kg category, especially because these were manufactured in the state-of-the-art Indian manufacturing plant at Chennai. In April 2018, the plant has completed production of 5 lac washing machines.

In the past eight years, BSH has experienced colossal success in India. This year, we successfully launched the luxury kitchen appliances brand – Gaggenau in India, laid the foundation of a refrigerator factory at our Chennai facility and for the first time, we forayed into the Asian top loaders washing machines category with our brand – Bosch.

We aim to keep this momentum going and introduce more offerings fit for the Indian consumer by localising offerings and innovating products fit for the evolving social class. 2018 will be a year full of fervour for BSH as we will continue expanding and launch new and exciting categories/products.

> By 2021, the new facility will manufacture approximately 41,000 units, targeting more than 400,000 units by 2028 for domestic consumption as well as for the exports market.

Tell us about the current manufacturing facility's capability and capacity.
In 2015, BSH Household Appliances moved from a product to a regionalised approach, which helped us understand the Indian consumer better and build relevant products that are successful in the country. In line with this objective and to support the Government's 'Make in India' campaign, BSH's new facility will see localisation for India, and will manufacture products for the brand Bosch.

Currently, at our 44 acre Chennai facility, we will manufacture Bosch refrigerators and aim to create close to 500 jobs by 2027. By 2028, the refrigerator factory targets a capacity of more than 400,000 appliances for domestic consumption as well as export to other emerging markets. To ensure that we meet these objectives, we are investing €100 million in the next four to five years. Also, recently the company laid foun-

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This year, we successfully launched the luxury kitchen appliances brand – Gaggenau, laid the foundation of a refrigerator factory at our Chennai facility and for the first time, we forayed into the Asian Top Loaders washing machines category with our brand – Bosch.

dation of refrigerator manufacturing plant in Chennai. Please tell us about the upcoming facility and investment.

India is one of the fastest growing home appliances market in the world. Today, the aspirational Indian invests in a good property, advanced technology and a comfortable lifestyle, which creates huge opportunities for us. With respect to our new refrigerator factory, we see a growth potential in the category as India comprises of 10 mn units yearly. Our objective is to become category leaders in this segment over the next few years.

With regards to the cooling category and as a part of our company's ambitious expansion drive, BSH will be investing €100 million over the next 4–5 years across building brands, technology centre, setting up its robust refrigerator factory to bring best in class German technology in India. As mentioned earlier, by 2021, the new facility will manufacture approximately 41,000 units, targeting more than 400,000 units by 2028 for domestic consumption as well as for export to other emerging markets. To support this, the facility will give direct employment opportunities to almost 500 staff by 2027. In conclusion, we are looking forward to Make in India for India.

In March 2018, the company forayed into various additional categories meant for the Indian consumers. Please tell us your further plans on these lines.

Q. Also, the company is expanding its product portfolio. Can you please tell us about it?

Reinforcing our commitment to the country, we are happy to have launched Bosch Asian top loaders in India. Even as one of the leaders in the front loaders category, we realised that in India most households are largely accustomed to top loaders. This insight coupled with the challenge that consumers face with regards to their fabrics and forward moving fashion, we believe that Bosch top loaders will provide the best innovative solution.

Q. How do you see demand for consumer durables growing in the future?

As mentioned earlier, the consumer durables industry is constantly evolving and moving towards technologically advanced appliances. There is a huge opportunity in the cooling and laundry category in India, which is seeing growth across the country, in Tier 1 and Tier 2 cities, while the dishwasher category is slowly picking momentum in the metropolitan cities.

Q. What technological (e.g. home automation, smart homes, etc.) transformations do you see affecting consumer durables industry.

Consumers are increasingly becoming aware of sustainable and green homes; many households have moved to accept and appreciate technologies that are sustainable & durable. Also, with the increase in purchasing power, aspirational Indians are opting for premium goods and services, thus, widening the opportunity for products that provide an edge above the others or me-too products. In a cluttered space, this change has pushed companies to innovate and derive key USPs that define their product and the segment they plan to target.

Q. How do you look at the Indian market?

BSH currently covers 250 + cities and with this new product offering, we are ready to expand across the length and breadth of the country as we aim to expand to 300–350 cities in next 2–3 years. Further, understanding the authenticity of the product for Indian consumers, Bosch Home Appliances will roll out a 360 degrees marketing and communications campaign to amplify the launch of Asian Top Loaders and reach out to potential customers across the four zones in India. This high calibre integrated campaign will include a mix of traditional mediums like TVCs, print hoardings and ground level communications as well as new age mediums like online and digital amplification.

At BSH, we believe there lies immense growth potential in the emerging regions of India, owing to the vast populace and their budding aspirational needs that contribute to a growing Indian home appliances market. In the last few years, BSH invested over 100 million Euros into India to develop its Chennai facility for refrigerators, the Tech Centre, R&D and brand stores to produce localised offerings for India. In line with our 'Make in India' commitment, we will continue to extensively invest in the country and build innovative India specific products.

In terms of challenges, it is difficult to decipher a market that is on a constant look out for technologically advanced and up-to-date products at reasonable price points. Besides this, India's home appliances sector is a cluttered space and we aim to break the clutter with innovative products and technologies that are central to customer insights.

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Optimizing your **supply chain!**

Chitradeep Banerjee talks about contingencies associated with a supply chain system and what safety and security measures an organization can adopt to mitigate such contingencies.

We all know how important it is to mitigate contingencies to sustain in market. Can you share your views on the contingencies faced in supply chain?

The inherent complexity in supply chain systems increases the likelihood of contingencies. Ignoring such contingencies can prove to be costly to an organization, in terms of money, productivity and market reputation. Contingency management plays a vital role in the supply Chain business. Any non-compliance can lead to a disaster if there is a lack of awareness or negligence. Supply chain contingencies are those that impact the 3Ms: Man, Material and Machine, along the entire chain, from manufacturer to suppliers and consumers. If we go for a risk-based thinking approach, we sometimes come across stray cases that might also have a Socio-Environmental Impact.

The complexity of supply chains requires an assessment of the types of contingencies involved and factors that may contribute to their occurrence. Two broad categories of contingencies exist, external and internal.

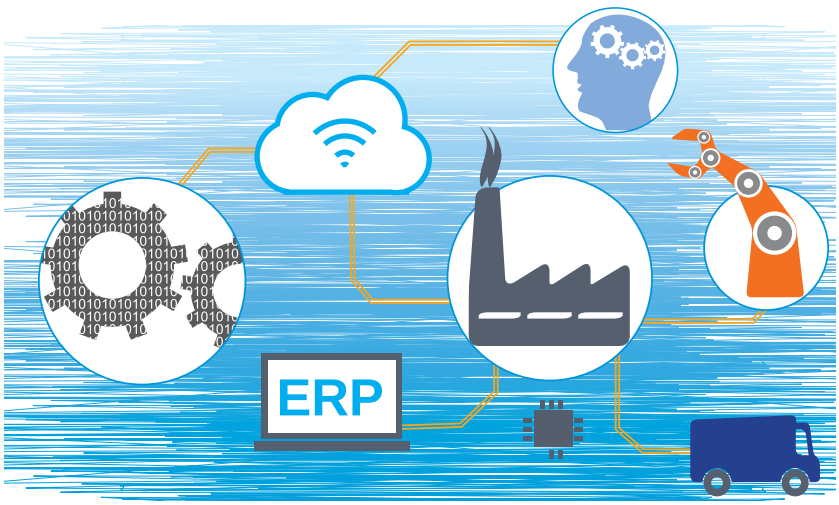
What are the relevant security certifications which can help Supply Chain Systems in this context?

Any security standard, when practiced in true spirit, consistently and constantly, will lead to achieving comprehensive benefits. The true essence is always felt if we do implement a relevant security standard without deviating from the guiding principles of the standard. An organization needs to select the right certification based on its requirement, market, customer and above all, that leads to a sustainable, long-term growth for the organization. Certifying bodies such as ours provide certification in all fields and domains, from Information Security and Supply Chain Management to Social and Quality Compliance. My recommendation will be for an organization to go for TAPAFSR / TSR since it takes care of the complete security aspects of goods, whether it is stored in a warehouse or is in transit.

Transportation security services are primarily based on two sets of standards: Facility Security Requirements (FSR) and Truck Security Requirements (TSR). FSR can be achieved at one of three levels: class A, B, and C, with class A being the highest level of security; monitoring the level of security for facilities and warehouses used for storing and transporting goods. Audits generally include two to three days of audits of the facility against TAPA's standards and repeat audits conducted at regular intervals, over a three-year period. Supply chain contingencies affect a wide range of stakeholders, where the direct players are the producers, the logistic providers, retailers and the customers. In addition, there are the providers of finance and consumer pressure groups, to name a few.

How do you foresee improved quality and safety measures implemented in the area of Supply Chain in India?

Improvements in any industry are driven by decision makers and leaders. Awareness of quality and a vison of transformations always help in paving the right path towards success. Leading organizations are increasingly looking at improving the performance of their supply chains, in order to deliver reduced cost, increased revenue and most importantly, increased shareholder and customer value. Continual improvement in supply chain systems can be achieved by implementing strate-



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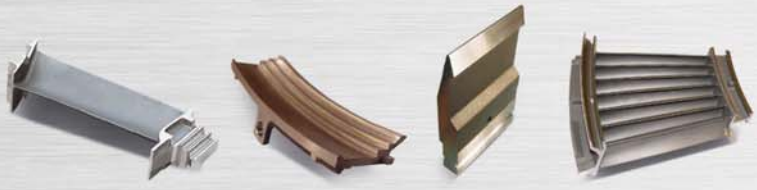

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Supply chain contingencies	
External supply chain contingencies	**Internal supply chain contingencies**
External contingencies can be driven by events either upstream or downstream in the supply chain.	Internal contingencies provide better opportunities for mitigation because they are within your business's control.
Demand risk - caused by unpredictable or misunderstood customer or end-customer demand, **Supply risk** - caused by any interruptions to the flow of product, whether raw material or parts, within your supply chain, **Environmental risk** - from outside the supply chain; usually related to economic, social, governmental, and climate factors including the threat of terrorism, **Business risk** - caused by factors such as a supplier's financial or management instability, or purchase and sale of supplier companies, **Physical plant risk** - caused by the condition of a supplier's physical facility and regulatory compliance issues	**Manufacturing risk** - caused by disruptions of internal operations or processes, **Business risk** - caused by changes in key personnel, management, reporting structures or business processes, such as the way purchasers communicate to suppliers and customers, **Planning and control risk** - caused by inadequate assessment and planning, which amount to ineffective management, **Mitigation and risk** - caused by not putting contingency plans (or alternative solutions) in place in case something goes wrong, **Cultural risk** - caused by a business's cultural tendency to hide or delay the dissemination of negative information. Such businesses are generally slower to react when impacted by unexpected events that have the potential to disrupt the supply chain.

gies and best practices adopted by high-performing organizations. (See table 2).

What is your perspective on the need to put in place a proactive contingency-based action plan and how should such a plan be developed?

In order to deliver, one ought to know the requirement upfront. At the outset, the stakeholders of supply chain need to perform a business impact analysis and a thorough gap analysis. Pitfalls in the supply chain should be identified and categorized, based on a severity scale. This can only be achieved when a frequent surveillance check is carried out. Generally, contingency-based action plans are developed based on outputs obtained from the below analyses and assessments:

- Mapping Stage-wise Cargo Flow and Business Partners
- Conduct Threat Assessment
- Conduct Vulnerability Assessment
- Prepare an Action Plan
- Document How Risk Assessments are conducted along with mitigation plans.

Table 2: Strategies and best practices adopted by high-performing organizations

- Provide insights into the health of supply chains by using a robust set of data analytics,
- Transform global supply chains through a cross-disciplinary approach spanning operations, tax and risk,
- Review, improve and assess contingency of procurement functions to realize long-term, sustainable benefits,
- Improve supply chains and infrastructure in emerging markets as a powerful catalyst to secure new market share and drive revenue growth,
- Integrate environmental, sustainable and low carbon aspects into end-to-end supply chains,
- Provide sector-specific supply chain insights with experienced supply chain professionals from the respective industries.

Are testing standards and certifications important for alternate plan of supply chain? Should it be made mandatory for an organization?

This question reminds me of a concept I learnt from a teacher in school: the "Maker-Checker" concept: the best way to find out what has been done is right, is to check and re-check. While re-checking, in the context of a supply chain system, can be done from second-party audits, the process of quality checks is further strengthened when a third party conducts audits, as per prescribed set of standards, to determine if there are any gaps in the system. Here, when it comes to security and supply chain contingencies, I believe that standards and certifications should be made mandatory. Government statutory bodies, regulatory bodies and those directly or indirectly linked to the supply chain should take steps to safeguard the interests of the end consumer. Standards and Certifications are necessary to maintain quality, security and safety within the system. They minimize risk factors and contribute significantly to bringing greater reliability, sustainability and business continuity to the entire eco system in the supply chain.

