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THE MACHINIST

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LEADING AUTO COMPONENTS MANUFACTURERS' JOURNEY TOWARDS EXCELLENCE

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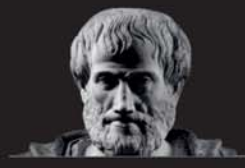

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Major component of growth

The automotive component industry, which contributes 2.3 percent to India's GDP, registered a very healthy growth of 18.3 percent for 2017-18, as per ACMA's latest report. The industry has posted a substantial growth on the back of the upswing in the vehicles sales in the country. In fact, this is the first time that the industry's turnover has crossed the Rs. Three lakh crore mark (Rs.3,45,635 crore, which is about US$ 51.2 billion)!

The overall Indian automotive industry is going through a huge transformation. While complying with the newer (and stricter) safety and emission norms, the industry is also grappling with the advent of the EV. At the same time, the term mobility is getting increasingly used along with terms like 'smart', 'connected' , 'autonomous' and 'shared'. Digitalisation and design have started overlapping each other. Customisation is becoming a norm. Therefore, the next decade is

"A NEW ERA OF MOBILITY IS COMING. WE NEED TO WELCOME IT WITH THE RIGHT SPIRIT."

going to be crucial. To succeed, companies will have to do more than just adapt and evolve. Success will come to those who can and will drive the change and initiate the future with their bold moves.

At the same time, if the government is serious with regards to early adoption of electric mobility then it needs to provide complete support in terms of a long-term road map that also encourages creation of infrastructure and a robust supply chain.

Policy regulations also need to take a comprehensive approach. For example, at present, 60 per cent auto components carry 18 percent GST while the remaining 40 percent parts are levied a GST rate of 28 per cent. This serious anomaly needs to be addressed on priority.

A new era of mobility is coming. We need to welcome it with the right spirit.

Editor & Chief Community Officer

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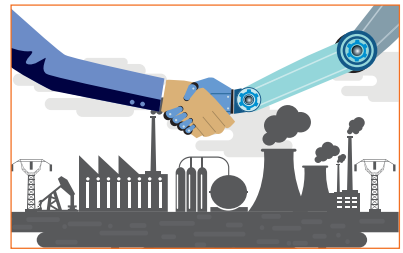

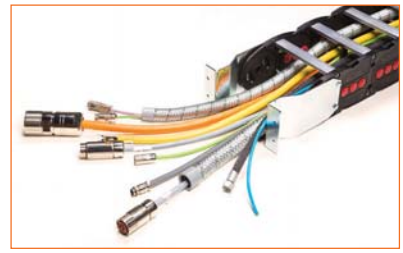

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India's exports record highest growth in 2017-18: Suresh Prabhu

DESPITE INCREASING GLOBAL PROTECTIONISM, India's export will continue to register healthy growth rates and is expected to touch USD 350 billion in the current fiscal said Union Minister of Commerce & Industry and Civil Aviation, Suresh Prabhu, in New Delhi recently.

The Minister stated that services sector is set to become a dominant driver of the Indian economy and will contribute $3 trillion of $5 trillion by 2025. In order to give a boost to the services sector Commerce Ministry has identified 12 champion services sectors for which Cabinet has approved a dedicated fund of ₹ 5000 crore to support initiatives for sectoral action.

Prabhu further added that the services sector contributes significantly to India's increased productivity & competitiveness and high quality of the champion services sectors will further boost exports of various services from India and give a boost to employment generation.

The Minister added that India is pushing for export of services to countries in Africa and also Latin America. India has a two pronged agenda with its trading partners: allowing professionals from India to travel abroad and trade facilitation in services export. The Minister exhorted ASSOCHAM to maintain high standards of professionals travelling abroad for services so that delivery of services exported will be of a high quality.

HAL demonstrates 10kg helicopter UAV

THE HINDUSTAN AERONAUTICS LTD successfully demonstrated flight of a 10Kg Rotary Wing (Helicopter) Unmanned Aerial Vehicles (RUAV) here in the presence of its Board of Directors, recently. The RUAV is of a 2-stroke petrol engine, twin blade main rotor and tail rotor, payload capability of 2.5Kg including live stream video camera and range of the vehicle is 8-10 Km with an endurance of one hour.

The flight lasted for about ten minutes during which the Attitude Control Attitude Hold (ACAH) mode, Position Control, Position Hold mode (autonomous hover), low speed flight in forward, backward and sideward directions, were demonstrated. The video feed from onboard the helicopter was streamed live and shown on the dedicated video receiver. The status of the helicopter, its parameters and its real-time position on the map were also shown.

To achieve self-reliance in the aviation field and to enhance its R&D efforts, HAL is working closely with premier educational institutes and has established chairs at IITs (Madras, Roorkee, Kharagpur, Bombay, Kanpur) and IISc Bengaluru. The RUAV is developed in association with IIT Kanpur and is the first outcome of HAL's tie-ups with academia.

Asian growth is steady: Asian Development Outlook

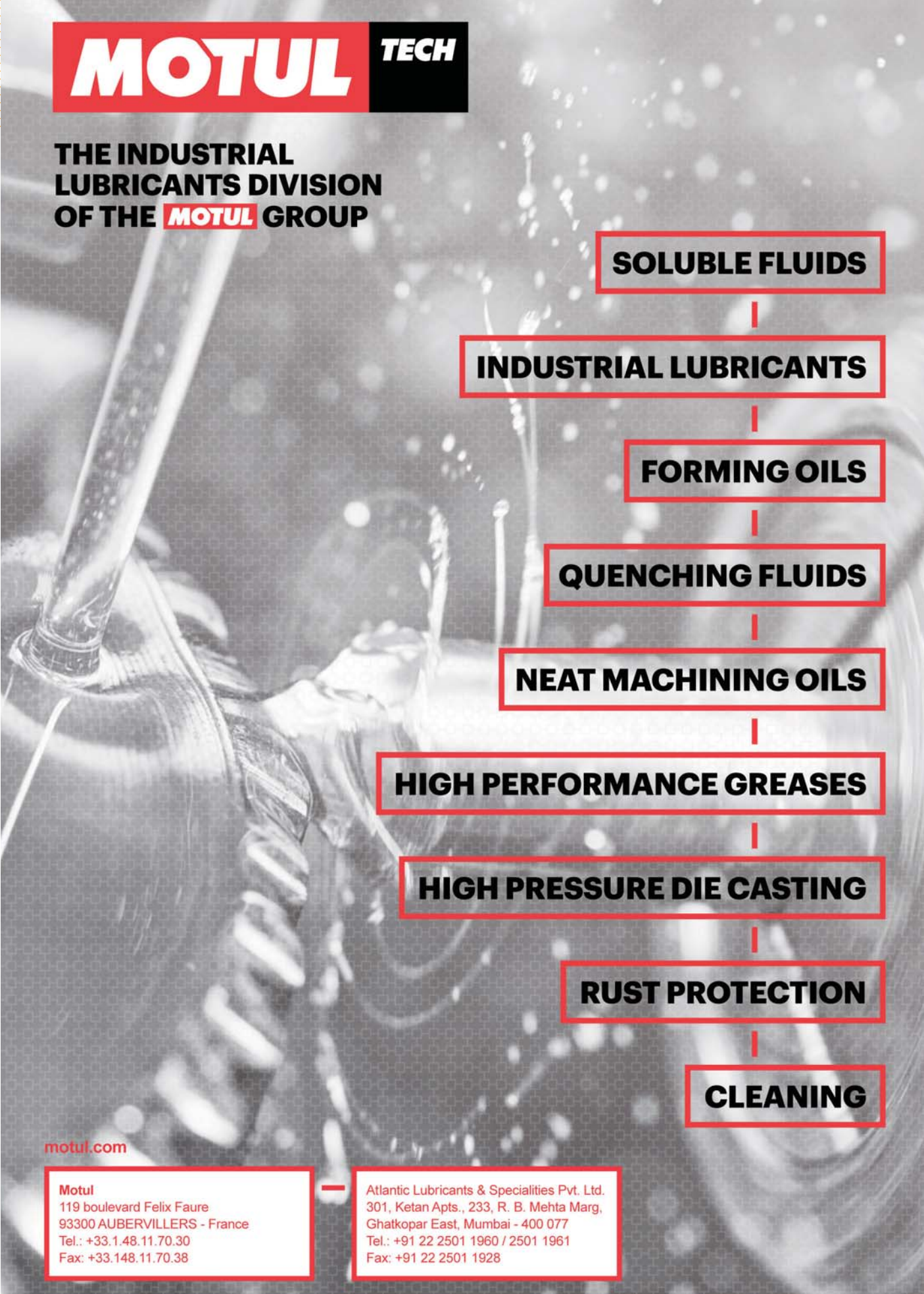
GROWTH IN ASIA and the Pacific's developing economies for 2018 & 2019 will remain solid as growth continues apace across the region, despite rising tensions between the US and its trading partners, says a new Asian Development Bank (ADB) report.

In a supplement to its Asian Development Outlook (ADO) 2018 report released last April, ADB forecasts 2018 growth for Asia and the Pacific at 6.0 percent for 2018 and 5.9 percent for 2019, in line with its previous projections. Excluding Asia's newly industrialized economies, growth is forecast at 6.5 percent in 2018 and 6.4 percent in 2019, also unchanged from April.

"Although rising trade tensions remain a concern for the region, protectionist trade measures implemented so far in 2018 have not significantly dented buoyant trade flows to and from developing Asia," said ADB Chief Economist Yasuyuki Sawada. "Prudent macroeconomic and fiscal policymaking will help economies across the region prepare to respond to external shocks, ensuring that growth in the region remains robust."

South Asia, meanwhile, continues to be the fastest growing subregion, led by India, whose economy is on track to meet fiscal year 2018 projected growth of 7.3 percent and further accelerating to 7.6 percent in 2019, as measures taken to strengthen the banking system and tax reform boost investment. In both Pakistan and Bangladesh, agriculture recorded notable improvement over the last year, surpassing expectations and driving growth.

In Southeast Asia, growth projections for the subregion remain unchanged at 5.2 percent in both 2018 and 2019, as robust domestic demand continue to support economies in the region. Higher public investment boosted first quarter growth in Indonesia, the Philippines, and Thailand, while private investment was strong in Vietnam.



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Boeing Apache, Chinook helicopters for India complete inaugural flights

BOEING AND INDIA recently took a significant step toward modernizing the Indian Air Force's helicopter fleet by completing the first flights of Apache and Chinook helicopters destined for delivery next year.