The interviewee is Director – Sales, Systems Certification at TUV Rheinland (India)

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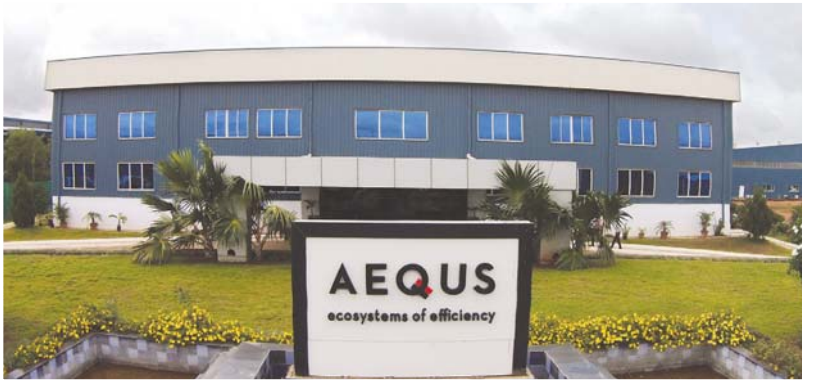
Wings of Ambition!

Aravind Melligeri, CEO and Chairman, Aequs Private Limited, wants to take the company from US$100 million to US$300 million by 2022. And he's building a global aerospace ecosystem to make it possible.

By Niranjan Mudholkar



A couple of months back, I could have easily dismissed the Hattargi village in Karnataka's Belgaum district as a non-descript place. Today, it is a different story! Having recently visited Hattargi, I now understand why aerospace giants like Airbus, Boeing, GKN, Safran, Honeywell, Fokker and many others come to this village. They source their important components, systems and aerostructures from an SEZ located here! Located at a 45-minute smooth drive from Belgaum, Hattargi is home to the Aequs SEZ. And Aequs is India's first and only full-fledged aerospace ecosystem, hosting separate facilities for fabrication, machining, treatment, assemblies, warehousing, and so on.

"With our acquisitions in US and France, we have now been able to establish the first global aerospace ecosystem in the world. Aequs also has the distinction of being India's fastest growing aerospace company, with a CAGR of 50 percent year-on-year for five years."

Entrepreneurial flight

"Spread over 250 acres, the Aequs SEZ supports the entire aerospace manufacturing process, thereby reducing time-to-market on projects and that's why aerospace majors come to us. Aequs offers one stop solution. Customers don't need to go here and there. When they come here, they do not have to worry about the logistics, the supply chain and the costs related to it," says Aravind Melligeri, CEO and Chairman, Aequs Private Limited. Melligeri, who founded Aequs, is an entrepreneur of a rare breed! After all, how many people consider becoming a manufacturing entrepreneur in India? And how many of them even look at aerospace as a serious option? Well, Melligeri is one such person. And he has done it with remarkable success! Aequs, which started in 2009, has steadily built its expertise in the aerospace services in a way that has global aerospace industry giants to India. Of course, Melligeri's wings of ambition are taking him all over the world! "With our acquisitions in US and France, we have now been able to establish the first global aerospace ecosystem in the world. Aequs also has the distinction of being

Aequs Aerospace in numbers

Annual CAGR (YTD FY'17-18): **50 percent+ over a 5-year period.**

Revenue of around **$ 100 Million** for Aerospace

Investment of around **$ 30 Million** a year (for the next 3 years)

3000+ employees globally

Six Locations: Belagavi in India (HQ), Houston - Texas, Paris - Texas in the US and 3 locations in France.

23 Units (Aequs + 3rd party) in Aequs SEZ – Belagavi.

"It was not something that could happen overnight or in five years. So, we actually took a 30-year view of this business and of the industry before establishing the SEZ and investing in partnerships and JVs. And that seems to be playing out well, so far."

India's fastest growing aerospace company, with a CAGR of 50 percent year-on-year for five years," Melligeri shares.

According to industry estimates, the global aerospace manufacturing market is worth a whopping US$ 10 billion -- of which India caters to only about US$ 250 million. The gap is enormous! But it also presents a magnificent opportunity. Melligeri is slowly building not just an organisation but also an ecosystem that should be able to claim a substantial part of this opportunity. In fact, today, Aequs already takes out a US$ 100 million share out of the US$ 250 million pie! But his vision is not just limited to his own share of the pie. He wants the pie to become bigger. "And that's why my efforts are towards building an ecosystem," he says. Of course, Melligeri has not reached where he is today overnight. "Basically, it has been an evolution. Automotive industry was my first job where I learnt system analysis. As we went into services industry, we entered the power generation industry doing turbines. Then we naturally progressed into aerospace engines, which are also turbines. So that's how we started in the aerospace industry," explains Melligeri who originally started his entrepreneurial journey by co-founding QuEST Global, an engineering company that today caters to different verticals including aerospace & defence.

Melligeri continues: "Later, we started doing wing designs, fuselage design, and so on. Then we started thinking about manufacturing as we saw a gap in the industry with regards to manufacturing. And that's how we entered aerospace manufacturing. We realised that there was no significant player in the aerospace segment except for HAL. So, we felt that this was a good bait, but we also knew that it was going to be a long bait. It was not something that could happen overnight or in five years. We actually took a 30-year view of this business and of the industry before establishing the SEZ and investing in partnerships and JVs. And that seems to be playing out well, so far."

Taking a long-term view

How does Melligeri see the aerospace industry in India evolving at present? He explains that globally, the aerospace indus-

Aequs Joint Ventures*

Aerospace Processing India Pvt. Ltd (API) is a JV between Aequs and Magellan Aerospace (Canada). It provides aerospace surface treatments not readily available in India. Located at Aequs SEZ in Belagavi, this is the first and only third-party facility approved by Boeing in India. API provides metal finishing treatment services for both the export market and the domestic market in India.

Aerostructures Assemblies India Pvt. Ltd (AAI) is a JV between Aequs and Saab AB (Sweden) located in Aequs SEZ, Belagavi. It focuses on build-to-print assemblies for commercial and defense aircraft for emerging markets and is ideally positioned to harness defense offset opportunities in the Indian market. AAI can manufacture aerostructure assemblies with sizes up to 4 x 2 meters, weighing up to 150 kilograms, and with a mix of metal and composite parts.

SQuAD Forging India Private Ltd (SFI) is a JV company for closed die forging in India. The JV, originally a tripartite agreement, currently has a structure with equal distribution among the partners Aequs and Aubert & Duval SA (ERAMET Group, France). SQuAD primarily supports major OEMs in their supply chain while contributing to their offset obligations. It focuses on aerostructure parts, landing gear and braking system components in aluminium, steel, titanium and nickel base alloys. SQuAD also handles products for other markets such as highly critical parts for automotive, power generation and oil & gas.

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try has a fairly well-defined structure – OEMs, tier 1 players for aerostructure manufacturing and for some system manufacturing, tier 2 suppliers for machined part manufacturing and sub assembly manufacturing, tier 3 players who are into treatments and tier 4 who are material suppliers. "Customers come to India primarily for detailed parts. India already had a huge amount of automotive machining excellence. So, it was incremental learning for India. Most of the OEMs, tier ones and tier twos chose to come to India to source the detailed parts."

> "In fact, our capacity today is two times the sum of the country's overall capacity in terms of detailed parts manufacturing in aerospace. We continue to grow 40 percent to 50 percent year on year."

Melligeri realised that there is no large detailed parts manufacturer in India. Most of the players were basically mom & pop shops with five, ten or fifteen machines. "That would never be enough for customers who came with big jobs. Aerospace customers were looking at partners who could absorb these big jobs. For this, we believed that we need scale. If a company is only doing business worth US$10 million, then it cannot absorb business worth US$ 20 million or US$30 million. You have to be a US$100 million company to be able to do that. And that's the aim that we set for ourselves. That's how we build our capacity. In fact, our capacity today is two times the sum of the country's overall capacity in terms of detailed parts manufacturing in aerospace. We continue to grow 40 percent to 50 percent year on year. Today, customers recognise that if they need detailed parts in India, they can come to Aequs. In fact, we are now also building the next tier suppliers for this industry in India," he explains.

What's needed!

What are Melligeri's expectations from the government when it comes to his industry? "Our biggest complaint to the government is the lack of access to the capital to grow. Aerospace manufacturing industry needs a lot of capital. I also feel that the expectations of the banks with regards to the collaterals are unreasonable. In competitive geographies, it is far easily available. If the government wants to make this a focused and export industry, then they need to step up and do something about that. Otherwise, if the government can launch a civil aviation program with a long-term horizon, then it can help the industry. Can we make a difference in the next two years to three years? Absolutely not! Can we make a difference in the next five years to ten years? Absolutely not! Can we make a difference in the next thirty-three years? Absolutely yes. If government can take such a long-term view, then it will be good. But I think it is difficult for them to do something like this," he shares.

Towards globalisation

For the first several years, Melligeri and his team just focused on the ability to deliver from Aequs. "In the last three years, we have started looking outside India. We did some acquisitions abroad to enhance our capabilities and started getting clients to transfer some work in India through those acquisitions." That is something which continues to happen. "We have defined the core areas – aero systems and aero structures – in which we will continue to work. Today, many times we are bidding for the customers where the 20 percent work is done close to the customers and the 80 percent work is done in India. The idea is to bring better economics to them and also risk mitigation. That's the ecosystem that we are talking about globally. But we have seen that customers are more and more inclined to come to India because of the integrated ability that we have built around this place. That way it is easier for them," he says.

Getting skilled workers

Getting sufficient skilled workers remains a big challenge across the manufacturing industry. But Aequs took this up early on. "When we looked at Belgaum as the location for our SEZ, everyone was rooting for Bangalore saying that it had infrastructure and aerospace talent. Actually, there is no true aerospace industry-ready talent avail-

Ongoing projects at Aequs

Clients	Projects
Airbus	Fuselage, Actuation systems, Aerostructure assemblies
UTAS	Aerostructures, Actuation system of cargo planes
Boeing	Actuation systems
Spirit Aerosystems	Actuation systems
GKN	Long bed components for Boeing CH-47 Chinook helicopter
Safran	Landing gear components
SAAB	Sheet metal fabrication
Honeywell	Outflow valve (OFV)
Fokker	Chinook long bed parts
SABCA	Aerostructures components
ISRO	Nose cone assembly for PSLV

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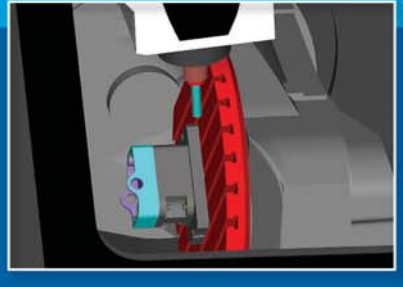

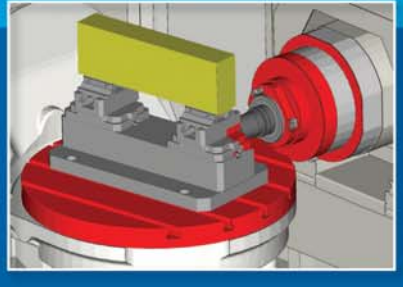

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able in the country today for the level that we need in terms of both volumes and capabilities. So, we thought we might as well build it from the scratch and in a sustainable manner. That's how Belgaum came into the picture. Within 100 km radius of this place, there are 8,000 to 10,000 engineering graduates passing out every year; and we are not even talking about diploma holders and ITIs. Of course, our absorption is nowhere around that level. There is immense availability of raw talent in this region. We have our internal training programmes where the selected candidates are skilled. Further, they are taken for on-the-job training. We knew from day one that we will have to train these people," he shares.

The way ahead

Aequs is today a US$ 100 million dollar company. Where does Melligeri see it five years down the line? "We have a stated objective to be a US$300 million dollar company by 2022. We are confident that we will get there. IWe are very focused on growing our business. We have added facilities spread over 300,000 sq ft over last one year. And we will continue to add more. That's part of the execution process. Also, we regularly keep investing new machines and technologies," he states.

Aequs has absorbed about US$20 million worth new orders in the last one year. So, while the existing programme is also growing, it is also adding up new business. "It's this combination that is getting us where we want to. We are the only machined detailed part partner for Airbus in India. That also makes one of the only 13 companies globally to do that. And that puts us in a position to win new packages," Melligeri explains.

"We are the only machined detailed part partner for Airbus in India. That also makes one of the only 13 companies globally to do that. And that puts us in a position to win new packages."