"We look forward to delivering this phenomenal capability to India," said David Koopersmith, vice president and general manager, Boeing Vertical Lift. "From coastal operations to high-altitude mountainous missions, these aircraft will play vital roles with the Indian armed forces."

India ultimately will receive 22 AH-64E Apache attack, and 15 CH-47F(I) Chinook transport, helicopters.

ISRO achieves another technological breakthrough!

THE INDIAN SPACE RESEARCH ORGANISATION (ISRO) has recently carried out a major technology demonstration, the first in a series of tests to qualify a Crew Escape System. This is a critical technology relevant for human spaceflight. The Crew Escape System is an emergency escape measure designed to quickly pull the crew module along with the astronauts to a safe distance from the launch vehicle in the event of a launch abort. The first test (Pad Abort Test) demonstrated the safe recovery of the crew module in case of any exigency at the launch pad.

After a smooth countdown of five hours, the Crew Escape System along with the simulated crew module with a mass of 12.6 tonnes, lifted off at the opening of the launch window from its pad at Satish Dhawan Space Centre, Sriharikota. The test was over in 259 seconds, during which the Crew Escape System along with crew module soared skyward, then arced out over the Bay of Bengal and floated back to Earth under its parachutes about 2.9 km from Sriharikota.

The crew module reached an altitude of nearly 2.7 km under the power of its seven specifically designed quick acting solid motors to take away the crew module to a safe distance without exceeding the safe g-levels. Nearly 300 sensors recorded various mission performance parameters during the test flight. Three recovery boats are being exercised to retrieve the module as part of the recovery protocol.

New research projects selected for IMPRINT-2

FOR ADVANCING RESEARCH in the high education institutions, the government under the leadership of Prime Minister Narendra Modi has approved 122 new research projects at a cost of Rs. 112cr. under IMPRINT-2 covering Energy, Security, Healthcare, Advanced Materials, ICT and Security/ Defence domains.

"Out of 2145 proposals, 122 best proposals were selected for funding under IMPRINT-II, advancing cutting edge level technology," informed Union HRD Minister Prakash Javadekar.

"Of the 122 new IMPRINT projects sanctioned, 81 are sponsored by the industry. This industry-academic collaboration will bring excellence in research," Javadekar said adding that the knowledge portal for monitoring the progress of research projects and to disseminate findings will be launched in October 2018.

The new research projects' categories are: 35 (ICT), 18 (Advanced Materials), 17 (Healthcare Technology), 12 (Energy Security), 11 (Security &Defence), 9 (Sustainable Habitat), 7 (Water Resource & River Systems), 5 (Environment & Climate), 4 (Manufacturing) and 4 (Nano Technology).

IMPRINT is the first of its kind MHRD supported Pan-IIT + IISc joint initiative, now open for private institutions too, to address the major science and engineering challenges that India must address and champion to enable, empower and embolden the nation for inclusive growth and self-reliance.

Innovate India, collaboration between Atal Innovation Mission & MyGov, launched

RAMANAN, MISSION DIRECTOR, Atal Innovation Mission and Arvind Gupta CEO, MyGov recently launched the "#InnovateIndia Platform", a collaboration between the Atal Innovation Mission and MyGov, a citizen centric platform of the Government of India. The #InnovateIndia portal will serve as the common point for all the innovation happening across the nation.

Launching the platform, Mission Director, Atal Innovation Mission said that the #InnovateIndia MyGov-AIM portal creates the much-needed innovations platform for registering both grassroots and deep-tech innovators at a national level. Those searching for a critical innovation can leverage the portal advantageously for the benefit of the economy as well as national social needs.

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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 21, 2018, Bengaluru

The Economic Times POLYMERS Global Conference on Plastics in Automotive

October 26, 2018, Pune

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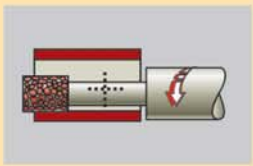
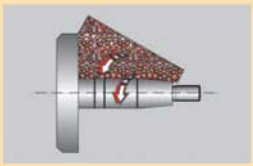


FIG-200 SPL CNC
BIG BORE GRINDER

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
CREEP FEED GRINDER

SGR-60
ROTARY GRINDER

SG-63
HYDRAULIC / PLC

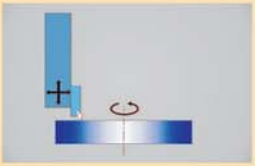
Automats

A15/25

TD36
AUTOLOADING

A42/60

Vertical Turning Lathe



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VIKRAM PAWAH TO HEAD INDIAN OPERATIONS AS CHAIRMAN OF BMW GROUP

Vikram Pawah (47) has been appointed as the Chief Executive Officer of BMW Group Australia and New Zealand effective 1 August 2018. He has additionally been promoted as the Chairman of BMW Group India and will remain committed to the Indian market in his expanded role. Hans-Christian Baertels (56), currently Director, Finance and Administration at BMW Group India will take over responsibility as the acting President.

Hildegard Wortmann, Senior Vice President, Asia Pacific, BMW Group, announced the appointments. Wortmann said, "Mr. Pawah brings excellent preconditions to lead BMW Group operations in India and Australia. Under his leadership, BMW Group India has successfully stood ground in a fiercely competitive environment and gained significant momentum in the Indian luxury car market."

Pawah joined BMW Group India in January 2017 and has more than twenty-five years of automotive experience.

SANGEETA TALWAR JOINS BOARD OF CASTROL INDIA

Castrol India Ltd announced the appointment of Sangeeta Talwar as an independent non-executive director to the Board of Directors of Castrol India Limited. In a career spanning over 30 years, Talwar has worked across large European, American and Indian corporations. She has worked with the private sector in India and in Switzerland, as well as spearheaded the implementation of a national level social sector World Bank funded project in rural India.

S M Datta, Chairman - Board of Directors, Castrol India Ltd said, "We are delighted to welcome Sangeeta Talwar to the Board of Castrol India. A respected corporate professional, she combines a deep understanding of business issues with an exposure across various disciplines in her executive career. Her varied global experience will help Castrol India to continue to deliver innovative solutions through its business."

LANXESS INDIA APPOINTS NEW MANAGING DIRECTOR

Neelanjan Banerjee will be the new Country Representative and MD for LANXESS India effective September 1, 2018. He will assume these tasks in addition to his current function as head of the Advanced Industrial Intermediates business unit (BU AII) in India. Banerjee joined LANXESS in 2006 as head of the former Basic Chemicals business unit and the Saltigo business unit in India. Banerjee follows Jacques Perez, age 56 years, who will take over new responsibilities as Managing Director of LANXESS Holding UK Unlimited and Country Representative of LANXESS in the UK. Born in France, he has also held the position of Chief Financial Officer (CFO) of LANXESS India Pvt Ltd since 2013. "On behalf of the entire Board of Management, I would like to thank Neelanjan Banerjee for his excellent work and outstanding contributions to the company so far and wish him success in the new role" said Rainier van Roessel, Member of the Board of Management at LANXESS AG.

ADIF APPOINTS JANAK MEHTA AS CHAIRMAN

Asia Dyestuff Industry Federation, an industry body representing Dyestuffs, Pigments, Optical Brighteners and Dyes Intermediates manufacturers has appointed Janak Mehta as the Chairman. Mehta was appointed for a tenure of five years during the federation's meeting conducted in Shanghai. Mehta was previously President for the Dyestuffs Manufacturers Association of India (DMAI). This announcement marks the establishment of the India chapter for the Federation and coincides with the centenary celebrations of China Dyestuff industry. ADIF also appointed four Vice Chairmen from DMAI and DMAI's Executive Secretary was officially designated as the Deputy Secretary General for ADIF. The Federation will work towards the development of the Asian colorant industry by promoting communication and exchange information among its members. Through sustained bi-lateral and multi-lateral cooperation as well as for holding seminars, and exhibitions between different members, the Federation aims to create opportunities and conditions conducive for the development of the Asian colorant industry.

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ESCORTS LTD APPOINTS NIKHIL NANDA AS CMD

The Board of Directors of Escorts Limited has appointed Nikhil Nanda as the Chairman and Managing Director (CMD) of the company. The Board of Directors unanimously appointed Nikhil Nanda to succeed Rajan Nanda, former Chairman and Managing Director of Escorts Limited. Rajan Nanda, passed away recently, after a brief illness.

Nikhil Nanda, said, "I am aware that an enormous responsibility, with a great legacy, has been entrusted on me. Our founder Chairman Mr HP Nanda created Escorts to elevate human lives by eradicating drudgery through technology driven agriculture and infrastructure. Along with our late Chairman, Mr Rajan Nanda, I got an opportunity to nurture the the legacy and build a strong engineering set-up to cater to community development. It is a privilege to lead this company which has been built by innovation, highly respected board and a great team."

THOMAS SEDRAN TO BE CEO OF THE VOLKSWAGEN COMMERCIAL VEHICLES

Dr. Thomas Sedran, General Secretary and Senior Vice President Group Strategy at Volkswagen Aktiengesellschaft, has been appointed CEO of the Volkswagen Commercial Vehicles brand effective September 1, 2018. In this function, he takes over from Dr. Eckhard Scholz, who is stepping down at his own request. Thomas Sedran's successor will be announced at a later date.

Dr. Thomas Sedran holds a Ph.D. in economics and worked as a management consultant from 1988 to 2012, for example holding responsibility on a global level for the Automotive Competence Center at Roland Berger Strategy Consultants until 2006. He then became managing director of the automotive industry section at management consultant AlixPartners in Munich. Sedran became the member of the Management Board of Adam Opel AG in charge of strategy and operations and interim CEO in 2012, and assumed responsibility for the Chevrolet and Cadillac brands in Europe as President and Managing Director in July 2013. Volkswagen appointed him Senior Vice President Group Strategy in 2015 and in addition, he was named General Secretary of Volkswagen Aktiengesellschaft in 2017.

HAL APPOINTS NEW DIRECTOR

C.B. Ananthakrishnan has taken over as Director (Finance) at Hindustan Aeronautics Limited. Prior to this, he was Executive Director (Finance) at HAL Corporate Office. Born in 1964, he is a Cost Accountant with MBA (Finance) from University of Madras. He joined HAL in March 2004 as Chief Manager (Finance) at Helicopter Division, Bengaluru.

He has over three decades of experience in private and public sectors with stints in merchant banking, pharmaceuticals and fertilisers before joining HAL. He is also HAL nominee Director in the Board of three joint ventures of HAL.

He played an active role in HAL's Initial Public Offer (IPO) during March 2018. Having rich experience in pricing, he was instrumental in signing of major helicopter contracts of HAL including supply of 159 helicopters to the Armed Forces.

NCCBM APPOINTS MAHENDRA SINGHI AS CHAIRMAN

National Council for Cement and Building Materials (NCCBM) has announced the appointment of Mahendra Singhi, Group CEO of Dalmia Cement (Bharat) Ltd., as its new Chairman. Singhi has been a part of the board of Governors of NCCBM since 2013.

NCCBM operates under the administrative control of Ministry of Commerce and Industry, Govt. of India, for technology development, transfer, continuing education and industrial services for cement and construction industries.

Commenting on the occasion, A Saxena, Director General of NCCBM said, "We are fortunate to have someone of Mr Singhi's calibre and experience to lead NCCBM. We are at a critical phase of development of our centres of excellence and we need renewed leadership to successfully implement our research, strengthen our technology initiatives and take advantage of the opportunities ahead for sustainable development of cement and construction sector. Mahendra Singhi is a technology visionary with a proven track record of execution. Furthermore, as a member of NCCBM'S board of governors for the past five years, he has a deep understanding of NCCBM's capabilities and potentials. "

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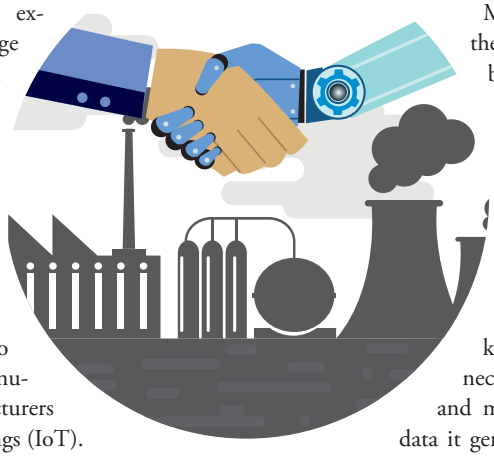
By Anil Valluri



Manufacturing is expected to be a huge driver for overall Asia's economy in the future . The year 2020 will be a big year for manufacturers as Deloitte predicts more and more Asian countries to join the manufacturing competitiveness - kicking out formerly well-established Western nations. This is sure to strengthen India's positioning in manufacturing. But to realize this, manufacturers will need to seize the Internet of Things (IoT).

Indian manufacturers are increasingly moving away from traditional manufacturing to smart manufacturing to address labour shortages and increased disruptions brought by technology advancements. Leveraging IoT by connecting machines, systems and products through networked sensors is one way of doing so. IoT enables them to improve operational efficiency and gain competitive advantage.

For example, a manufacturer could use a combination of sensors, data and analytics to monitor the performance and operating environment of its production machines and take preventive action before any malfunctions. With this predictive maintenance capability, the manufacturer can reduce cost and time loss due to unexpected downtime and production outages. In a connected factory, IoT provides real-time insights across the production line. The manufacturer can quickly identify production lags and adjust to meet production orders. Since the value of IoT lies in data, a data management strategy is central to the success of IoT projects.

Five areas a data management strategy should cover:

- Collect, which involves capturing sensor data and making it transportable.
- Transport, which focuses on ensuring data from connected things are securely and reliably transferred to the data center.
- Store, which entails storing the sensory data and making it available for analysis.
- Analyze, which comprises of the analysis of sensor data.
- Archive, which looks at cost-efficient, long-term archiving of sensor data.

Manufacturers also need to ensure their data management strategy covers both data at the core (i.e. stored in a data center) and data at the edge (i.e. generated at the device and machine sensors). In the former, all data is first sent to the data center to be centrally stored before it is analyzed. This is useful for analyzing data retrospectively.

As for the latter – which is also known as edge computing – the connected device partially filters, analyzes, and makes initial decisions based on the data it generates. A connected robotic arm in a production line, for example, can collect data on its performance, filter out the unimportant information, and only send alerts to the operator if there is an anomaly.

"IoT enables manufacturers to improve operational efficiency and gain competitive advantage."

Adopting advanced manufacturing can daunting as there are various things to address – especially from a data management aspect. One way of reducing this complexity is by using solutions that can unify IoT data to make it available to workloads or applications regardless of architecture and platform.

The future of manufacturing in India and the APAC region will be built around smart and connected technology. IDC predicts that by 2021, manufacturers in the region will collectively spend around one-third of their total investment on IoT. But first, manufacturers will need a future-proof data management strategy that allows them to effectively harness data that their connected devices produce. Only then will they will be able to use IoT to monitor the pulse of their business and make well-informed decisions to drive it forward and past competitors.

The author is President, NetApp India and SAARC.

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Green Growth!

As global automotive players, Nissan and Renault are focussed Green Manufacturing initiatives, says **Colin Macdonald,** CEO & MD, Renault-Nissan Alliance Pvt. Ltd. (RNAIPL)

By Niranjan Mudholkar

How's the journey been for you at Renault-Nissan Alliance factory since January 2014 – first as the Deputy MD and then as MD since April 2015?

India is a fascinating country – diverse, enigmatic and dynamic. The growth of business and economy has its own challenges for manufacturing but provides one with a rich and rewarding experience. I have many fond stories and memories to share and continue to enjoy the opportunities. RNAIPL has witnessed an overall improvement in performance in terms of Quality, Cost and Delivery. It is a huge honour and a privilege to lead the plant as its MD and I strongly believe that the plant is progressing towards a strong future.

What is the plant's annual production capacity?

RNAIPL's annual production capacity is 4,80,000 cars. We produce total of 10 models across Nissan, Datsun and Renault brands.

What are some of the key 'Green' manufacturing initiatives implemented at the Chennai plant?

As global automotive players, Nissan and Renault are focussed towards adopting Green Manufacturing initiatives to reduce the environmental impact of their activities and are constantly working towards minimizing its ecological foot print.

RNAIPL has established several 'Green' manufacturing initiatives, in the two focus areas of water and energy management.

Water Management: RNAIPL has installed three rainwater harvesting ponds with 1.9 lakh KL rainwater storage, through which RNAIPL can self-sustain its water requirements for up to 130 days. The plant also has an in-house wastewater treatment technology, which, combined with a strong evaporator facility, has helped achieve Zero Liquid Discharge. Regular water audits and awareness programs are also held at the plant shop floor. These practices have helped significantly mitigate RNAIPL's operational water needs and inculcating self-sufficiency by reducing dependence on the Government water supply. Recognizing the efforts taken on water management initiatives and its impact, RNAIPL was accorded the CII Award for 'The Best Water Management Practices' in the year FY16-17.

"RNAIPL's annual production capacity is 4,80,000 cars. We produce total of 10 models across Nissan, Datsun and Renault brands."

Energy Management: With a commitment to reduce carbon footprint across all value chains, RNAIPL has undertaken active measures to institutionalize an effective energy management plan. This includes compliance with global best practices and facilitation of various energy saving projects. In 2016, RNAIPL started using wind energy as an alternative medium for electricity. RNAIPL will venture into Bio-thermal by 2019. RNAIPL's green energy initiatives brought down energy use per car by 42 percent in the last 8 years, since inception. Today, RNAIPL ranks in the top four for optimal energy use, among all Nissan plants in the world.

What are some of the major steps taken by RNAIPL towards becoming a self-sustainable manufacturing plant in terms of power utilization?

RNAIPL has established a robust energy efficiency plan, comprising 38 energy saving projects across its facility. These include large-scale installation of LED lighting, Variable Frequency Drives, and Intelligent Flow Controllers.

The plant is additionally compliant with Nissan's global practices like Nissan Energy Saving Collaboration (NESCO) and Engineering Standard Expense Ratio (ESER) and receives regular audits across several sustainability criteria. Under NESCO, a team has been instituted to suggest initiatives for reducing energy use and corresponding CO2 emissions.

The deployment of these best practices has brought down energy use per car by 42 percent in the last 8 years. In 2010, the energy consumed was 2.03 Gigajoules per car, which has been reduced significantly to about 1.77 Gigajoules per car. In 2016, RNAIPL began its renewable energy transition by opting for wind energy, which now powers 27 percent of all energy needs. RNAIPL is working to increase wind energy utilization to 40 percent, while increasing Bio-Thermal Energy utilization to 10 percent by FY19.

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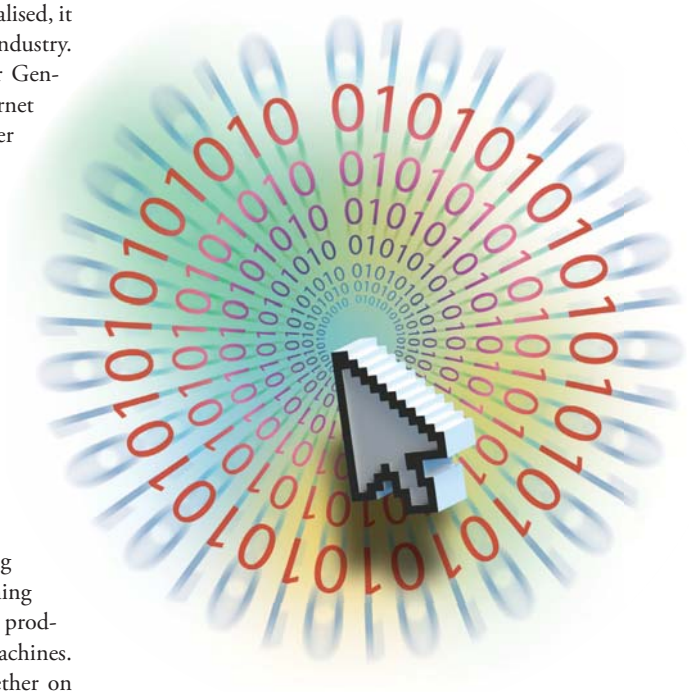
Being 'smart'

As the Industry 4.0 revolution hits the manufacturing, the industry is going smart. Industry leaders speak to The Machinist about advantages and challenges.