Impact down the line on the SMEs

Melligeri strongly believes that for the long run, India needs to have a tier structure for the aerospace industry. Accordingly, Aequs has also started working with partners. "One of our stated objectives is also to source around 20 percent work from supply chain partners down the line by 2022. And it is something that we really want to achieve as it is important for us to build these suppliers to keep us competitive. And we cannot be doing everything. When we get a package, we get all sorts of stuff. We also look at partners globally with the holistic objective of bringing the right value to our customer and also mitigating the risk," he explains.

Melligeri shares that Aequs is also handholding its suppliers when it comes to relevant certifications and audits. Aerospace is a far more unforgiving industry in terms of precision and quality compared to other industries. "At the end of the day, if I am buying it from a supplier and then sending it to the customer, the customer does not care where it comes from as long as it is fulfilling the customer's requirements. It is my responsibility to ensure that the systems and processes are followed stringently. In the last one year, that's what we have invested in and we continue to do that. Big players like Airbus do not want to work with smaller players because they are trying to consolidate the supply chain."

Melligeri also sees that a lot of aerospace manufacturing business which is currently sourced from European and North American companies shifting to India in the next 15 years. "Economics will drive customers to re-evaluate. It is already happening. China is more concentrated on its internal programmes so that brings more focus on India. Even countries like Thailand, Malaysia and Vietnam have become very competitive as their respective governments are opening up the market for aerospace players with all kinds of SOPs."

Being happy

Is Melligeri happy as an entrepreneur considering where he has reached? He smiles: "I cannot be happy as an entrepreneur. That's not the definition of an entrepreneur! On a serious note, I am happy with what we have done so far. But, there is a lot more to be done. There are so many opportunities. It's all about choosing the right ones and investing in them. If I had got a contract of a million dollar five years back, I would have been excited. But, today, it doesn't. So, we need to get larger contracts to make an impact to the business." And what would he like to be remembered as ten years down the line? "As someone who came here, set to do something, did it and made a difference to the region," he says matter-of-factly.

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Airbus opens A320 Family production line in Hamburg, Germany

Airbus has inaugurated the fourth Hamburg, Germany A320 Family production line. Making use of digital technologies and a more flexible industrial setup, the innovative state-of-the-art line is a key enabler for ramping up the single-aisle programme to 60 aircraft per month by mid-2019.

Frank Horch, Hamburg's Senator of Economy, Transport and Innovation and Thomas Jarzombek, Federal Government Coordinator of German Aerospace Policy, witnessed the milestone together with Guillaume Faury, President Airbus Commercial Aircraft, and 500 distinguished guests at a special ceremony in Hamburg.

"The inauguration of our latest, most modern A320 production line opens a new chapter in efficient, digital aircraft manufacturing," said Guillaume Faury. "With these new technologies we are building our aircraft more efficiently, a key enabler for higher production rates. I would like to thank the teams who pushed this newest Airbus production standard from concept to reality."

With more than 14,000 A320ceo and A320neo Family aircraft ordered and over 8,100 delivered, the A320 is the world's most successful single-aisle aircraft family. Incorporating the latest state-of-the-art technologies including new-generation engines and Sharklets, the A320neo Family provides 15 percent fuel savings at delivery and 20 percent by 2020. To date, the A320neo Family has captured nearly a 60 percent market share with more than 6,000 orders from 100 customers.

Turkish Aerospace Industries selects Siemens PLM Software to transform the digital enterprise

Turkish Aerospace Industries has selected technology from Siemens PLM Software to implement a complete digital twin in the company's manufacturing enterprise. Turkish Aerospace Industries has become Turkey's center of technology in design, development, modernization, manufacturing, integration and life cycle support of integrated aerospace systems, from fixed and rotary wing air platforms to unmanned aerial vehicles (UAV) and satellites. Extending the partnership for an additional 11 years, Turkish Aerospace Industries plans to implement a wide variety of software from Siemens' end-to-end digital innovation platform, including the Teamcenter® portfolio, NX™ software, the Simcenter™ solution and the Tecnomatix® portfolio, which will help deliver complex programs more quickly, reduce physical prototyping and save valuable time to market.

"Using software from Siemens, we will be able to create a digital twin of our products and apply engineering simulations to these products," said Temel Kotil, president and CEO of Turkish Aerospace Industries, Inc. "Turkish Aerospace Industries sees exciting opportunities ahead for the design and production of our indigenous products, made possible by infrastructure accumulations provided by Siemens in the field of industry."

Bombardier closes the C Series transaction

The closing of the previously announced C Series transaction between Airbus SAS, Bombardier Inc. and Investissement Québec came into effect on July 1, 2018. Airbus now owns a 50.01% majority stake in C Series Aircraft Limited Partnership (CSALP), while Bombardier and Investissement Québec (acting as mandatory for the government of Québec) own approximately 34% and 16% respectively. CSALP's head office, primary assembly line and related functions are based in Mirabel, Québec.

Furthermore, as previously announced, Bombardier has issued today in the name of Airbus SAS warrants exercisable for a total number of 100,000,000 Class B shares (subordinate voting) in the capital of Bombardier, exercisable for a period of five years at an exercise price per share equal to $1.74 US, being the U.S. dollar equivalent of $2.29 Cdn on June 29, 2018.

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Boeing delivers first 737 MAX to Jet Airways

Boeing and Jet Airways today celebrated the delivery of the airline's first 737 MAX airplane. Jet Airways will be first Indian carrier to fly the new and improved 737 airplane, which delivers a double-digit improvement in fuel efficiency and improved passenger comfort.

"The new 737 MAX is a critical element to our future growth strategy and we are proud to become the first airline in India to introduce this brand new airplane to our customers," said Naresh Goyal, Chairman of Jet Airways. "The 737 has been the backbone of our dynamic fleet for many years and we are excited to leverage the superior capabilities of the new 737 MAX. The improved economics and efficiency as well as the passenger pleasing features of the MAX will enable us to strengthen our position as India's premier airline."

This delivery marks the first of 150 737 MAX airplanes the Mumbai-based airline has on order with Boeing, following two separate orders for 75 jets placed in 2015 and earlier this year.

Bell and Safran to develop innovative hybrid electric propulsion systems

Bell Helicopter has collaborated with Safran on the development of innovative hybrid electric power system solutions to support Bell's vertical take-off and landing (VTOL) aircraft concept.

"Bell is at the forefront of on-demand mobility – ushering a new era of flight where the benefits of aviation are accessible to more people in more places," said Scott Drennan, Bell's director of Innovation, while speaking at the Transportation Conference. "This announcement is another proof point of our commitment to providing transportation of people and logistics in new, innovative and more efficient ways; our work with Safran is a historical milestone for future transport solutions."

For several years, Safran innovation teams have been actively exploring the potential of hybrid solutions for future propulsion systems. Bell and Safran's shared vision for electric and hybrid electric aircraft is to strive for the successful deployment of Bell Air Taxis and new on-demand mobility systems in the future.

"Thanks to the long and sustained technology-development strategy conducted within the Safran group, we can now offer Bell our hybrid electric power solutions for their next generation products that result in improved performance giving more value to our customers," said Stéphane Cueille, Safran senior executive vice president, R&T and Innovation.

Bell will lead the design, development and production of VTOL systems, and Safran will bring its technical expertise to bear in the development of a disruptive propulsion system.

AASSC launches skill development programs across India

The Aerospace and Aviation Sector Skill Council (AASSC) has developed Qualifications Packs for 70 Job Roles spread across five subsectors through extensive industry engagement. Using these Qualifications Packs as template, skill development programs are being launched across India. One of the biggest such program is the launch of Aviation Multi Skill Development Centre at Chandigarh where five batches have already passed-out. The Centre has plans to train around 2400 candidates over the next three years.

The strength of Board members will be enhanced to 26 member from present 21 to include MSME representation to meet the future challenges, says T. Suvarna Raju, Chairman, AASSC and CMD of HAL.

To ensure availability of qualified trainers and assessors, AASSC has run programs along with Department for International Development (DFID), UK and many more such schemes are in the pipeline. Development of Transnational Standards for Aerospace Design job roles is underway with the support of DFID, UK.

The Ministry of Skill Development and Entrepreneurship (MSDE) has decided that India will be represented in the 'Aircraft Maintenance' skill in the World Skills competition scheduled to be held in August 2019 at Kazan, Russia. The AASSC has been entrusted with the responsibility of conducting the regional level selections for the trade at Bengaluru and the national level selections at Greater Noida. The candidate selected at the nationals will represent India at World Skills competitions 2019 at Kazan, Russia. The AASSC with the support from NSDC will train the candidates from July 2018 till the world Skills competition in August 2019 and these candidates will also take part in the BRICS skills completion in South Africa.

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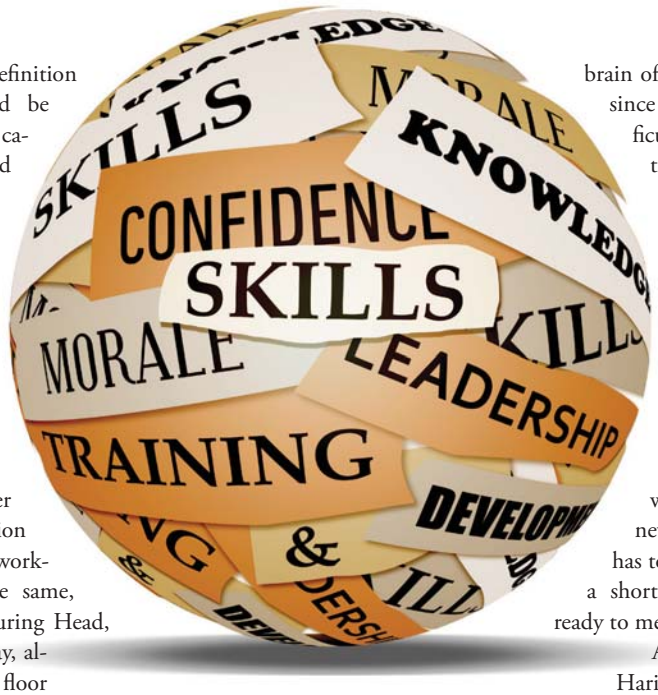
Skilling India

The manufacturing industry has been vocal about challenges that it faces due to skills gap. Here is an overview of the challenges, and steps that are being taken to bridge this gap.

By Swati Deshpande



The general definition of skills would be an ability and capacity acquired through deliberate, systematic, and sustained effort to smoothly and adaptively carryout complex activities or job functions. However these abilities and capacities need to be upgraded time and again as the industries transform. Manufacturing is currently going under technological transformation that brings challenges at the workforce level. Speaking on the same, Hussain Shariyarr, Manufacturing Head, Godrej Appliances says "Today, almost every area of the factory floor has transformed with addition of new technology whether it is core production, maintenance or utilities and thus skilled labour is required in every department. Additionally, technology and automation brings about the amalgamation of different skill sets. Most of the current employees are skilled in a specific function and the manufacturing vertical is not immune to the requirement of multi-skilled labour. Unless this skilled workforce is given the additional inputs to upgrade their skill, they would be equivalent to unskilled labour."

Seconding the same, Santosh Dwivedi, Deputy General Manager – Corporate HR, Solar Industries mentions, "The unskilled labour affects areas such as quality, reliability and safety in the manufacturing industry. These areas directly affect productivity, cost, on time delivery, morale and environment." However, the challenges of unskilled labour goes beyond these areas and is far more serious thans it looks. Explaining it in detail, V. Anbu, Director General and CEO, IMTMA notes, "This challenge is not confined to certain areas or departments but to the industry as a whole and primarily for those working on shopfloors. Manufacturing industry across all levels is facing a serious crunch of skilled labour with technical knowhow. The industry specifically is facing a shortage of workforce with requisite design skills which is considered to be the heart and brain of manufacturing. This is so since the industry finds it difficult to retrain a workforce that it has hired for a certain job. The industry also faces challenges due to budget constraints and time factor. There is also a higher attrition rate due to lucrative offers from the market. Many engineers also leave jobs quickly to augment their career graphs. However, with rapid evolvement of new technologies industry has to retrain its workforce over a short period and make them ready to meet future contingencies."

Analysing the situation, Hari Prakash M, CEO, GP Petroleums says, "It is understood from various sources that only 2 percent of Indian labour force is skilled against the highest 96 percent in Korea, Japan 80 percent, Germany 75 percent and China 40 percent. Based on our observation - a) Production department & b) maintenance department faces real challenge with skilled labour requirements. India is amongst the young countries because close to 30 percent of its population is youth with literacy percentage is almost close to 75 per-

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"Volkswagen India focuses on skilling at various levels to cope with the rapidly transforming industry."