By Swati Deshpande

Since 2011 when Industry 4.0 was conceptualised, it has been transforming the manufacturing industry. Speaking on the same, V. Anbu, Director General and CEO, IMTMA mentions, "Internet has been transforming lives better than ever before. Like human lives, manufacturing industry is also undergoing some sweeping transformations in the technology driven world. Industries are deploying internet of things, big data, robotics, artificial intelligence, and many more contemporary technologies to ramp up production. This is building momentum for achieving manifold growth in years to come. Smart manufacturing is synonymous with Industry 4.0 and it is revolutionizing the way manufacturing is done worldwide. The concept which first came to light at Hannover Messe fair in 2011 has now become a norm throughout the globe. It is heralding a new way of organizing the means of production by setting up 'smart factories'. In these 'smart factories' everything is connected. There is constant interaction between products and machines as well as between machines and machines. Humans, machines and materials are all linked together on a network and the network in turn is connected to outside world. There is ceaseless communication. The overall objective is to convert data into information and knowledge in real time to make the process productive, flexible and ensure quality. The stakes are high both in terms of technology and economically and culturally as well. Smart factories make it possible to respond to challenges of globalization and sourcing of raw materials and energy resources besides offering control over security of industrial information systems."



It is a fascinating evolution. Pursuit of Productivity has been a perpetual target for all manufacturers. Reducing waste and improving efficiency, repeatability, reliability, yield & safety all add to up to improving Productivity.

Kaustubh Shukla, Chief Operating Officer - Industrial Products Group, Godrej & Boyce

Seconding the same, C. P. Vyas, Head of Electrification Products, ABB India says, "The manufacturing sector has changed rapidly in the last five years. The disruptive technologies of digitalization with cloud and mobility solutions with imperatives like energy efficiency, software as a service and a churning workforce has made smart manufacturing or connected factories a stepping stone for success and customer satisfaction. Smart operation combines different elements enabling continuous monitoring of the production process through visualization of operational data, to increase efficiency and flexibility of the operational process. This is important at a time when companies are collaborating with customers to arrive at solutions which will address their issues/requirements rather than look at selling one size fits all. The smart operation line can track and monitor operational performance parameters across the entire manufacturing chain in real time. The factory also has digital lifecycle management with inter-

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Humans, machines and materials are all linked together on a network and the network in turn is connected to outside world. There is ceaseless communication. The overall objective is to convert data into information and knowledge in real time to make the process productive, flexible and ensure quality.

V. Anbu, Director General and CEO, IMTMA

connected automation components, machines as well as data about processes and products. This helps archive expertise and experience and collaborate with different regions and markets to arrive at optimal solutions for different geographic domains. Real-time feeds monitor the entire manufacturing process. Remote access and wireless communication with Radio Frequency Identification Devices (RFID) and connected robotics process automation solutions manage the operation process, work orders and testing parameters. This entails providing real time service to customers to intimate them before the downtime can occur, the customers can witness testing of equipment remotely in real time with the help of VR technology."

According to Kaustubh Shukla, Chief Operating Officer - Industrial Products Group, Godrej & Boyce, "It is a fascinating evolution. Pursuit of Productivity has been a perpetual target for all manufacturers. Reducing waste and improving efficiency, repeatability, reliability, yield & safety all add to up to improving Productivity. Need for mass customisation is another trend that has influenced the way manufacturing has evolved. Smart Manufacturing enabled by technologies of sensing, processing and controlling have immensely changed the way we manufacture and this is only the beginning. With rapid changes and evolution of enabling technologies – AI and Machine Learning, the 'Smartness' will only increase. Sectors engaged in mass manufacturing stand to gain the most and thus will be the early adapters."

Smart India

One of the major advantages of these technologies is they do not require heavy investments but needs accurate planning and vision. "A lot of improvements can be done as a complement to or with minor tweaks to the existing system. It is also great for the workforce as it provides a platform for up-skilling of older workers, archiving their expertise and leveraging the skills of millennial ones who are digital natives. It also provides a platform for both to collaborate and feed off each other's strengths. At a time when India is looking at enhancing quality and productivity – providing a structured approach and seamless shift transitions with defined skill matrix for each job and redefining energy efficiency, smart factories can be a great catalyst to fully realize the potential of programs like Make in India," said Vyas.

Speaking on the implementation of such technologies in India, Dr. Andreas Wolf, Joint Managing Director, Bosch Ltd., asserts, "In India we need standardized solutions, which are adaptable and have quick return on investment. The feasibility of such solutions depends on the nature of problems that they set out to improve. In a country like India, there are many challenges for manufacturing including productivity and quality mindset. Hence, smart automation methods like Process automation, Karakuri Kaizen (Japanese system used to handle materials using natural principles like gravitation force, centrifugal force, etc), Pick and place mechanisms, Vibratory feeders and conveyer systems, Co-bots (collaborative robots), Vision systems and Gantry mechanisms can be game-changers if implemented properly."

He further adds, "India has a high degree of connectivity so it is possible to connect shopfloor associates easily. The large SME base in the country is also open to new technological solutions. Bosch also plans to roll out solutions to our supplier base, thus making the entire value chain more productive. The Indian market offers a great space for smart manufacturing solutions with positive GDP growth and an increasing openness for businesses to operate in."

As per Shukla, "While there is a substantially large and growing demand due to domestic consumption, the growth of manufacturing will also call for focussing on exports. So India will have to rapidly evolve the maturity and sophistication of Manufacturing to be as good if not better than the rest of the world. Having said that, the deployment of such technologies is still in nascent stage and will grow over time. The Process Industry was the first to adopt Smart Manufacturing and we foresee that discreet manufacturing sectors that require mass production and mass customisation will be the next to adopt

The best thing about smart manufacturing is that since it is a mix of various elements – one can choose elements as per the reality of one's operational processes, timelines and market specifications and deploy accordingly to provide minimal disruption to production schedule.

C. P. Vyas, Head of Electrification Products, ABB India

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Tips to adapt new technologies

Speaking on the how Bosch India adapted new technologies, Dr. Andreas Wolf, Joint Managing Director, Bosch Ltd. narrates his experiences.

- Any technological change is based on the business case evaluation, use cases and on the value stream. Machines or processes are enhanced as a part of the daily task and don't negatively affect the process.

- Secondly, industry wide change must begin at the top and work its way down. In this sense, the Industry 4.0 Academy of Bosch trains senior industry leaders on the implementations and benefits of smart manufacturing and Industry 4.0. This leads to tangible change across processes and enables organizations to alter their strategies based on smart manufacturing principles.

- India is the IT hub of the world today. If you also want to act on the issue of manufacturing, we need to go for automation which can improve our productivity levels significantly. In the Indian industry, in many parts, we still have a gap of at least 20 percent- with respect to productivity. Automation level is far below. And, this differs from industry to industry.

- In Bosch Bidadi we have at least six smart automation solutions running. In the plant earlier there was manual loading of heating units in different operations like cutting and chamfering, knurling, resistance checking. Now a simple automated loading system has been incorporated for these operations. The resistance checking has been integrated in the last station. This is a good example of improving productivity and quality.

- In the Chassis system plant in Chakan, all the lines in the entire international production network have been connected resulting in full transparency of line performance.

- We are also heading towards zero defects. The issue in the last decade was that we accepted quality which was just "fine". Importance was given to low cost. Now, affordability yes, but additionally customers want zero defects. Automation will help us achieve a sustainable and zero defect quality. Another example from the Bidadi plant is an introduction of an early warning system. If the number of defective parts in one shift exceeds a certain limit, an automated signal is created in the smart phone of the front manager. The front manager will react as soon as they notice the signal. No matter where he is – in the canteen, meeting, etc.

Smart Manufacturing Technologies."

Elevating the processes

Bringing technological change in the plant is similar to upgrading an airplane while it is in the air. In such a scenario, the smooth transition is important. Speaking on the same, Vyas asserts, "The best thing about smart manufacturing is that since it is a mix of various elements – one can choose elements as per the reality of one's operational processes, timelines and market specifications and deploy accordingly to provide minimal disruption to production schedule."

Seconding the same, Shukla adds, "Naturally, it would be easier for greenfield projects to embrace Smart Manufacturing. However even for the brownfield projects, inculcating smartness is possible, albeit a far more challenging task, like upgrading an aircraft from propeller to jet, inflight! One will have to take up some installations as Proof of Concept or Technology Demonstrators, and then roll out the plan. Indian manufacturers have the wherewithal to undertake such a transformation."

On a larger scale

Evaluating the scenario on a larger scale, Vyas mentions, "In order to increase the contribution of manufacturing to the national GDP, India has to stride ahead in terms of global competitiveness when it comes to quality, efficiency and focus on clean energy. In order to fully realize the potential of our demographic dividend of younger populace, we need to provide them with improved job opportunities. Smart factories can be the bridge to achieve these goals by enhancing productivity, efficiency, minimizing downtime and improving customer service. One aspect of smart manufacturing, remote monitoring and data analytics is one area where India could leapfrog and become a leader just like it did with software in developing the global delivery model. However success will largely depend on the ability to combine the transition to smart manufacturing with a robust industrial apprenticeship/training model and also create frameworks as per the characteristics of different industry segments and scope of operations (SMEs)."

On a concluding note, Anbu says, "India can ensure its place on the top in the global list of countries that excel in manufacturing only by setting up smart factories. India's manufacturing sector GVA growth for 2017-18 from manufacturing sector was estimated at 5.1 percent as per Ministry of Statistics & Programme Implementation. India has a humungous job in hand to realize its vision of being the world's preferred manufacturing destination. India's manufacturing sector has realised that smart manufacturing will enable them achieve this and are adopting technologies in their production lines. This is aiding them to meet the surging needs of customers who demand price competitive products. Smart factories are also helping manufacturers to garner profits."

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The A Brand

Hindalco to acquire Aleris for US$ 2.58 billion

Hindalco's wholly owned subsidiary, Novelis Inc, has announced signing of a definitive agreement to purchase Aleris Corporation, a global aluminium rolled products major, headquartered in the United States, for US$ 2.58 billion in a debt finance deal. Kumar Mangalam Birla, Chairman, Hindalco, said "Over a decade ago, with the Novelis acquisition Hindalco leap frogged into the global arena of the Aluminium Industry. It made Hindalco a global multinational and brought with it top-tier international customers and best in class capabilities in aluminium value-added products. Since then, Novelis has grown significantly and continues to be the global leader in its markets. The acquisition of Aleris is the next phase of our aluminium value added products growth strategy. This will solidify our position as the world's No.1 aluminium Value-Added Products player. Post this acquisition, we are well placed to serve our customers across geographies in automotive and now the high-end aerospace segments. We will have presence throughout the downstream aluminium value chain in Asia, positioning us for future growth in the region. This also enhances the access to world class manufacturing capabilities for our existing Indian aluminium value-added operations and accelerates our path to making world class products in India." The acquisition adds to Hindalco's ability to bring in the latest capabilities in aluminium value-added products to India. This acquisition of Aleris Corp. by Novelis Inc. is subject to customary closing conditions and regulatory approvals.

Elgi Equipments acquires Pulford Air & Gas

Elgi Equipments has announced its 100 percent acquisition of F.R. Pulford & Son Pty Limited along with its wholly owned subsidiary Advanced Air Compressors Pty Ltd, doing business as Pulford Air and Gas, based in Sydney, Australia. This acquisition was completed on July 31, 2018. Through this acquisition, ELGi gains access to a national pool of customers to grow sales and service in Australia. Pulford is one of the largest distributors of industrial compressors in Australia and has been in the business for nearly 100 years. The company has reported an annual turnover of AUD 14.5 Million during the financial year 2015-16, AUD 15.8 Million during 2016-17 and AUD 18 Million during 2017-18. ELGi will gain 100 percent of the shareholding and control of Pulford. Dr. Jairam Varadaraj, Managing Director, Elgi Equipments said, "Pulford embodies market leadership through decades of customer centricity. All of us at ELGi are humbled by Pulford's legacy in the Australian market and we are honoured by the role ELGi will play in its growth."

Tom Fyfe, Managing Director, Pulford said "We are all very excited about the growth opportunities with the products, we know this is a big step forward for both companies that secures Pulford as a major player in the Australian compressed air market."

Siemens to acquire Mendix

Siemens has signed an agreement to acquire Mendix. Under the agreement, Siemens will pay in cash €0.6 billion to acquire the company. Mendix will retain its distinct brand, culture and continue serving customers across the full range of industries. Siemens will continue to invest in Mendix's independent product roadmap, continuing its legacy as the most-innovative, open low-code cloud platform. Mendix will be part of the software business of Siemens' Digital Factory (DF) Division, with the Mendix platform also deployed across other Divisions. As enterprises invest to digitalize their operations, demand for business applications is growing significantly faster than the capacity of IT organizations to deliver them. Low code application development platforms provide features for rapid development, deployment and execution of applications in the cloud. "We acquire Mendix to extend our leading position in digitalizing the industrial world, which is a cornerstone of our Vision 2020+", said Klaus Helmrich, member of the Managing Board of Siemens AG. Closing of the transaction is subject to customary conditions and is expected in the first quarter of fiscal year 2019. Derek Roos will remain CEO of the company and join the Siemens PLM Software senior leadership team.

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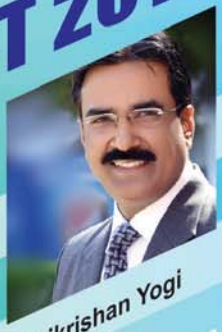

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3

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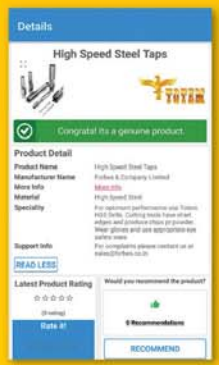
↑ Scratch the grey scratch strip on the smart label and enter the scratch code

6



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Jan-Oliver Roehrl

Chief Technology Officer and Director, Bosch Ltd

By Swati Deshpande

Bosch is one of the leading auto component manufacturers in India. But how does the company look at the Indian market? Speaking on this, Jan-Oliver Roehrl, Chief Technology Officer and Director, Bosch Ltd. mentions, "The Indian market holds incredible potential for Bosch. It is predicted that by 2025, the Indian auto-components industry will become the third largest in the world. According to a global report the Automobile sales in India including passenger and commercial vehicles, grew by 9.5 percent last year. Bosch is thus preparing to benefit from the globalisation of the sector, with another key highlight being that its export potential can be increased by up to four times, to USD 40 billion by 2020. India has also recently overtaken Germany to become the fourth largest automotive market in the world. The Central Government's plan to have 30 percent of India's mobility fleet to comprise of electric vehicles by 2030 is a notable one in the market."

He further ads, "Internal Combustion Engines (ICE) will face major disruptions in the next few years, but they will still continue to be the major components of automobiles. We believe the co-existence of fossil fuel engines and electrification with hybridization is an interim solution."

Riding high on growth

Elaborating on the company's performance, Roehrl says, "Bosch Ltd. witnessed growth of 17.8 percent in its mobility business in Q3 2017-18. In this domain, Powertrain Solutions have been the key performing business unit. For the automotive sector, Bosch has always been providing cutting edge technologies such as the introduction of electronic fuel injection equipment, connected mobility, automated driving, solutions for traffic problems and electrified cycling, to name a few. The company remains in pursuit of developing advanced technologies suitable for the Indian automotive market, including the electrification of the Powertrain and building strategic partnerships with OEMs for localized solutions. With changes in emission norms altering the market scenario, Bosch will continue to play a vital role in this space."

Revealing his plans for the current year, he says, "In the current financial year, Bosch will continue to move forward with its transformation into a provider of mobility services.

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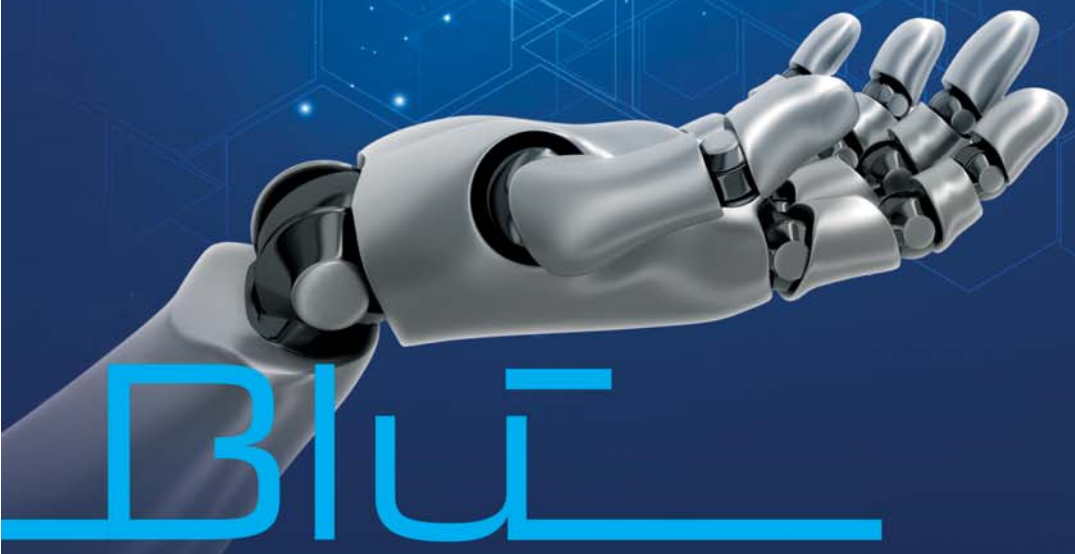

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The new Mobility Solutions division will witness over 600 associates coming together to develop and sell digital mobility services. These include vehicle sharing, ridesharing and connectivity-based services for car drivers. Next year, we plan to focus on adopting a functional and technical approach to the upskilling process for the mobility market. Bosch has also set up a project house, which is working on prototype development and system integration to feasibly get EVs and electromobility solutions on Indian streets. The project house specifically addresses Indian electrification projects."

The Indian automotive industry is undergoing massive change right now owing to the changing of emission norms and talks about electric vehicles, alternative powertrains and so on.

Change is inevitable

As the norms are changing, manufacturers have to align its processes accordingly. Explaining on how Bosch is adapting to these changes Roehrl says, "The Indian automotive industry is undergoing massive change right now owing to the changing of emission norms and talks about EVs, alternative powertrains and so on. Bosch believes that there should be an adequate transfer period for the adoption of e-vehicles and its supportive infrastructure. A fine balance in the transition of the automotive industry to EVs must be achieved for maintaining enough employment in the industry whilst maintaining profitability. The aim is to make commutation as emissions-free, stress-free and accident-free as possible. We are actively involved in the development and manufacturing of advanced systems that contribute to each of these expectations. Also, we are making considerable upfront investments in the form of capital expenditure, high spending on R&D, opening of new markets and on internal reorganization to chase these goals. By connecting hardware and software, Bosch is ensuring that the future of connected, automated and electric driving is within reach. Further, to address the dynamically shifting market, Bosch has set up agile project teams to develop tailored solutions for the country on electrification and connected solutions."

Roehrl further adds, "Bosch has always encouraged the transformation of India's automotive outlook/business. While the country is still in its nascent phase with regards to growing its infrastructure to accommodate e-vehicle transformation, the company is collaborating with several OEMs to achieve BS-VI implementation by April 2020."

"With the suggestion by the government to introduce mass adoption of EVs by the year 2030, Bosch is well prepared to provide tailored solutions to achieve this in the Indian market. Worldwide, over 800,000 EVs are powered by Bosch's electric powertrain. We are adapting our global tech for the Indian market. For India, we are working on electric solutions varying from e-cycles, two and three wheeler, Passenger cars, buses and trucks. This is in addition to facets of technologies from hybrid to fuel cells to battery electric depending on the segments. As mentioned earlier, the Indian auto-components industry is poised to become the third largest in the world by 2025. As such, it needs to become one of the most worthwhile and flexible industries in India. The automotive market thus has a steady growth chart which offers immense hope to all its stakeholders. With respect to the overall impact of EV's in the auto industry, for them to remain constant and replace conventional vehicles, they would also need to become affordable for all," he concludes.

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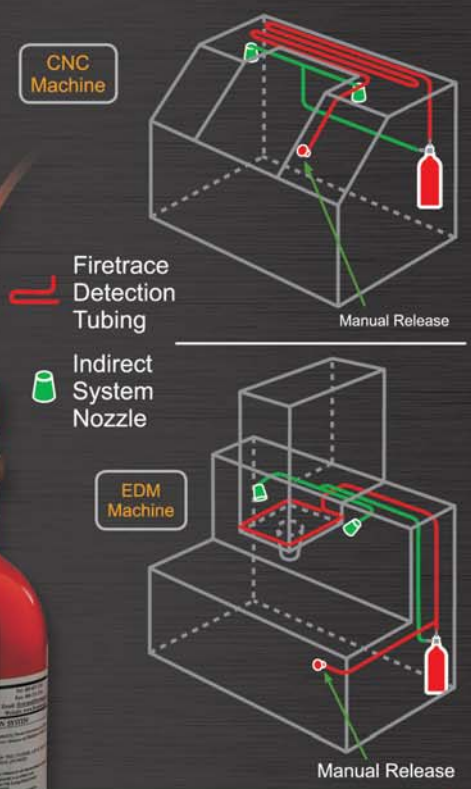

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Sriram Viji

Deputy Managing Director, Brakes India

By Niranjan Mudholkar

■ Tell us about Brakes India's overall manufacturing footprint.