Dr. Andreas Lauermann, President & Managing Director, Volkswagen India Pvt. Ltd.

cent. By this data, it is learnt that the progress of any country lies with skilled labour and for country like India where the skilled labour set is very low, has tremendous potential and opportunity to offer skill based trainings to make the future strong and supply skilled labour not only to Indian manufacturing industries but also overseas industries."

Seconding the same, P. Kaniappan, Managing Director, WABCO India Ltd. mentions, "Attracting top talent to the manufacturing industry is always difficult. To overcome this challenge we have launched our specially designed PACE maker program and Great Place to Work initiatives to help us attract the best talent."

Taking a different perspective, Shirin Salis, Vice President—Human Resources, Ingersoll Rand India believes, "The challenge that the manufacturing industry will need to overcome is the negative perception that it suffers from- that it comprises of mostly unskilled and partly skilled workforce while the actual skill demands of the industry are ever increasing in the face of digitalization. Mapping critical skill sets to roles and functions, redefining the employee value proposition and opportunities for career progression are critical to manage the sourcing and developing of critical skills required by the industry. Additionally, there is dearth of talent in the industry, which needs to be addressed on priority. However core engineering and manufacturing management skills are available in our country, but they need to be honed further to keep abreast with the changing functionality of manufacturing. Furthermore in today's rapidly changing scenario, it is next to impossible to find the 'right fit' for the 'right role'. Therefore organizations need to be ready to cultivate and nurture in-house talent to fuel their long term growth."

Employee training

India's manufacturing industry is moving towards Industry 4.0 to keep itself at par with global competition. Elaborating on the same, Salin continues, "Increasingly, new-age and futuristic technologies such as artificial intelligence, machine learning, big data analytics, artificial intelligence, internet of things, block chain, etc. are changing the talent landscape. Manufacturing processes now need employees with high-tech skill set, proficient in mathematics and possessing an analytical mind-set. In the wake of these developments, it is a significant priority for organizations to upskill their workforce at a rapid pace and transform their workforce with the evolving manufacturing ecosystem. Organizations with a thriving talent pool will be the ones winning the manufacturing race in the near future."

Agreeing to it, Anbu opines, "The workforce needs to be educated and trained in understanding the new technologies. The skill sets of the engineers in new technologies need to be enhanced so that they could put technologies."

In this regard, Volkswagen India focuses on skilling at various levels to cope up with the rapidly transforming industry. "We undertake special training programs for the employees," says Dr. Andreas Lauermann, President & Managing Director, Volkswagen India Pvt. Ltd.

Wabco India also undertakes training for their employees. In this regard, Kaniappan recited the efforts that the company takes. "We constantly anticipate and track the evolving industry trends both in India and global markets and through our structured talent management program; we are able build a strong talent pipeline with the required skill sets. Talent management is done in every function with a view to identify top talents, prepare a succession plan and formulate developmental action for the identified talent. Moreover, as a part of the talent management process we regularly implement talent and skill development actions like benchmark visits to customers, suppliers and other manufacturing organizations to learn best practices, structured job rotation, short term training programs, higher education programs, participation in industry forums conducted by industry bodies like ACMA and CII, six sigma green belt programs and short term assignments at other global WABCO locations."

Speaking on Solar Industries' efforts, Dwivedi notes, "As far as existing employee are concerned, we have launched Competency Mapping initiatives (through Assessment and development Centres), which leads us to the clear picture about the existing Skills & Competencies available. After Competencies are identified then comes the next phase of Coaching and mentoring through the Learning and development Models."

Similarly, Toshiba India has its own initiatives for its employees. Explaining the same, Tomohiko Okada Managing Director, Toshiba India Pvt. Ltd. says, "Maintaining high Toshiba quality standards, at par with Made in Japan products, across all our manufacturing plants around the globe, is one of our key objectives. To achieve that, technical train-

We constantly anticipate and track the evolving industry trends both in India and global markets.

P. Kaniappan, Managing Director, WABCO India Ltd.

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ing is an integral part of employee development at Toshiba. We have training programs for engineers wherein Indian engineers are taken to our facilities in Japan to get them acquainted with the latest technologies, manufacturing processes and skills. Engineers from Japan also regularly visit the manufacturing facilities in India to supervise, support and train the local engineers. We also send our employees to visit manufacturing plants in Japan for skill development and advanced technology training."

"At Godrej Appliances, we indulge in a multi-pronged approach to bridge the skill gap: Investing in in-house training programs - through our technical training centres at our manufacturing locations, we upgrade the skills of our workforce for our requirements. The technicians and operators are trained on the new technologies through class room inputs and practical training on models and simulators. This improves their knowledge and builds confidence. For skill development in software programming, both managers and operators are also sent for training to Siemens, Fanuc, etc. When new equipment with new technology are introduced, the operation and maintenance team are trained by the OEM at their factory and at our factory," describes Shariyarr.

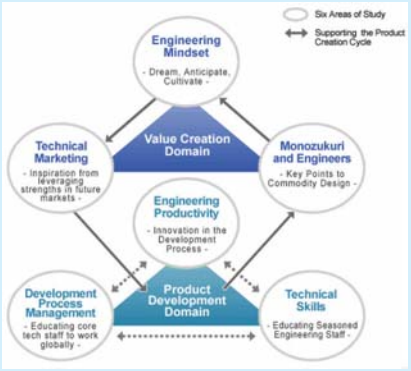
Kaniappan further says that to develop a competent workforce, Wabco India imparts need based trainings to the operators, with emphasis on quality for multi skills and involve all employees for the improvements through suggestions scheme and QCC projects. "Structured training on specialization & analytical skills is regularly conducted and Total Productive Maintenance (TPM) is used and leveraged as an effective tool to improve overall productivity," he reveals.

Narrating Solar Industries' plans, Dwivedi mentions, "We have already initiated the Competency Mapping initiative (through Assessment & Development Centres). Using best available tools for Assessment and Development Centres we have come up with the Action plan, which will lead us to the further Areas of Development. In next phase, we will undergo the Impact assessment of the activity done. All these activities are inspired by The Deming's principle (Plan-Do-Check-Act)."

In this efforts of skill development, creating conducive work environment is equally important. Speaking about the initiatives and processes at Toshiba India, Okada says, "In a manufacturing set up, to achieve time efficiency, entire process is divided into multiple production lines. While each engineer and employee is responsible for the quality of the product that passes through his/her production line, to assure high quality of the end product teamwork within the whole factory is paramount. We encourage our employees to effectively work together as a team. Realizing the competence and capability of our Indian engineers and technical staff, our endeavour is to constantly enhance and upgrade their skills and build quality consciousness in them and infuse the feeling of commitment and teamwork."

Technical Training Program System

Toshiba India has developed a new technical training program system to equip engineers with the skills and capabilities they need for their job that focuses on value creation and product development.



- **Value Creation Domain:** To create new markets and values, we need to be in touch with the market. These courses enable us to understand how things are created by fostering the mindset of Toshiba's engineers.
- **Product Development Domain:** Innovation is needed in the development process to compete at top levels. These courses allow us to produce personnel who have mastered the skills to be leaders in their fields.

Source: Toshib India Pvt. Ltd.

"Technology and automation brings about the amalgamation of different skill sets.

Hussain Shariyarr, Manufacturing Head, Godrej Appliances

The skill sets of the engineers in new technologies need to be enhanced so that they could put technologies like IoT to good use on shop-floors in their day-to-day operations.

V. Anbu, Director General and CEO, IMTMA

Industry Academia relation

The Government of India is also taking steps to upskill the

youth and make them industry ready. Narrating the various initiatives, Anbu highlights that through the National Skill Development Corporation, Government of India has been training engineers. "The Ministry is also supporting development efforts in IoT, Industry 4.0, advanced manufacturing, etc. Industry bodies and associations such as IMTMA are creating a conducive environment to train workforce in these applications through their various training programmes conducted at their Tech Centres in Bengaluru, Pune and Gurugram. IMTMA conducts industry awareness workshops at colleges for students to make them industry ready," he adds. However this is not possible without the industry's help.

Tips for Students' Skill Development

Shirin Salis, Vice President—Human Resources, Ingersoll Rand India gives tips for academia for students' skill development:

1. Help identify students' strengths and ensure that they continue to grow them as they move through semesters.
2. Encourage students to identify 3-4 subjects that they want to excel in and ensure that their activities are consistent with strengthening them.
3. Help them work on their communication & Interpersonal skills – encourage them to take up a leadership role in the class, take up areas where they need to negotiate with others, understand larger issues, advocate for internal customers, etc and build skills in "establishing good relationships with peers"
4. Create an environment/forums where they can write technical white papers, submit stories to the local college magazine, write to local newspaper, etc. – it is very important to have the appropriate written and verbal communication skills

Toshiba India is also supporting the 'Skill India' initiative by imparting technical skill training to Indian engineering students. "We conduct periodic training programs for the students of ITI (Industrial Training Institute) at our Toshiba JSW factory in Chennai," informs Okada. Similarly, there are other companies as well which work along with ITIs. Speaking about Volkswagen India's initiatives, Dr. Lauermann says, "We are training the trainers at ITIs, introducing technical syllabus that is relevant to changing times and have even adopted one ITI in Pimpri Chinchwad to turn it into a centre of excellence." Godrej Appliances is also on the board of four ITIs in Mumbai and in districts surrounding its manufacturing facilities in Mohali and Shirwal. The company is instrumental in developing the curriculum for refrigeration and air conditioning trade. "We also work closely with the ITIs providing them with industry insights and curricular reforms that are relevant to today's practices," explains Shariyarr.

Elaborating further on the company's other initiatives, Shariyarr he asserts, "Under the vocational training program of the group's 'Godrej Disha' initiative, we address this skilling gap by providing high quality vocational training in collaboration with renowned training institutes. 'Godrej Vocation Training Schools (GVTS) initiated as far back as 2012, and has successfully trained over 37,000 students."

After competencies are identified, the next phase is coaching and mentoring through learning and development models.
Santosh Dwivedi, Deputy General Manager – Corporate HR, Solar Industries

Wabco India has signed MOUs with leading universities and management institutes to provide various management development Programs, B.Tech programs, student orientation programs and short term courses for our employees and trainees. "In addition, we have established Centers of Excellence in partnership with Veltech University, Chennai and Chennai Institute of Technology. These facilities will impart knowledge and training, in current and advanced braking systems of commercial vehicles to the engineering students of the universities, mechanics and engineers of automotive industry and road transport authorities. The creation of such facilities will stimulate interest in students, research scholars and faculty members in their fields of research to enhance road safety," explains Kaniappan.

Volkswagen India has the Mechatronics Apprenticeship Programme that fresh out of school (10th standard) students and takes them through the German Dual Apprenticeship style programme that focuses on theoretical and practical learning. "They start with the basics such as metal filing and go on to learn robotics and automation by the end of the course," notes Dr. Lauermann.

In this effort of skilling India industry association such as IMTMA is also at the forefront. Highlighting the initiatives of the association, Anbu mentions "Recently, IMTMA signed MoUs with different institutions to offer internship programmes for students who are still on board. The programme helps them to develop industry skill sets even before they finish their studies." He further adds that IMTMA-Institution Innovation Collaboration" (III-C). III-C has provided a platform for both industries and academia to collaborate and work together to bring out the best innovative products with the help of research talent pool available in institutions.

With these initiatives, India is sure to bridge this "skills" gap in the years to come.

Škoda to lead VW Group's 'India 2.0' project

Škoda Auto is now taking on an important role for Volkswagen Group in the development of the Indian car market with the 'India 2.0' project, "Volkswagen Group has tasked us with this responsibility, thereby highlighting the level of trust that Volkswagen Group's management places in the expertise of the Škoda team," said Škoda CEO, Bernhard Maier. Around one and a half years ago, Škoda Auto was tasked with developing a sustainable model campaign for the Škoda and Volkswagen brands in the Indian volume segments. All models designed and produced locally in India in the future will be based on Volkswagen Group's MQB platform, which already fulfils the stricter legal requirements for India that come into force in 2020. The project will be headed by Gurpratap Boparai, MD, Škoda Auto India Private Ltd. As part of this project, Volkswagen Group to invest EUR one billion in India.

The project will be headed by Gurpratap Boparai, MD, Škoda Auto India Private Ltd.

Bharat Forge acquires stake in UK based EV firm

Bharat Forge Ltd. ("Bharat Forge") has announced a strategic investment of £ 10 million in Tevva Motors (Jersey) Limited ("Tevva"), a company incorporated and registered under the Companies (Jersey) Law 1991 carrying out its operations from Chelmsford, UK. Tevva provides electric powertrain solutions for Commercial Vehicles & buses in the 7.5 -14 T weight category. This is soon to be extended for the development of new Commercial Vehicles, especially trucks and buses. These vehicles actively and autonomously manage the use of the range extender by utilising Tevva's ground-breaking, patented software, Predictive Range Extender Management System (PREMS), to ensure only electric drive is used in low carbon zones and other city centers. Bharat Forge has been working on its R & D and technology strategy in the Electric Vehicle space over the last few years. This is Bharat Forge's 3rd major initiative in the EV space, and comes shortly after the start of the 'Engineering and Development Centre' at MIRA, UK and the investment in Tork Motorcycles Pvt. Ltd., India.

Collaborative future

Cobots are set to define material handling in industrial spaces, says **Vivekanand**, Country Manager, India and SAARC, GreyOrange

Industry 4.0 is at our doorstep. We now live in an age of smart factories, robotics logistics and supply chain automation. AI, robotics, machine learning, IoT and big data are key ingredients of this set up, and several industries are already at the forefront of rapid innovation.

Collaborative Robots, or Cobots, are the byproducts and perfect examples of such rapid innovation. They are emerging as a new solution to enhance productivity and complement the existing workforce. Cobots, typically single or dual armed machines, can be easily handled and programed to work in tandem with humans. They are light, agile and ideal for jobs that are repetitive and monotonous. Some are AI-enabled, or come with advanced sensors and machine vision for better accuracy and higher output. From assembling, picking and placing to palletizing and even welding, these robots are being widely applied in several areas of supply chain, fulfilment and manufacturing. They are a preferred alternative to bulky and complex industrial robots and help create a safer working environment.

In recent years, cobots have become a more common sight in logistics centres and assembly lines. The collaborative robots market is poised for exceptional growth over the next few years and is expected to account for 34 percent of the global robotics spend by 2025. The material handling segment is set to experience the largest growth in collaborative robot instalments. The economics of installing cobots have become more viable, and these smart machines have become a more attractive option to help increase productivity and efficiency.

Historically, the automotive industry has been a leader in the use of cobots, where they help pick and place as well as move heavy or bulky material from one spot to another. Their wide range of applications and advantages make them ideal, especially for heavy goods such as electronics and equipment among others. In the last decade, cobots have becoming smaller and more capable of handling smaller items.

Presently, to address the massive growth in e-commerce, we are seeing more companies work around shorter delivery cycles and mass customization of products to satisfy the needs of new consumer demands. These companies have been compelled to innovate and adapt to newer technologies to boost their volume and quality and make the movement of goods quicker and more efficient as well as accurate.

Conventional handling methods take more time and are prone to errors. In e-commerce the growing number of online orders with many product variants, sizes and dimensions have pushed for the need to find a more innovative approach. Therefore, the demand for cobots from industries like e-commerce, retail and FMCG is on the rise. Cobots can use Machine Vision to identify and pick products from shelves quickly and accurately and help achieve higher picks per hour and increase overall throughput.

In terms of material handling, a cobot can use Machine Learning to figure out how to grasp different packaging types from boxes, pouches, bottles to vacuum-sealed packages. It uses Machine Learning to devise the strategy to pick each item from the densely packed inventory using a versatile gripper. Further, cobots help drive intelligent process automation to release workers from low end jobs, letting them focus on higher skill sets that require application. As costs for cobots decline and they require lower investments, they become easier to integrate into a system. This is the prime reason why cobots are being increasingly deployed even in smaller facilities and warehouses.

The global industrial landscape is firmly on the path toward a robotics revolution, where the role of cobots is expected to increase. As digitization in industries become a reality, these smart machines will be a business imperative. Future shopfloors and warehouses will become an efficient human-robot collaboration space for higher efficiency and optimization and contribute to the progress of the industrial ecosystem.

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COMING SOON

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THE TIMES GROUP

Protecting the valuables!

Failure to effectively protect manufacturing data often stems from a lack of awareness about cybersecurity and where the company is left exposed, says **Ashish Thapar,** Managing Principal, APJ at Verizon Enterprise Solutions

By Niranjan Mudholkar

Q. According to Verizon Data Breach Report 2018, what are the major threats to watch out for in the manufacturing sector?

It is a well-known fact that if you do have an original idea, someone will want to steal it. This is particularly true in the manufacturing vertical. A cybercriminal can steal several years' worth of your planning, research and development, and other secret information and then use that ill-gotten advantage to bring your idea to market faster and cheaper. Cyber-espionage is the most prominent threat in the manufacturing sector accounting for 31 percent of all breaches. State-affiliated actors and current or former employees stealing valuable intellectual property via espionage to gain a competitive advantage.

Data threats	
Frequency	536 incidents, 73 with confirmed data disclosure
Top 3 patterns	Cyber-Espionage, Everything Else and Web Applications represent 76% of breaches within Manufacturing
Threat actors	External (89%), Internal (13%) (breaches)
Actor motive	Financial (53%), Espionage (47%), and Fun (2%) (breaches)
Data compromised	Personal (32%), Secrets (30%), Credentials (24%)

Q. What are soft target manufacturing?

Cyber security is a top-of-mind risk for organizations of all sizes and across all industries. This makes all relevant data and information a soft target across all industries and this is especially true for manufacturers, as it is an industry norm for organizations to quickly adopt new, more efficient automation or digitization — technologies that are often a target of cyber criminals. Personal data (32%) and secrets or confidential information (29%) are almost tied for first place. Credentials (24%) also make a solid appearance, and stolen credentials can be used to advance attacks and ultimately compromise other data types. When we look at targeted versus opportunistic attacks, we see that breaches in this vertical are 86% targeted. This finding underlines the point that criminals go after certain manufacturing entities with a very specific purpose in mind. The victim organization is chosen because they have trade secrets that are highly desirable to the attacker. Unlike many other industry verticals, the attacks are carried out almost exclusively by organized crime syndicates; manufacturing shows a greater percentage of state-affiliated actors (53%) than it does for organized crime (35%). Motives of the actors are much closer to an equal division between financial (53%) and espionage (47%).

Q. What are the steps taken to safeguard the industry from cyber-criminals?

While there are a host of technical, procedural and administrative controls that are required to safeguard any industry, below are few tips to consider for keeping a manufacturing unit safe from cyber-attacks:

Joy in division: Keep highly sensitive systems and/or secret data separated from the rest of your network. Restrict access to it to only those who absolutely require it to do their jobs. Even then, monitor that access routinely to make sure the data is not being copied, moved or accessed in a suspicious manner.

Look inside: It is not only the state-affiliated actors' one must concern themselves with, but also internal threats if you wish to keep secrets safe. Implement data loss prevention (DLP) and User & Entity Behavior Analytics (UEBA) controls to identify and block transfers of data by staff, and especially those who are terminated or resigning; and use endpoint detection & response (EDR) solutions to hunt & protect against malicious activities at end points.

Reeling them in: While this recommendation may be verging on the repetitive, most external espionage cases begin with some type of phishing attack. Other than having layered technological defenses; provide your employees with a very quick and easy way to report social-engineering attacks and encourage them to report incidents on a timely basis.

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BEL opens new office in Vietnam

The Hon'ble Defence Minister, Smt Nirmala Sitharaman, recently inaugurated the first Representative Office of Navratna Defence PSU Bharat Electronics Limited (BEL) in Vietnam.

Nirmala Sitharaman handed over the symbolic key of the Representative Office of BEL at Vietnam (VIRO) to Gowtama M V, Chairman & Managing Director, BEL, during the Vietnam-India Defence Industry Business Meeting held at Hotel Melia, Hanoi, recently, in the presence of P Harish, Ambassador of India to the Socialist Republic of Vietnam, Dr Ajay Kumar, Secretary (Defence Production), and other senior officials of India and Vietnam Defence forces. VIRO is located in close proximity to the Embassy of India, Vietnam, on the 10th Floor of TNR Tower, Hanoi.

BEL, India's leading Defence electronics company, is fast expanding its global presence, putting its best foot forward to give a thrust to exports worldwide, especially South East Asian countries such as the Republic of Union of Myanmar, Indonesia, Malaysia, Thailand and Philippines. Spotting a niche market in Vietnam, BEL has now set up its first Representative Office at Vietnam for addressing export business opportunities and to provide unstinted product support and services to users in the region. The Representative Office will aim to promote BEL's exports in areas such as Weapon Systems, Radar Systems, Naval Systems, Military Communication Systems, Electronic Warfare Systems, Combat Management System and Coastal Surveillance System.

JCB building new plant in UK for cab systems

JCB has announced an investment of more than £50 million in a new British plant which will create hundreds of jobs and double production of cabs used on its machines. Work is under way on a 350,000 sq ft facility for JCB Cab Systems adjacent to the A50 in Uttoxeter, Staffordshire, next to two existing JCB plants. The hi-tech factory will have the capacity to produce around 100,000 cabs a year. It will include a computer controlled production line, fully-automated painting facility and robotic welding and will create more than 200 new jobs by 2022.

JCB CEO Graeme Macdonald said: "This new factory will be the most advanced and productive cab facility in the world and will bring even greater levels of efficiency to the business. The investment is one of the biggest in the company's history and underlines our commitment to manufacturing in Britain and in our home county of Staffordshire."

This new factory will be the most advanced and productive cab facility in the world and will bring even greater levels of efficiency to the business.

JCB Cab Systems currently employs more than 400 people at its existing site in Rugeley, Staffs. The new plant is scheduled to open in the summer of 2019. JCB Cab Systems' General Manager David Carver said: "While new jobs will be created, moving to the new factory will enable us to double capacity without doubling the workforce thanks to high levels of automation. The whole plant is being designed to improve productivity, reduce waste and provide unprecedented quality levels."

Latecoere to set up facility at Aequs SEZ Belagavi

Aequs Special Economic Zone has expanded further by bringing Toulose based Latécoère Groupe, ranked 2nd worldwide in onboard aircraft wiring, to set up its production facility in Belagavi, Karnataka. Initially, the first production runs will commence in an existing 1300 sq. m. unit in Q3, 2018, pending construction of a new facility in Aequs special economic zone. The company is planning to construct a brand new 4000 sq. m. manufacturing facility within the SEZ to benefit from the existing aerospace ecosystem at Aequs.

Aravind Melligeri, Chairman & CEO of Aequs Group, said upon signing of the agreement, "Aequs has developed a thriving ecosystem that would facilitate every occupant, who is a part of this SEZ, to grow exponentially by leveraging interrelated capabilities, difficult to find in one location elsewhere in the world."

"The know-how of the Interconnection Systems teams has once again won global recognition by the industry. The new plant is designed to make the Group more competitive and will help us to support our customers in their development initiatives," added Latécoère CEO Yannick Assouad.

Voltbek breaks ground in Sanand for home appliances factory

Voltas and Ardutch BV (a subsidiary of Arçelik A.S.; part of the Koç Group – Turkey's largest industrial and services group), had earlier announced a joint venture for Consumer Durable Products in May 2017. Accordingly, a Joint Venture Company (JVC) - Voltbek Home Appliances Private Limited (Voltbek) was established in India to engage in the business of White Goods. Voltbek has during the past few months taken various actions including identification of land for its manufacturing activities. Voltbek has recently laid ground to start construction of their first manufacturing facility, spread over 60 acres, in Sanand, an upcoming industrial hub in Gujarat. This facility will be manufacturing home appliances that include refrigerators and washing machines.

Voltbek will leverage Arçelik's global expertise in setting up large, modern, state-of-the-art manufacturing unit, quality and R&D labs and International benchmarking processes and Voltas's strong brand presence, and country wide sales and distribution network.

This manufacturing facility will be one of the first white goods appliances unit in the State of Gujarat, creating an OEM base for home appliances in the region along with local employment opportunities. The choice of Gujarat as the destination for the manufacturing unit was due to State's 'ease of doing business', and 'good governance'.

Sigma Electric to build new plant

Sigma Electric Manufacturing Corporation has announced that it would build a new plant in Jaipur, India. Sigma Electric is investing over Rs.100 crore at the new manufacturing facility, adding to four plants already in operation at Jaipur. The plant will be fully operational by September 2019. Strategically located in Mahindra World City, the new plant will incorporate state-of-the-art technology with high pressure moulding Iron casting, with fully integrated machining, electroplating, and powder coating facility. The plant will include a world-class Engineering, and Tool Design & Tool Manufacturing facility and comply with Industry 4.0 norms. This 120,000 sq. feet facility with 3500 MT per annum casting capacity, would comply with Green norms and be a Zero discharge facility. The plant will generate over 500 new jobs. "The new plant will enhance our global leadership position in machined castings and support the growing demands of our MNC customers in varied electrical and industrial markets across the world," said Sigma Electric's CEO and President Viren Joshi.

Optimas Solutions opens CoE in Pune

Global industrial distributor and service provider for fasteners, Optimas Solutions, has opened a dedicated Parts Production Approval Process (PPAP) Centre of Excellence in Pune, India, to assure customers of PPAP process integrity and accelerate the Optimas global parts quality approval process. PPAP is synonymous with industrial OEMs and the new Centre of excellence will expedite the delivery of correct components to customer production lines.