Brakes Indian has a footprint that covers the major auto hubs across India. In total, we have 15 plants across India – some of these are full-fledged manufacturing plants and some are assembly plants close to customers. Being head quartered in Chennai, our centre of gravity is still in the south, but our more recent expansions are pan India. This is needed to service customers more quickly and respond to their changing schedules and to help reduce logistics costs. In the recent past, we have commissioned our new foundry in Naidupeta with further plans to expand there, we are in the process of completing an integrated manufacturing plant in Jamshedpur and are committed to an assembly plant close to Pithampur. We are also expanding capacities in our existing plants in Tamil Nadu and Gujarat.

■ How well prepared is Brakes India to meet the emerging trends of the automotive industry like BS VI norms and electric mobility?

Brakes India with our JV partner ZF is well positioned to support the industry in the emerging mega trends. The key areas that we are working on include safety, preparedness for electric drive trains and drag reduction at the wheel end. On our safety roadmap, we see the need for progressing beyond mandatory ABS in 2018/19 towards mandatory electronic stability control, which is especially critical on our highways. We see the urgent need for active pedestrian safety regulation through features such as automatic emergency braking.

"The key areas that we are working on include safety, preparedness for electric drive trains and drag reduction at the wheel end."

Further to this fuel economy and emissions is a big area of industry focus. Just last year, we introduced the Thin Wide Bridge (TWB) front caliper disc brake for a large SUV. This brake reduces the wheel end drag by over 60 percent, which from a cost benefit perspective is one of the quickest and cheapest ways to improve losses in the vehicle. This will become critical in as we move towards EVs.

"In total, we have 15 plants across India – some of these are full-fledged manufacturing plants and some are assembly plants close to customers."

In the auto expo earlier this year, we showcased the full range of future products from the ZF portfolio, geared towards autonomous driving and electric mobility. This includes ADAS systems like cameras and radars and equally importantly the Integrated Brake Control (IBC) which can perform braking with integrated stability control and regenerative braking features without the need for an IC engine or vacuum generation.

■ Last year, Brakes India has partnered ZF for the successful production of the first electric park brake (EPB) system in India. How do you see this partner-

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ship evolving in the light of the increasing focus on vehicle and passenger safety in our country?

Brakes India has been in a JV for over 50 years and we actively work to bring the right technologies to the market at the right time. The lag between global requirements and India is shrinking, which means that technology transfer is quicker, and our responsiveness is far quicker. EPB was one example of this, where ZF is the global leader and we see the potential to grow this business and provide a great value to the Indian customer base.

- **Recently, you have announced to invest about ₹100 crore in expanding the capacity at the Naidupeta factory in Andhra Pradesh. Tell us more about this.**

Brakes India has invested approximately Rs. 120 Cr in a greenfield site in Naidupeta. The Naidupeta project has started with the goal of increasing the product range at Brakes India. The line concept is a little different from what we have done in the past and enables us to produce slightly larger and more intricate castings. Starting off, this line will produce components for brake assemblies, turbo charger assemblies, certain commercial vehicle structural and engine parts as well as new orders that we have on the anvil. Based on the product mix, we expect to produce somewhere in the range of 12,000 MT of cast products from this new line. The industrial estate at Naidupeta has been designed for core manufacturing activities, with good infrastructure for roads, power and relatively easy access to ports. It has been relatively seamless to work with the government on approvals and commission our first project at Naidupeta. We are already evaluating further expansion of capacity at this site with an additional foundry line, which will come to the tune of Rs. 100 Cr. This will be more similar to our existing moulding lines and serve to augment capacity by an additional 24,000 MT.

- **How is Brakes India addressing the evolving needs of the Indian commercial vehicles sector?**

The Indian commercial vehicle sector has seen a lot of change in the past years and is continuing to be hit by new regulations and changes at a rapid pace. Though the long-term implications of these changes are positive, we see the industry going through turmoil in the short term which impacts customers and future investment in the absence of a strong long-term roadmap.

"The Indian commercial vehicle sector has seen a lot of change in the past years and is continuing to be hit by new regulations and changes at a rapid pace."

With respect to our focus on commercial vehicles, we see a high level of differentiation in the future for different vehicle segments, which was absent in the past. For inter-city and city buses we see the need for a high level of safety, stability and low maintenance costs where we are offering our heavy-duty disc brakes and electromagnetic auxiliary retarders. The feedback from customers is extremely strong, with some customer is running our system for over 5,00,000 km without service! For tippers again, we see a similar system where the usage conditions are the highest duty levels in the market. For long line haulage, we are designing lighter and more cost-effective systems to improve efficiency.

In the 5T to 10T commercial vehicle segment, we have a paradigm shift with our Unibooster couple with Caliper Disc Brakes. The feel on these vehicles is similar to that of a passenger car and the weight reduction can be in the range of 100kg for a similar specification vehicle with an air braking system.

"The lag between global requirements and India is shrinking, which means that technology transfer is quicker, and our responsiveness is far quicker."

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Prashanth Doreswamy

Country Head India, Continental Corporation and MD, Continental Automotive Components India

By Swati Deshpande

Continental Corporation, tier-1 automotive supplier & tire manufacturer, operates across India. It has over 8,000 employees across 15 locations, including eight plants that cater to the Indian market and a Technical Center that supports Continental's global R&D activities. The Indian operations of the company are led by Prashanth Doreswamy, Country Head India, Continental Corporation and MD, Continental Automotive Components India.

"To give a bit of history about Continental India, the 147 year old German technology company has been present in the country for close to 50 years, through technology partnerships (Continental Tires since 1974) and joint ventures for its various businesses. The first Indian independent legal entity was formed in 2008, following the acquisition of Siemens VDO globally," informs Doreswamy, who joined Continental as Head of Market India in October last year.

Headquartered in Bangalore, the Automotive business has manufacturing locations in Bangalore, Gurgaon, Manesar, Pune and Chennai. "The plants are located in a manner where we are present in almost every automotive hub of the country. We develop and manufacture a wide range of electronic products in our Bangalore plant including engine management and power steering ECUs, immobilizers, body control modules and instrument clusters for all vehicle segments. Along with this, we also manufacture actuation ABS, airbags electronics, drum brakes, callipers, Powertrain and Chassis sensors, fuel supply modules and fuel rail assemblies in its other locations in India. In addition, the company supplies pumps, injectors and sensors to our customers in India from the global plants. Continental Automotive Components India has a customer base spanning all major local and global OEMs in India. In our endeavour to support our customers, the company has invested in an in-house test & validation lab for its Engine Systems and Fuel Supply business units in India," adds Doreswamy.

> As CO2 norms continue to get tighter, hybrid and electric vehicles will demonstrate significant environmental advantages over conventional gasoline or diesel-powered cars.

Besides supplying to the domestic market, the company has set up a highly advanced engineering centre, Tech Centre India (TCI), in Bangalore in 2009. "TCI delivers high quality and cost-effective support to Continental globally. It works on a hybrid concept, combining the strengths of an in-house development centre, with offshore development capabilities," mentions Doreswamy.

The year gone by

2017 was a good year for Continental. "We continued our growth story, be it in terms of business, manufacturing capacity or headcount," asserts Doreswamy. Adding further he says, "In terms of key milestones, in 2017, we announced plant expansion of Business Unit Passive Safety & Sensorics for Wheel Speed Sensors. In January 2018, we inaugurated a new line for the production and assembly of Electronic Control Units (ECU) for 2-Wheeler and passenger car Anti-Lock Braking System (ABS) and Electronic Stability Control (ESC). These were significant milestone as it contributed to overall localization efforts of Continental in India."

The company's Tech Centre India also continued to grow in strength. "We signed a Memorandum of Understanding (MoU) with Indian Institute of Technology Madras (IIT-M), for advanced research in Machine Learning and Neural Networks for technologies that aid partially automated driving," he continues.

Indian market

Highlighting the importance of the Indian market in Continental's growth story, Doreswamy says, "India is emerging as focus market for safety products and with steady acceptance of safety technologies in vehicles such as airbags, Anti-lock Brake Systems (ABS) and Electronic Stability Control (ESC). We are committed to localize these technologies and adapt them to local requirements."

Touching upon the future he says, "With BS VI getting effective from 2020 onwards, many automotive manufacturers in India are already well prepared to meet the more stringent emission standards, as they have been exporters of vehicles to countries where Euro 6 standards are enforced by law. The new standards require that after-treatment systems be enhanced by adding DPF (diesel particulate filter), SCR (selective catalytic reduction), LNT (lean NOx trap) for diesel and TWC (efficient three-way catalyst) and if required GPF (gasoline particulate filter) for gasoline. To ensure a smooth migration and avoid multiple development loops and calibration, a platform approach (Continental's Euro 6 compliant diesel systems, SCR systems, and gasoline systems) can offer a suitable alternative for vehicle manufacturers. As CO2 norms continue to get tighter, hybrid and electric vehicles will demonstrate significant environmental advantages over conventional gasoline or diesel-powered cars."

He further adds, "Our attention is focused on two parallel efforts as far as emissions go. The first is the full value creation from the growing demand for the most efficient combustion engine technologies that also guarantee the lowest emissions, and, the second is to benefit from the prospective growth in environmentally friendly, electrified and fully electric drive systems. We are also implementing a sustainable growth strategy featuring a high level of investment in R&D and in capacities for future technologies and systems for electric vehicles."

> We strongly believe that the cars of the future will feature electric drives, which will be fully connected and automated.

Elaborating on emerging trend of electric vehicles, he says, "We strongly believe that the cars of the future will feature electric drives, which will be fully connected and automated. We see growth for the combustion engine and also for the 48-V mild hybrid and hybrid technology until approx. 2025/2030. From that point onward, electromobility (focus on all-electric vehicles) will increasingly come to fruition."