AAM to expand operations in Spain

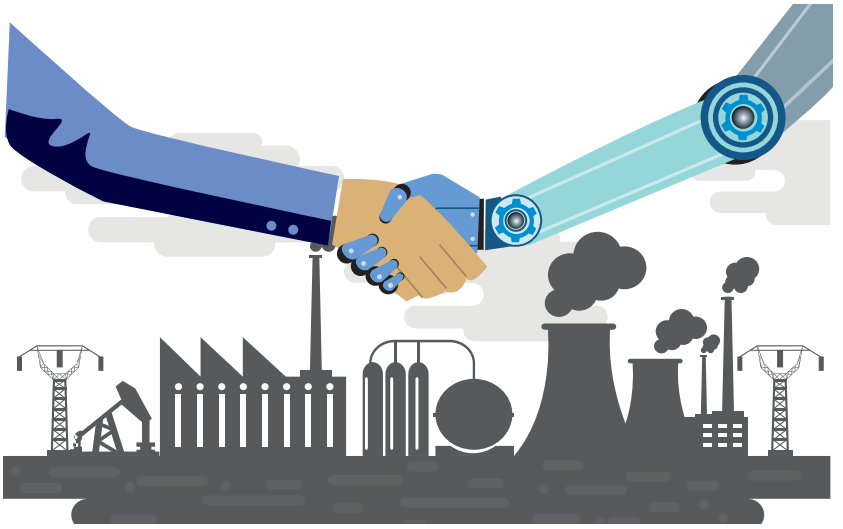
American Axle & Manufacturing, Inc. will expand operations in the industrial area of Viladecans, Spain, to support growth with new and existing European customers.

Set to open in January 2019, a new 15,000 sq m facility located 20 km southwest of Barcelona will produce powertrain components for Europe's leading automakers including Renault, BMW, Daimler, Porsche, Audi and Ford. The new facility consolidates two smaller facilities in nearby Gavà and at full capacity will employ 170 associates. "As AAM continues to diversify and expand our global customer base and product mix, our new Barcelona facility will be an integral part of our European manufacturing footprint," said David C. Dauch, AAM Chairman and Chief Executive Officer. "The new facility will help AAM meet customer demand for products that help reduce noise and vibrations from downsized engines." AAM Barcelona will produce a complete range of damper products including compression dampers, PV bonded dampers, isolation pulleys, in-mould bonded dampers and damped gears. AAM is a leader in this segment having pioneered the isolation pulley, many types of viscous dampers and damped gears. "The new Barcelona facility will allow AAM to rationalize and improve operations through a lean and efficient layout and production flow and to re-integrate the currently externalized warehouse," said Greg Deveson, President, AAM Powertrain. "As automakers continue to downsize engines, especially with the increased number of hybrid applications, demand for products like damped gears and isolation pulleys will increase. This new facility will help AAM continue to meet and exceed our customers' performance and quality expectations."

A fully connected **eco-system!**

Manufacturers would be able to connect the production value chain with digital machining, says **Sunil Joshi,** Sales Head – Digital Machining, Sandvik Coromant - South & East Asia.

By Niranjan Mudholkar



What are the key opportunities that you see with digitalisation for the manufacturing industry?

Today the manufacturing industry is growing rapidly. The entire manufacturing value chain from design to outbound logistic is working in silos. There is a huge opportunity to integrate the entire manufacturing value chain. We have the CoroPlus® offer of connected solutions that connects systems and processes in production, enabling customers to make use of data and turn it into a competitive advantage.

Obviously, there are big challenges as well. What are these challenges and how can manufacturing organisations overcome these?

We are witnessing the fourth industrial revolution and there are bound to be disruptive forces in the digitalization of production which have consequences for the manufacturing industry and will inevitably change the rules of the game. Challenge is to first embrace the change and have an open mind to take decisive steps in this direction. Being prepared and having an eco-system in place is one more challenge. It would be important for organizations to educate their associates and set up an infrastructure to adapt to this new technology.

Digitalization will pave the way for better productivity in terms of utilizing the available resources (electricity, consumables etc..) for higher output and reducing the impact on environment.

Talking specifically about the machining function, what differentiates digital machining from conventional machining in terms of utilisation of technology?

Today many decisions in manufacturing are made based on past experiences and gut feel. Digital machining will use data to make fact-based decision making. Going ahead, there would be mass connectivity, and with connected things comes rapid growth of data available. You might have heard or read that 'data is the new oil', the 'fuel of digitalization' and this is what will differentiate digital machining from conventional machining.

What are the various advantages offered by digital machining from the operational as well as business perspectives?

With digital machining, manufacturers would be able to connect the production value chain. In a connected value chain, the design is done with insight to the value chain. By having this transparency, you are able to design for manufacturing. For example, choose the most appropriate hole size based

on what tools you have in stock, and that your hole placement is suitable for CAM operations and eventually for machining.

In CAM, there are a number of tasks that you need to perform. For example, you need to choose machining process, tooling solutions and create your virtual tools for simulation and process preparation. If these tasks are made with digital access to digital recommendations and tool data, great productivity gains can be made – resulting in a high-quality CNC codes.

> "It would be important for organizations to educate their associates and set up an infrastructure to adapt to this new technology."

How easy or difficult is it for companies to start their digital journeys? And how do you help them in this journey?

India has been in the forefront when it comes to their contribution and leadership in the cyberspace. We believe that the change has already started to happen, and many companies have started early in embracing this technology. It would not be a big challenge for companies to adapt. This is going to be an exciting journey during which we would be walking together with many of our customers and partners. The learning curve would be interesting, and we would be involved in educating the industry in this initiative during which it is also an opportunity for us to learn from our customers and partners. We will also utilise our state of the art Sandvik Coromant Centre in Pune for running customer training programs and also use the latest technology of Digital Live streaming across the country to transfer knowledge.

Do you see digitalisation contributing to sustainability? In what way?

Yes certainly, sustainability will be one of the key benefits from digitalization. Digitalization will pave the way for better productivity in terms of utilizing the available resources (electricity, consumables etc..) for higher output and reducing the impact on environment.

Speaking from a personal point of view, you would have seen the metal cutting industry evolve quite interestingly in the last 22 years. Where do you see it going after the adoption of digitalisation?

We have seen interesting changes in the metal cutting industry over the past two decades. The manufacturing industry has matured from using conventional tools to the latest cutting-edge technology from Sandvik Coromant. We are now entering in the next phase wherein the manufacturing industry will adapt to this change very fast. Soon, we will see a fully connected eco-system within the manufacturing world.

AUTOMOTIVE UPDATE

Faurecia to build new plant for Kia Motors India

Officials at the ground breaking

Faurecia is expanding its presence in India with a new Interiors plant in Ammavarupalli, Andhra Pradesh, inside KIA Motors supplier park. The ground breaking ceremony was attended by executives from Mobis and Faurecia. Faurecia will be investing INR 50 crore (€6.25m) in the new 15000 square meter site, leading to the creation of 400 jobs. The plant is scheduled to be commissioned in the first quarter of 2019 and will have a daily production of above 1000 Instrument Panels for Mobis (Kia Motors). Luis Navarro-Llacer, Vice President (Interiors IJKT Division) and Vidyadhar Limaye Director (Faurecia Interiors India Pvt. Ltd.) declared: "Today's event is a milestone in Faurecia's history in India, where we have been operating since 2004. India represents the fourth biggest automotive market and it is an ideal base for the development of our business. Our new facility will provide near-term capacity improvements and allow Faurecia to bring forth a renewed commitment to India's automotive OEM segment. Faurecia is pleased to accompany KIA Motors in their exciting journey in India starting 2019." Present through its three activities (Clean Mobility, Interiors and Seating), Faurecia employs 3600 people and has two technical centres and 11 production facilities spread across India. The Group serves locally leading OEMs like FCA, Renault-Nissan, ISUZU, Ford, Hyundai, Maruti-Suzuki, Tata, Toyota and Volkswagen.

India develops Li-ion battery

Central Electro Chemical Research Institute (CECRI), Karaikudi, Tamil Nadu under Council of Scientific & Industrial Research (CSIR) and RAASI Solar Power Pvt Ltd have signed a Memorandum of Agreement for transfer of technology for India's first Lithium Ion (Li-ion) Battery project. A group at CSIR-CECRI has developed an indigenous technology of Lithium-ion cells in partnership with CSIR-National Physical Laboratory New Delhi, CSIR- Central Glass and Ceramic Research Institute Kolkata and Indian Institute of Chemical Technology Hyderabad. CSIR-CECRI has set up a demo facility in Chennai to manufacture prototype Lithium-Ion cells.

Testing **evolution!**

Emerging trends in the automotive industry are leading to new challenges and test tools are evolving to keep up with the pace of innovation.

By Anjelica Warren

As modern vehicles undergo a radical transformation today because of trends such as electrification, active safety, and V2X, features that were once for convenience such as backup cameras and parking assistance have advanced into life-saving features like emergency braking. Additionally, cars are also capable of storing and recovering energy through techniques like regenerative braking, effectively making them independent microgrids. Automotive test departments, hence, oversee maintaining these features by develop testing capabilities to ensure quality, reliability, safety of these systems. This article will explore the automotive challenges introduced by these trends and how test tools are evolving to keep up with the pace of innovation.

Enhancing safety and mobility for all

In India, government data indicates a 30 percent increase in road accidents in the past decade, with an estimated 17 deaths every hour (Source: World Health Organization, Number of road traffic deaths). Advanced Driver Assistance Systems (ADAS) have the ability now to rectify this situation as vehicles advance towards autonomous operation. There is, however, more work to be done and self-driving cars will require more rigorous testing and traceable results for their multiple subsystems and software algorithms before they can be deemed safe for the road.

The data generated from autonomous vehicles that is used for safety requires extreme attention to detail to create a system that can identify the exact causes of failure during testing. Mismanaging data at any step of the test process risks product development roadblocks or drawing incorrect conclusions.

"Hybrid and fully electric vehicles have gained the advantage today because of their smarter powertrain systems which deliver more power, lower emissions, and enhanced driver experience. Testing their components, however, can be extremely complex, given their integration of two different powertrain technologies."

Engineers must hence be prepared to critically evaluate terabytes of data to gain insights, maintain traceability, and make data-driven decisions.

Race to electrification

Over one-fifth of global greenhouse gases are emitted by the transportation sector. Growing concerns about climate change are driving stricter fuel efficiency regulations for automakers to reduce CO¬2 emissions. Additionally, governments around the world are announcing mandates for limited or no combustion engine vehicles to be sold after specific dates. The Government of India, for instance, launched the National Electric Mobility Mission Plan (NEMMP) 2020 with a target of achieve 6-7 million sales of hybrid and electric vehicles year on year from 2020 onwards, effectively reducing the dependence on fossil fuels.

Hybrid and fully electric vehicles (EVs) have gained the advantage today because of their smarter powertrain systems which deliver more power, lower emissions, and enhanced driver experience. Testing their components, however, can be extremely complex, given their integration of two different powertrain technologies. Components such as the battery pack, for example, operate safely within designed specifications to not impact other subsystems. Thus, test engineers must adopt flexible systems with high mix I/O, higher frequencies and resolutions, and higher

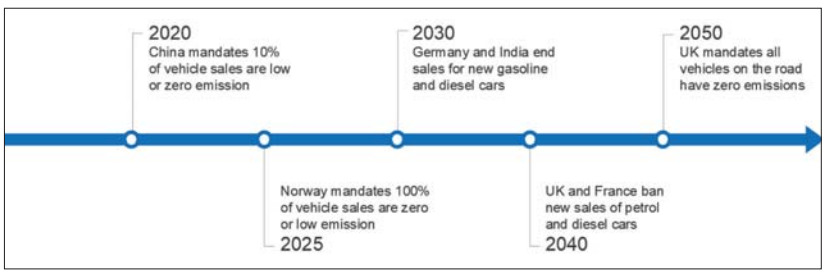


Figure 1. Automakers are racing to design smarter powertrain systems to comply with strict fuel efficiency regulations.

voltages and currents to test mechanical and power electronics components.

The growth of EVs is also shaking up the automotive supply chain. OEM purchasing managers are looking for suppliers that can deliver more electric car parts. LG, a new player in the automotive supply chain, provides more than 50 percent of components required for electric vehicles including the battery, nearly the entire powertrain, connectivity and infotainment modules.

The evolving nature of the industry also affects test departments, who struggle today to use the same personnel with the same equipment to meet new test requirements to stay differentiated. Test managers today must supplement existing test configurations with flexible, application specific tools that can be reconfigured dynamically, enabling a broader group of users to gain key insights for ad-hoc tests.

Converging technologies equip the modern vehicle

From their origins as a mere means of transport, cars today have evolved to become like smartphones in terms of how one purchases them, with infotainment, driver assistance, and connectivity (i.e. software and experience of the car) being important considerations.

While many experts disagree with the comparison between cars and smartphones, automakers are nonetheless leveraging innovations from other industries to gain a competitive edge and meet rising customer demands for new capabilities. With safety systems using technologies drawn from the aerospace/defense industry (radar, camera, and LiDAR) and engineers incorporating feature-packed infotainment systems (audio, video, RF and wireless, and in-vehicle communications), the line between automotive and consumer electronics continues to blur today.

Also, the dynamic nature of these technologies adds a layer of complexity to the automotive development process. In the case of V2X, for example, automakers must be prepared to integrate the two currently present standards – 802.11p aka DSRC and LTE V2X – using easily modifiable validation tests without significant cost or rework to the system. Another challenge to be overcome is the process of government regulation of autonomous vehicles which can be rectified by the presence of an open testing platform with the interoperability, I/O breadth, and synchronization.

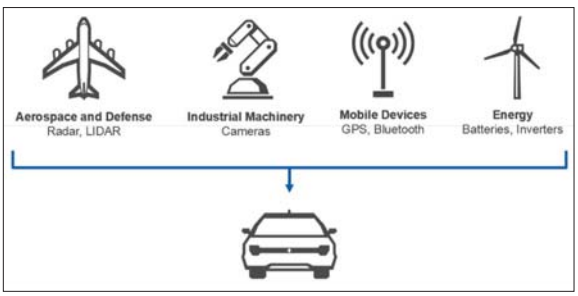


Figure 2. Modern vehicles incorporate technologies from other industries including aerospace, energy, and mobile devices, which increases the complexity of testing.

The data generated from autonomous vehicles that is used for safety requires extreme attention to detail to create a system that can identify the exact causes of failure during testing. Mismanaging data at any step of the test process risks product development roadblocks or drawing incorrect conclusions.

The way forward

Autonomous vehicles, which today form the forefront of innovation in the industry, come with their own set of challenges. Simple components such as headlights or car seats are becoming increasingly complex electromechanical systems that incorporate an ECU, sensors, actuation, and communication into the rest of the vehicle. Engineers must hence understand the interdependence of electrical and mechanical components with industrial I/O and communications within these systems to maintain safety critical quality. These vehicles also generate large amount of data, making it increasingly challenging to find specific test results without an established data management strategy.

Innovation in the auto industry shows no signs of slowing down. We at NI have been a trusted partner to OEMs and suppliers around the world, delivering flexible and future-proof test systems with the widest breadth of I/O, system-wide synchronization, and an expansive ecosystem of partners. For example, FlexLogger, NI's latest configuration-based datalogging tool, is a representation of the products being designed in response to these challenges. The pace of evolution in the automotive industry, coupled with the rise of radical new designs and ever-changing regulations have thus begun to stretch organizational budgets and test methodologies, forcing test departments to do more with less. The pressure to deliver, hence, falls squarely on the shoulders of test managers who face the challenge of building increasingly complex, mixed measurement test systems under compressed timelines, all while managing the explosive growth of collected data. These challenges have also permeated into adjacent industries including heavy equipment, aerospace, industrial appliances, and academic research. To overcome these challenges, engineers now need application specific tools to optimize the test workflow without sacrificing the ability to adapt.

The author is Automotive Product Marketing Manager, NI

Wired to future

The metro rail network in the country is increasing with the mass rapid transit system emerging as one of the best solutions for urban transportation, says **Marc Jarrault,** Managing Director, LAPP India Pvt. Ltd.

By Niranjan Mudholkar

How do you view the growth and development of the metro railway network in India?

With more and more global companies making their way to India, it has led to instant development of cities. With people migrating more into urban localities and cities, the density of population in these city limits is increasing at a greater pace. These developments are increasing and the people residing in these cities are finding transportation a major challenge, leading to more demand of the usage of public transport. The metro rail network in the country is increasing with the mass rapid transit system emerging as one of the best solutions for urban transportation. As of today, India has 425 kilometres of metro lines operational in 10 cities and the government has the vision to have metro in as many as 50 cities running across more than 700 kilometres. We believe that this goal will be achieved in the coming few years as state governments are including plans of expanding the metro in the infrastructure development proposals.

As of today, India has 425 kilometres of metro lines operational in 10 cities and the government has the vision to have metro in as many as 50 cities running across more than 700 kilometres.

LAPP has also worked with metro projects in Europe. How would you compare the progress of the Indian metro projects with those in Europe?

LAPP has worked recently in a rolling stock project in Germany. Like other infrastructure developments project, metro rail projects in India also has its own set of challenges. In pre-construction phase, complications were being faced as there were no comprehensive map of underground utilities available. Hindrances related to land acquisitions, especially private land, along with geo-political issues, escalation in costs are few factors responsible in project execution.

However, with the success of Delhi-NCR metro, two dozen projects have initiated the process with the urban development ministry and now we see quite a few line-ups of metro projects that have picked up pace in the last two to three years. The cities that have lined up their plans include Pune, Nagpur, Ahmedabad, Chennai, Vijayawada, Kozhikode, Indore, Bhopal, Patna, Guwahati, Kanpur and Varanasi.

Briefly tell us about the key Indian metro projects where LAPP has contributed in the recent times.

LAPP in India has been associated with metro projects in Delhi, Chennai, Noida, Bangalore, Kochi and Nagpur. We are supplying our cable and connection technology with international standards for their elevated and underground stations for different applications related to fire and alarm systems, SCADA and PLC wiring, signalling, public display and address systems, tunnel ventilation, traction converters, emergency etc.

What are the different solutions offered by Lapp India to the metro projects? What advantages do these solutions offer?

We at LAPP believe in providing integrated solutions and branded products of cable and connection technology to help

"LAPP in India has been associated with metro projects in Delhi, Chennai, Noida, Bangalore, Kochi and Nagpur. We are supplying our cable and connection technology with international standards for their elevated and underground stations for different applications."

the industry meet their challenges. Rounding up our portfolio with products for the railway industry, we offer customers high-quality, reliable solutions which meets all global standards in this sector. For metro rail network, LAPP has developed following solutions:

OLFLEX® TRAIN cables: These cables are built especially for coaches, a physically cross-linked in electron beam system using high energy beams. This gives them significantly improved mechanical and chemical resistance even at elevated temperatures.

OLFLEX® INFRA, a flame retardant, low smoke and halogen free cable for building and infrastructure in metro projects. OLFLEX® FIRE, fire survival cables, have been developed that can be used in the regular wiring in a station facility.

OLFLEX® INSTRUM is a data and control cable that has been designed to efficiently transmit long distance signals without reducing signal strength.

As important as cables are while designing metro rail system, it is also important to have appropriate accessories like connectors, cable glands etc. Hence, along with the cables, we have also developed accessories like EPIC® H-A, a power connector with fire protection capabilities and SKINTOP® MS, a flame retardant and halogen free cable gland, for railway industry which can be used where mechanical stability and fire protection are critical. These cable glands have gone through the quality check tests such as water & dust protection testing, pulling protection test and so on.

Are these solutions manufactured in India?

As these products are developed to meet the challenges faced by Indian metro rail network we have been very particular to develop these products here in India at our Bangalore factory.

AUTOMOTIVE UPDATE

Volvo Cars to have 25% recycled plastics from 2025

The specially-built version of its XC60 T8 plug-in hybrid SUV that has components made from recycled materials.

Volvo Cars has recently announced its ambition that from 2025, at least 25 per cent of the plastics used in every newly launched Volvo car will be made from recycled material. Volvo Cars also urged auto industry suppliers to work more closely with car makers to develop next generation components that are as sustainable as possible, especially with regards to containing more recycled plastics.

To demonstrate the viability of this ambition, the company has unveiled a specially-built version of its XC60 T8 plug-in hybrid SUV that looks identical to the existing model but has had several of its plastic components replaced with equivalents containing recycled materials. "Volvo Cars is committed to minimising its global environmental footprint," said Håkan Samuelsson, President and CEO of Volvo Cars. The special XC60's interior has a tunnel console made from renewable fibres and plastics from discarded fishing nets and maritime ropes.

Xilinx to develop AI solutions for Daimler AG

Xilinx recently announced that it is collaborating with Daimler on an in-car system using Xilinx technology for artificial intelligence (AI) processing in automotive applications. Increasingly complex advanced driver-assistance systems (ADAS) and autonomous-drive (AD) vehicles are increasing demand for Xilinx devices, which can be located in the ADAS/AD Central Module as well as within the camera, radar and/or Lidar systems. Today, Xilinx announced that it is collaborating with Daimler on an in-car system using Xilinx technology for artificial intelligence (AI) processing in automotive applications. Xilinx has a strong pedigree in automotive.

"We are accelerating our product development using AI technology by engaging our global development centers with Xilinx experts," said Georges Massing, director user interaction & software, Daimler AG. "Through this strategic collaboration, Xilinx is providing technology that will enable us to deliver very low latency and power-efficient solutions for vehicle systems which must operate in thermally constrained environments."

Creating a **world class ecosystem**

Know more about the industrial park that houses SMEs, and fosters innovations.

The Micro, Small and Medium Enterprises (MSME) segment plays a key role in India's industrial progress. According to CII statistics, close to 36.1 million units of Indian MSMEs contribute around 6.11 percent of the manufacturing GDP and 24.63 percent of the GDP from service activities as well as 33.4 percent of India's manufacturing output. They have been able to provide employment to around 120 million persons and contribute around 45 percent of the overall exports from India. However, despite being the backbone of the Indian economy, it also remains the most challenged sector in the nation today. A major reason why Indian SMEs are unable to claim their rightful place in the global arena is the lack of adequate infrastructure and power. This needs to change if ambitious campaigns like 'Make in India' as well as 'Start up India' have to succeed.

The good news is that an industrial park close to Mumbai has taken up the cause of supporting the MSMEs and contributing to the nation's development and growth, by creating the much-needed manufacturing infrastructure of international standards.

Located strategically at Bhiwandi, Bhumi World Industrial Park strives to develop a dynamic and future-ready industrial landscape in India by taking the lead in driving innovation and construction productivity in all our development. To this end, we have formed partnership with industry players to spearhead progress. With our developing facilities, we endeavour to make sure that our development is sustainable and environmentally friendly too.

Micro, Small and Medium Enterprises (MSMEs) have played a crucial role in the socio-economic development of India. The sector is considered to be the growth engine of the Indian economy for not only its contribution in employment generation, but also for the role it has played in the industrialisation of rural and backward areas. Today, MSMEs are operating in both formal as well as the informal sectors of the economy, starting from cottage industries to the high-tech engineering segment, which is evident at Bhumi World Industrial Park.

Key highlights

- The Bhumi World Industrial Parks, inspired by the Make in India initiative, is spread across a total land area about 82 acres.
- Pre-approved finance for tenants from nationalised or co-operative banks.
- 40 percent subsidy on Fixed Capital Investment
- Industries like printing, plastic, garments, furniture, engineering, pharmaceuticals, imitation Jewellery, food, cosmetics, automobile and ancillary industry, electrical and electronics are housed in the project.
- Good and wide network of roads inside the project for vehicular movement, uninterrupted electric supply, high speed internet connectivity, security with CCTV surveillance are some of the key features of the project.

Mission

To create a world class ecosystem for fostering leading edge innovation industrial park – MSME & large enterprises.

- Over 950 companies operational
- 15000 JOBS created.
- Make In India Project – With 150 manufacturing units from international markets lke – UK, Germany, USA, Japan, China, Poland, Switzerland, etc.

Excellent leadership

Bhumi World is led by young and dynamic Entrepreneur Prakash Patel, who is founder and Managing Director of Bhumi World Industrial Park. He is better known as the Real Es-

tate Entrepreneur and what he has achieved is nothing short of his vision.

With his profound knowledge in the business and industrious attitude, he has led the group of companies to scale new height, to extend that today the group is considered as a best Real Estate developers of Industrial Park in the Maharashtra region.

Having plunged into the business of real estate and knowing Industrial owners requirements in regards to real estate, he worked hard to learn the business module of acquiring, creating and selling real estate. Since the family specialized in the manufacturing, they had to create a product that matched their expertise and knowledge and hence led to creation of Bhumi World Industrial Park. On further deliberation, he felt that the concentration has to made to provide the facilities for SME/MSME business practitioners. This vision has today provided real estate to over 1000 business houses and its expected to give such facility to additional business owners in multiples of thousands. Today Bhumi World Industrial Park provides employment to over 15000 work force and always greedy to absorb more people and generate more employment.