"Globally Continental is already supplying EV technologies to customers. With increased acceptance of these technologies in the market, we will look at localizing entire value chain right from R&D to manufacturing based on specific customer requirements. New technology adoption and upgradation will drive the EV demand in a market like India," he continues.

Speaking about the challenges, Doreswamy mentions, "One of the basic challenges of EVs is range and the cost. Both of these factors need to be convincing enough to persuade the end user to buy electric vehicle. However, if you see consumer trend, they are on a constant look out for mobility solutions that is on par with a petrol or diesel vehicle – in terms of costs and mileage. The top priorities should be to set up infrastructure to support electric mobility, for easy charging of electric vehicles. The primary concern of an EV driver is the lack of vehicle charging system that can get the driver stranded on the road. Continental has solutions and technologies on offer that can help address this challenge too."

On a concluding note, he says, "Continental recognizes the potential of the Indian automotive market as well as India's emergence as a hub for high quality engineering talent. Continental Is Committed to the Local Market. Continental has followed a strategy of 'In the market for the market' and localization has been at the core of our India strategy. We have grown and invested where it made sense, always. Since our establishment in 2008, we have made significant investment in the country."

Shrikrishan Yogi

Regional President, Brose India Automotive Systems Pvt Ltd.

By Niranjan Mudholkar

Brose started its operations in India with an engineering centre in 2008. How do you look at this decade old journey of the organisation in India?

Brose has been present with sales and development teams in India since 2006. Today, Brose India carries out all activities locally – from design, development, test and validation to manufacturing. In Pune, our company has a development center and headquarters with more than 180 employees who are currently working to develop door systems, closure systems, seat systems, electronics and drives for the Indian market and other locations of the Brose Group. We set up a manufacturing plant in 2011 both for supplying customers in India and for exporting products.

"In the next five years, Brose expects strong growth in the Indian market. To match the growing demands that we expect, we have plans to add significant capacity in the areas of development and invest in the training of our employees."

The strong growth of our company triggered the movement into a larger production facility in September 2012. Starting with manufacturing of window regulators and seat height adjusters, Brose India now also manufactures side door latches as well as door modules. With the local testing, prototyping and validation facility we provide greater local added value to our customers. With these things in place and a total strength of 380 employees, we are ready to tackle the challenges of the next decade.

At present, how many products is Brose India manufacturing and supplying in India? Which are these? Do you foresee expanding the portfolio soon?

Currently, Brose India manufactures window regulators, side door latches, door modules and seat height adjusters. As a system supplier for mechanical, electric, electronic and sensor systems we support car manufacturers with innovative products – always with the goal of increasing safety, enhancing

"Brose has been present with sales and development teams in India since 2006 as well as a manufacturing plant, which was set up in 2011. Today, Brose India carries out all activities locally – from design, development, test and validation to manufacturing."

comfort and maximizing efficiency. One example of a product we introduced in India last year is the plastic door module, which is supplied to a new model of a well-known off-road manufacturer. This is the first time such a product has been locally manufactured in India. It has been well-received by the OEMs as it gives them weight savings and considerably improves manufacturing efficiency.

Similarly, we will introduce other products like power liftgates, seat structures and seat retractors from our global portfolio to bring comfort and safety to Indian consumers. We are also looking forward to establishing products from our electrical drives portfolio to optimize the efficiency of vehicles.

■ I understand that currently Brose India operates out of two locations in Pune – the engineering centre and a manufacturing plant (started in 2011). Will you be looking at adding another location to have a better reach to your customers?

In the next five years, Brose expects strong growth in the Indian market. To match the growing demands that we expect, we have plans to add significant capacity in the areas of development and invest in the training of our employees. As a first step, we will double the existing size of our development centre and manufacturing plant to match the growth expected in the market. Further, depending on customer requirements and program requirements, we will also add satellite plants closer to customer locations in the future.

■ How important is the India operations in Brose's global scheme of things?

Brose primarily develops and markets products in the region where the product is also used. Of course, we do that in India as well. We work together with the global and domestic OEMs to offer customized cost-effective solutions. However, the Indian operations have an additional charter and a much broader scope. We have tapped into the highly skilled IT and ITes workforce in India. These people work hand in hand with the global sites to support the Brose IT infrastructure and the Brose product development teams to bring engineered solutions into production.

"By introducing the whole product portfolio of Brose in India and leveraging the "Make in India" campaign, I want manufacturing revenue to increase fivefold by 2025, including our exports from India."

We also have one of the largest groups of simulation (CAE) engineers within the Brose Group in Pune and there is hardly a product developed without the direct involvement and contribution of Brose India. In order to facilitate the establishment and growth, we have the involvement and strong support of our headquarters in Germany.

"With the successful introduction of the door module – we are the only supplier in India that has demonstrated this capability – and exporting of our door latches and window regulators to the South East Asian market, we are well on our way."

■ Brose India has been working on a five-year growth plan initiated in 2016. How's the progress on that front?

In 2016, Brose had its 10th anniversary in India. During this time, we had to establish and lay the foundation of the company while preparing for more comprehensive and focused growth. The first part of this was to grow the product and customer portfolio. With the successful introduction of the door module – we are the only supplier in India that has demonstrated this capability – and exporting of our door latches and window regulators to the South East Asian market, we are well on our way.

The next area was to strengthen our supplier relations in India by developing them to cater to our global locations – and I am glad to announce significant progress in that area. Today more than 60 percent of the domestic supply base is considered for global locations. Of course, all this calls for a larger footprint in India, and on this front, we have finalized a location in Pune that will bring our manufacturing and development activity under one roof.

■ What's your personal vision for Brose India?

My vision for the company is to continue with profitable growth for the Brose Group in India. I stress that we must be a market leader with our technology products that increase the safety and comfort of vehicle owners and occupants. A threefold increase of our shared services (IT and Engineering) is achievable in the medium term. By introducing the whole product portfolio of Brose in India and leveraging the "Make in India" campaign, I want manufacturing revenue to increase fivefold by 2025, including our exports from India.

Sudhir Mehta

Chairman & Managing Director, Pinnacle Industries Ltd

By Swati Deshpande

Over the years the automotive industry has gone under transformation. Speaking about current scenario, Sudhir Mehta, Chairman & Managing Director, Pinnacle Industries Ltd. says, "The Indian commercial vehicle industry is witnessing strong growth due to revival in sales, aided by the higher government spending on infrastructure, greater replacement demand and easing of GST-led disruption. It is set to further improve its performance and is pitted to continue its growth momentum in double-digits at 10-12 per cent."

Elaborating on the company's performance Mehta explains, "Last year, we achieved 15 percent y-o-y sales growth, given the disruptive market scenario. We also introduced our vehicle customisation and conversion division, Pinnacle Speciality Vehicles, this year at the Auto Expo. We expect increasing our market share in the current financial year."

The company has its plant in Pithampur. When talking about it, he says, "Spread across 18 acres, our facility is equipped with latest technologies, robotics automation and advanced machinery to create the best products. With 25 robots, we manufacture more than 25,000 components every day. Our production capacity has grown manifold over the years with current installed capacity standing at 4.5 lakh seats per annum."

Highlighting the company's technological prowess, he says, "The plant possesses injection moulding machines ranging from 60–650 T, Multi axis CNC tube bending machines, press for stamping of sheet metal parts using 10–400 T mechanical and hydraulic presses, a fully automated powder coating plant with conveyor speed of 5 meters per min, two oval carousals for flexible Polyurethane foams and rigid integral skin PU foams for steering and grab handle, etc. We have high-tech 'Polyol' blending plant to back up the Flexible PU foam manufacturing. The state-of-the-art factory also houses ultra-modern facilities for upholstery stitching and facility for PU moulding dashboard. Modern robotic welding facility is setup to ensure consistent quality and improved productivity."

He further added that "We are one of the largest manufactures of extruded ABS sheets – having battery of thermoforming machines along with 5 axis CNC routers for trimming. We have been manufacturing hi-tech quality products for both national as well as global markets in compliance with all the international safety and quality norms."

Mehta's goal is not limited to scaling up numbers of units but also keep on improving the quality of the products. "For

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this, we have a dedicated R&D unit in Pithampur and Pune that comprises of research scholars, skilled engineers and acclaimed automotive designers for product innovation and betterment of our manufacturing standards."

"State-of-the-art R&D centre is ready to support global and domestic needs of customers with back up of in-house and external test facility. We check the seats with help of Manikin available in-house. The design team is strongly backed up by in-house Styling team helping us to provide end to end solution to our customers. In-house tooling facility for injection moulding, sheet metal stamping, robotic welding fixtures, foam moulding, thermoforming, etc. reduces the time to market," he continues.

"With the ongoing demand for our products, we continuously invest in expanding our technologies and production capacity. With a unique combination of modern and sustainable manufacturing processes, we minimise adverse environmental impacts while conserving energy and natural resources," he says.

Nowadays, safety is a buzz word in the automotive industry. In this regard, the wat forward Mehta says, "Indian Automobile Industry in the last decade has made significant progress by adopting stringent emission standards, and is progressing towards technical alignment with international safety standards. However, we need to define and put in action strict safety regulations for special purpose vehicles like school buses and ambulances. Moreover, vehicle safety as well as ergonomic safety are two very crucial parameters. Ergonomics has a great impact on active as well as passive safety and health of the passengers. Seat being the most important part which is used maximum in the vehicle if designed wrongly can be very harmful for the drivers / Passengers on board. Bad design of seat can cause issues of lumbar pain after long distance travel and fatigue. Also vehicle / road vibrations reaching directly to body of passengers can cause nausea causing uncomfortable rides."

New venture

Pinnacle Speciality Vehicles (PSV) is a division of Pinnacle Industries and was established in 2016 at Pithampur. "PSV is the leader in the customisation and conversion of vehicles for commercial and personal use. We have set up most technologically advanced vehicle conversion facility with a conversion capacity of 250 vehicles per month. With state-of-the-art manufacturing facility, design studio, modern production and top automotive designers and engineers; PSV customises every detail of a vehicle with finesse and delivers the level of perfection and quality expected from Pinnacle. PSV's dynamic & sophisticated designs, exceptional engineering and unrivalled craftsmanship guarantees customers a unique & unforgettable experience," narrates Mehta.

> Indian Automobile Industry in the last decade has made significant progress by adopting stringent emission standards, and is progressing towards technical alignment with international safety standards.