Prakash Patel, Managing Director, Bhumi World Industrial Park

Advantage India - Robust Demand

- Huge domestic market with a rapidly increasing population and disposable income.
- By 2030, Indian middle class is expected to have the second largest share in global consumption at 17 percent.

Competitive Advantage

- Increasing share of young working population.
- A resource-rich country with 4th largest reserves of coal in the world and immense potential for renewable energy like solar and hydro, ready to meet the needs of the growing industry.

Increasing investment

- FDI in the sector reached USD 73.7 billion between April 2000– December 2017
- Most sectors are open to 100 percent FDI under the automatic route.

Policy Support

- National Investment and Manufacturing Zones developed to create an ecosystem for industries in India.
- Initiatives like 'Make in India' and sector specific incentives to various manufacturing companies, aiming to make India a global manufacturing hub.
- Skill India, a multi skill development programme has been started to equip the workforce with the necessary skills required by the sector.

Growth drivers for manufacturing sector in India

- With the advent of the digital age, Indian manufacturing companies have started adopting digital technologies in their production processes which will help in increasing efficiency. It is estimated that 65 percent of manufacturing companies will have high levels of digitalisation by 2020.
  - ✓ For its Commercial Vehicles, Ashok Leyland is utilising machine learning algorithms and its newly created telematics unit to improve the performance of the vehicle, driver and so on.
- Backward integration helps manufacturers to increase efficiency and overall cost of products without sacrificing on quality. Various organisations are looking at backward integration as a means to reduce costs.
  - ✓ As of April 2018, Rallis India, a subsidiary of Tata Chemicals, is planning to undertake backward integration as its inputs have become costlier and the move will help the company to ease pressure on its profit margins.
- Forward integration strategies also help organisations to realise cost benefits.
  - ✓ As of May 2018, The Chatterjee Group (TCG) is planning to set up a Continuous Polymerisation (CP) unit and a spinning unit, which will act as forward integrated units for its petrochemicals subsidiary MCPI.
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MVX Drill - New chipbreakers and grade for hardened steels and aluminium

Smart thinking has led to simple solutions for some old problems associated with indexable insert drilling. Difficulties such as chip clogging on deep holes, dissimilar rates of wear on inner and outer inserts due to differing peripheral speeds, plus flexing and wear of the drill body itself have all been resolved with a new and innovative design.

New UH breaker for hardened steels and UN breaker for aluminium

The existing range of inserts for steels, stainless and cast iron has been complemented with two new chip breakers and a new insert grade. The latest PVD coating technology has been applied to the new DP8020 grade to supplement its durable carbide substrate. This makes it the ideal grade to combine with the new UH chip breaker. The strengthened edge of this chip breaker provides the properties for reliable drilling of harder materials up to 45HRC.


New UN breaker for aluminium


New UH breaker for hardened steel

For aluminium machining, the uncoated TF15 grade now comes equipped with the new UN chipbreaker. With a sharp ground edge, it provides outstanding chip disposal and helps to prevent chip welding for increased reliability.

Different grades for inner and outer inserts

The outer insert in this type of drill naturally runs at a higher speed than the inner, thereby leading to higher levels of wear. Consequently, the inner insert needs to have a higher level of stability and resistance to fracturing at lower speeds. This anomaly has been negated by using a CVD coated outer insert that has higher abrasion resistance, in tandem with a PVD coated inner insert that can cope better with fracturing forces and resistance to welding. This combination means improved reliability and fewer changes of insert for increased levels of productivity.

Interchangeable inserts with 4 cutting edges

The SOMX type inserts are interchangeable from inner to outer position, have 4 cutting edges and a unique wavy chip breaker design for improved chip control. The peripheral edge also has a wiper type geometry for excellent hole wall accuracy and surface finishes. The inserts are also positioned in such a way that when cutting, they are both equally in contact with the workpiece, thereby reducing drill body flex to provide a more consistent performance.

Tool body

The tool body is designed with through coolant holes and an optimum sweep of the flutes that provides extra metal thickness behind the direction of the principal cutting force. This controls tool body deflection and helps to achieve reliable deep hole drilling up to 6 x D. Additionally the body surface is heat treated to prevent wear from chip evacuation. The sizes available are -

- Ø17mm-Ø43mm in L/D=2, 3, 4, 5 and 6.
- Ø17mm-Ø63mm in L/D=2, 3, 4 and 5.

Source: Mitsubishi Materials

UPDATE

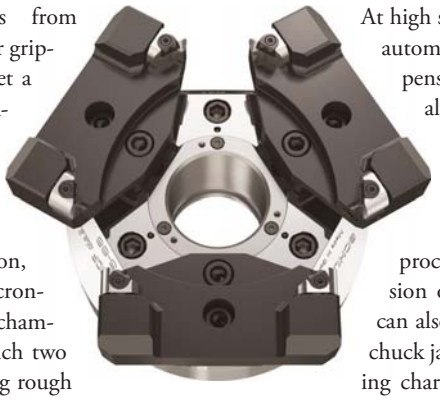
Mastercam 2019 released by CNC Software

CNC Software has announced the release of Mastercam 2019. It is now available for purchase. Mastercam 2019 was developed to streamline the manufacturing process from job setup to job completion. Mastercam 2019 increases machining productivity and reduces overall production costs with new 2D through multiaxis milling automation features, CAD and model preparation improvements, expanded 3D tooling, Accelerated Finishing™, and powerful turning and Mill-Turn enhancements.

CNC Programming: Mastercam 2019 continues to increase productivity and programming efficiency, while reducing overall production costs, with a series of automated 2D through 5-axis toolpath improvements. Re-engineered chamfering and holemaking strategies, plus the new Multiaxis deburring provide new levels of time-saving automation and simplicity. New milling toolpath strategies, like the high speed Equal Scallop toolpath, offer both machining performance and surface finish improvements. The new release includes additional support for the Sandvik Coromant PrimeTurning™ method, enhanced grooving, bar feed, and other features for turning and mill-turn applications, plus new lathe and Swiss-style machine support.

Job Preparation and Setup: Mastercam 2019 increases efficiency and reduces job setup time and the preparation needed for part machining and programming. This includes enhanced CAD functionality and 3D model import support, improved part preparation and fixture setup tools, additional PowerSurface capabilities, and expanded support for Model-Based Definition (MBD).

Compensation jaw with centrifugal force and vibration compensation



The hydraulic compensation jaws from SCHUNK, the competence leader for gripping systems and clamping technology, set a new benchmark in hydraulic compensation jaws for low-deformation workpiece clamping. It is the first time that chuck jaws for compensating the workpiece clamping have successfully been combined with centrifugal force compensation, vibration-damping characteristics and micron-precise concentricity. The integrated oil chamber system is a central feature, above which two oscillating clamping elements for clamping rough or finished parts are mounted. As they individually adapt to the workpiece, form tolerances in castings, for example, are reliably compensated. Compared to conventional 3-point clamping, the number of clamping points is doubled, which lowers the deformation of the workpiece and the obtainable roundness is significantly increased.

The hydraulic system allows for automatic centrifugal force compensation

At high speeds, the hydraulic clamping system automatically ensures centrifugal force compensation so that the clamping force is always reliably maintained. In order to minimize workpiece deformation, the clamping force can be considerably reduced in comparison with previous solutions without restrictions on process reliability. For maximum precision on the component, the concentricity can also be adjusted micron-precisely on the chuck jaws. Additionally, the vibration-damping characteristics of the oil chamber system benefit the surface quality of the workpiece and the tool life. The hydraulic compensation jaws are suitable for low-deformation O.D. clamping of rough and finished parts and are available for all lathe chuck sizes and serration types.

For more info, contact:
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Schunk Intec India Private Limited
Email: info@in.schunk.com, Web: www.in.schunk.com

Energy efficient enclosure climate control solutions

One of India's leading businesses in FMCG sector, ITC Ltd was in the process of ¬finding Climate control solutions at ITC Ltd, Bengaluru – North Unit keeping in view that the enclosure cooling solutions has to be energy efficient and maintenance-free.

Innovative energy efficient solution by Rittal

Rittal has been one of the leading names in terms of energy saving solutions because of our top-notch innovative and technologically advanced products and services. After the detailed conversation with the representative of ITC Limited, Bangalore, Rittal team of engineers audited their plant and suggested the right cooling solution to be installed. Rittal had to demonstrate, why their cooling systems are the best for ITC.

In order to present the progress, Rittal demonstrated their energy consumption & maintenance free concept under the stipulated time of a month. Rittal Enclosure cooling unit (Blue e+) of 2000W along with an energy meter was installed on their machine. A month's review revealed that, 'World's' First Revolutionary Cooling Unit 'Blue e+', was leading in terms of energy efficiency and better performance.

Affiliating trust and innovation

A month-long survey revealed that by installing Rittal Blue e+ cooling solutions, ITC was able to save up to 60% of their energy consumption than the other manufacturer's cooling units. The study during the trial period established the fact that Rittal Blue e+ is better in terms of performance and energy consumed than the present installed cooling units of other manufacturers. The team at Rittal upholds in high favour, gained by the approval of their energy efficient cooling solution, thus building a new found partnership with ITC.

Faster - Better - Everywhere

Rittal is World's Leading Systems provider for enclosures, power distribution, climate control, IT infrastructure and software & services. Known in high regard for our product and services, our versatile and exible range of services perfectly compliment the exhaustive product portfolio that we put up. Our team of service partners and trained service engineers help us to provide innovative maintenance services in Rapid Response time. Ensuring impressive and dependable systems in full availability with all application areas worldwide, 24/7, 365 days a year.

Source : Rittal India

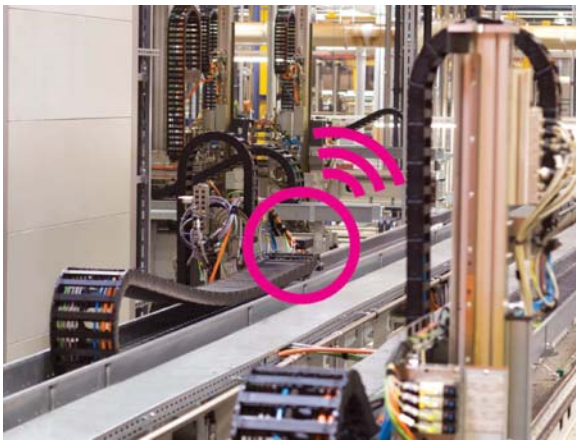
Increase plant safety, reduce maintenance costs

New intelligent plastic solutions offer many options for predictive maintenance

'Machine Learning', 'Big Data' and 'Industry 4.0' - the real potential customer benefits from digitisation are often hidden behind these buzzwords. Intelligent products such as igus smart plastics, for example, enable companies to increase the reliability of their systems, plan maintenance tasks accurately and thus save costs. The way this works is demonstrated by igus with new ideas at the Hannover Messe 2018.

igus has been developing a family of products since 2016 under the heading 'isense', where various sensors and monitoring modules add intelligence to plastic solutions such as energy chains, cables, linear guides and slewing ring bearings. They measure among other things the wear during the operation and alert the user early enough to plan repair or replacement. By networking using the igus communication module (icom), the online status and alert display, for example via a PC, tablet or smartphone, is just as possible as a direct integration into the customer's infrastructure. These smart plastics are already predicting the service life of numerous customer applications, such as in the automotive industry. They are continuously developed in close cooperation with customers. These novelties will be presented by igus at the Hannover Messe.

> "The isense components provide the customer with additional safety through a permanent service life update. This is because it includes the current ambient conditions of the actual application. Maintenance and replacement occurs only when it is really essential. This saves time and maintenance costs."
>
> **Richard Habering,** Head of smart plastics business unit, igus



Individual integration of smart plastics

The improved isense modules, which use sensors to collect data from the energy chain, cable, linear guide or slewing ring bearing, are equipped with a serial interface and can be easily integrated into a control cabinet. A data logger allows the storing of values on an SD card. The data measured by the different isense systems are then sent wirelessly to the icom module, summarised and processed. The customer has the choice of various concepts for integration into their own infrastructure. In this way there is an option for the icom to send the data from the sensors to a PC or integrate the data via the computer into the existing software environment and intranet solution. In addition, a connection to the igus Data Center is possible. In this case, the maintenance recommendations via Machine Learning and AI algorithms are constantly compared and defined with the experiences of many existing applications, for example in the large igus test laboratory spread over a floor area of 2,750 square metres. "Due to the numerous test findings that are fed into the online service life calculators, we are able to predict precisely how long an e-chain will work reliably in a particular application," adds Richard Habering, head of the newly established smart plastics business unit at igus. "The isense components provide the customer with additional safety through a permanent service life update. This is because it includes the current ambient conditions of the actual application. Maintenance and replacement occurs only when it is really essential. This saves time and maintenance costs."

For more information, contact:
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