On a concluding note, Mehta mentions, "As the industry is showing signs of growth, we need to strive hard, leverage new business opportunities and take on upcoming challenges. We look forward expanding our clientele, introducing new offerings and expanding our production capacity. Going forward, we will be aggressively exploring innovative avenues for ramping up our sales network."

Sunjay Kapur

Group CEO, Sona Group

By Swati Deshpande

Sunjay Kapur is at the helm of the affairs of Sona Group. Speaking on the performance of the group, he says, "The last year has been extremely encouraging from perspectives of the customer growth as well as financial growth, with our sales and profits growing by 22 percent YoY. This year too we see strong secular growth trends especially in the CVs and tractors markets and expect to achieve a 20 percent growth rate over FY2018."

Further he notes that the electrification trend is here to stay. "However, it may be a little slower in taking off than expected. This provides the Indian automotive industry and its supplier base enough time to leverage this new opportunity and retool itself." Sona Group has produced and supplied the first indigenously manufactured electric axle in this segment. Kapur further adds that "We see it as a massive opportunity, as a majority of parts we produce go into the differential assembly, which not only remains unchanged in electric vehicles but comes with a higher torque requirement. This allows us the opportunity to produce even more sophisticated products tailored to electric vehicles."

We see it as a massive opportunity, as a majority of parts we produce go into the differential assembly, which not only remains unchanged in electric vehicles but comes with a higher torque requirement.

Safety has always been a critical component for the automotive industry – and as road discipline and vehicular safety become a more important part of the societal fabric, the requirements would become more and more stringent.

Another crucial aspect of the automotive industry is safety. Speaking on the same, Kapur suggests, "Safety has always been a critical component for the automotive industry – and as road discipline and vehicular safety become a more important part of the societal fabric, the requirements would become more and more stringent."

In order to meet the meet customers' requirements, Sona Group already has four factories in India. "Three of them are located in North India while one is in the Western part of the country," he says. However as the automotive industry's demand grows, there would be need for expansion as well. With regards to expansion, Kapur asserts "We are expanding our product portfolio as well as ramping up capacity. Currently we are in the process of building two more manufacturing units in Western India, which will both be operational in 2019."

Varadan Devanathan

President, Yanfeng India Automotive Interior Systems Pvt. Ltd

"India is one of the largest and fastest growing automotive markets and hence brings lucrative opportunities."

By Swati Deshpande

Yanfeng India Automotive Interior Systems Pvt. Ltd. (YFAI) is a joint venture between two leading market players: Yanfeng, one of the largest automotive suppliers in China and Adient the global leader in automotive seating (formerly a part of Johnson Controls). "In 2015, the two companies entered into the joint venture that established Yanfeng Automotive Interiors. With over 110+ locations in 20 countries around the world, YFAI is close to customers everywhere. Our experts make up one seamless global network," mentions Varadan Devanathan, President, Yanfeng India Automotive Interior Systems Pvt. Ltd.

Devanathan is spearheading Indian operations. Elaborating about the same, he informs, "YFAI started its operations in India in 2012 in the state of Gujarat as Yanfeng Visteon.

YFAI drives its innovations through five innovation platforms 'Lightweight Solutions, Functional Surfaces, Surface Leadership, Decorative Trim and Lighting, Adaptive Interiors'

With steady and sustained growth, the company today has established three manufacturing facilities in the country — Sanand, Pune and Chennai — to support customers in those regions primarily for passenger vehicle business."

He further adds that "The company offers products ranging from instrument panels / cockpits, door panels and floor consoles, decorative trim and lighting solutions. Our current manufacturing technology encompasses injection moulding, vibration, hot plate and ultrasonic welding, various screw operations including traceability, kimekomi, plating and painting, etc."

Along with the manufacturing footprint, YFAI also has an Engineering Centre in Pune, integrated with the global engineering network. This Engineering Centre supports both local and global program needs. "With these footprints and 400 employees YFAI India achieved YoY growth of 40 percent in 2017," says Devanathan.

Technological edge

Highlighting the importance of the Indian market, Devanathan says "India is one of the largest and fastest growing automotive markets and hence brings lucrative opportunities. In

order to widen our customer base and to support our customer's new requirements, we are bringing new technologies such as milling-scoring, cut-sew-wrap, paintshop, etc. Additionally, we are also working continuously to spread an integrated pan India supplier base."

Looking from the long term perspective, the automotive landscape is transforming. Speaking on the same, "Disruptive trends, including electric vehicles, autonomous driving, mobility services and new tech mobility OEMs are driving rapid change in the automotive industry. To address this, YFAI is executing a comprehensive, forward-looking product and technology portfolio transformation through innovation."

The company drives its innovations through five innovation platforms 'Lightweight Solutions, Functional Surfaces, Surface Leadership, Decorative Trim and Lighting, Adaptive Interiors'. Elaborating on this, Devanathan says, "We worked on XiM18 (eXperience in Motion), featuring more than 30 innovative product and process solutions for the next generation of electric and autonomous driving cars, the concept demonstrates the way people will experience vehicle interiors in future." He further adds, "XiM18 showcases multiple innovations that include Slim Airvent, Smart interior surface, Start/Stop OHC with PRND, CHyM Instrument Panel/ Door Trim, Perforated Leather Lighting, Powered Floor Console and Tambour Door, also a lot of Stowage/Trays/Drawers with adaptive features of StowSmart, which highlight our vision Better life on board through superior automotive interior solutions."

Disruptive trends including EVs, autonomous driving, mobility services and new tech mobility OEMs are driving rapid change in the automotive industry.

P. Kaniappan

Managing Director, WABCO India Ltd.

By Swati Deshpande

P Kaniappan who is the Managing Director of WABCO India Ltd. says that the company's success lies in aligning with its customer's manufacturing footprint. "To work along with our customers, we have five world-class manufacturing sites located in Ambattur, Jamshedpur, Mahindra World City, Pantnagar and Lucknow. Worldwide, WABCO has 27 factories," he informs.

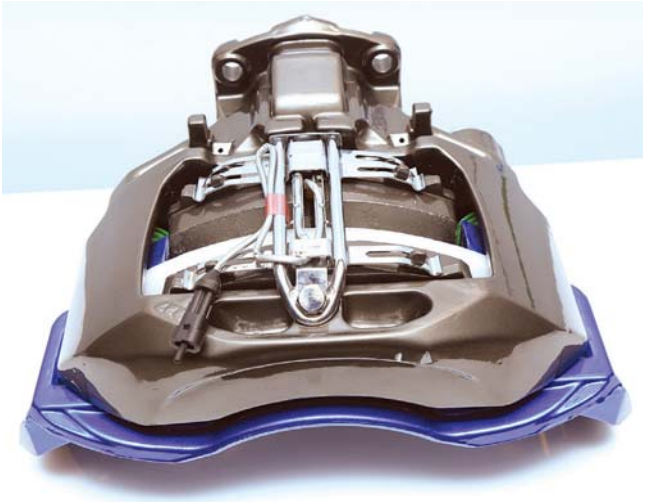
Under his leadership, WABCO India achieved sales growth of 15.8 percent during FY 2017–18. "The company reported sales of Rs. 2,611 crores in FY 2017–18. The sale to OEMs grew by 23 percent, which is 16 percent above the market growth of 7 percent. This market outperformance was achieved by introducing and increasing the market share of new products, and increasing the share of business of existing products. We expect the growth momentum to continue in line with post GST trend," says Kaniappan.

The company has recently announced its first major steering system deal in India with Tata Motors. "Through this partnership, WABCO India is equipping the manufacturer with its hydraulic power steering systems and helping them meet increasing demand for new heavy duty trucks. Our globalized integrated supply chain, local engineering expertise and ability to rapidly respond to Tata Motors' requirements, are helping ensure this original equipment manufacturer's continued success as India's commercial vehicle market leader."

Speaking on the transformation that the automotive industry going through, Kaniappan says, "As our industry strives toward environmental sustainability through cleaner, greener vehicles, WABCO India is innovating technologies for the rapidly expanding electric vehicles market. The Indian commercial vehicle industry is witnessing a trend towards electrification of buses as a first mover followed by trucks."

How is the company gearing up for these transformations? Answering this, Kaniappan suggests, "WABCO India has a clear roadmap for autonomous driving, connectivity and electric vehicles and will play a major role in driving these industry mega trends. The company has expanded into new segments like off- highway, defense, luxury bus, car and trailers and looks forward to the following strategic opportunities in the coming years." The company also has penetration roadmap for newer technologies. "These technologies include Electronic Stability Control, Intelligent Trailer program, Advanced Driver Assistance Systems, Door System, Fleet Management Solutions, Air Disc Brake, e–Compressor, Electronic Braking System and Smart Suspension. Additionally, partner with trailer customers for implementing trailer Anti-Lock Braking Systems & Electronic Braking Systems," he concludes.

WABCO India has a clear roadmap for autonomous driving, connectivity and electric vehicles and will play a major role in driving these industry mega trends



THE ECONOMIC TIMES
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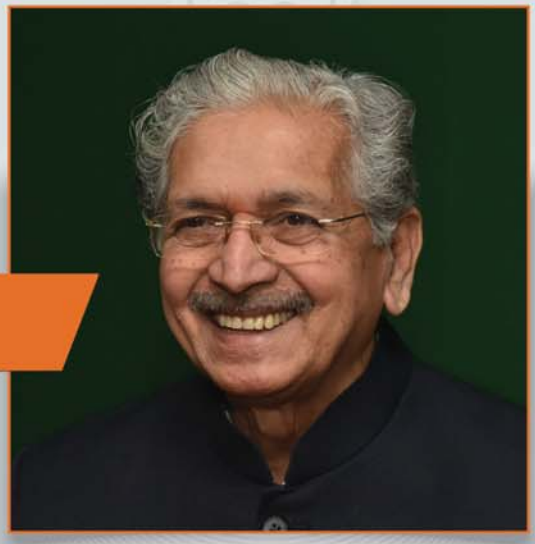
MEET THE STALWARTS OF MANUFACTURING 4.0

Analyzing trends that promise to propel manufacturing into high gear over the next decade.



CHIEF GUEST

SHRI SUBHASH DESAI

HON'BLE MINISTER, INDUSTRIES & MINING
GOVERNMENT OF MAHARASHTRA

Key Topics of Discussion

- Overcoming the challenges of engaging a skilled workforce
- Maintaining ROI with cost efficiency and productivity
- Understanding robotics and AI's impact on Indian manufacturing
- Success and failure stories from national and international plant leaders
- Challenges of recruiting and retaining staff in a competitive environment

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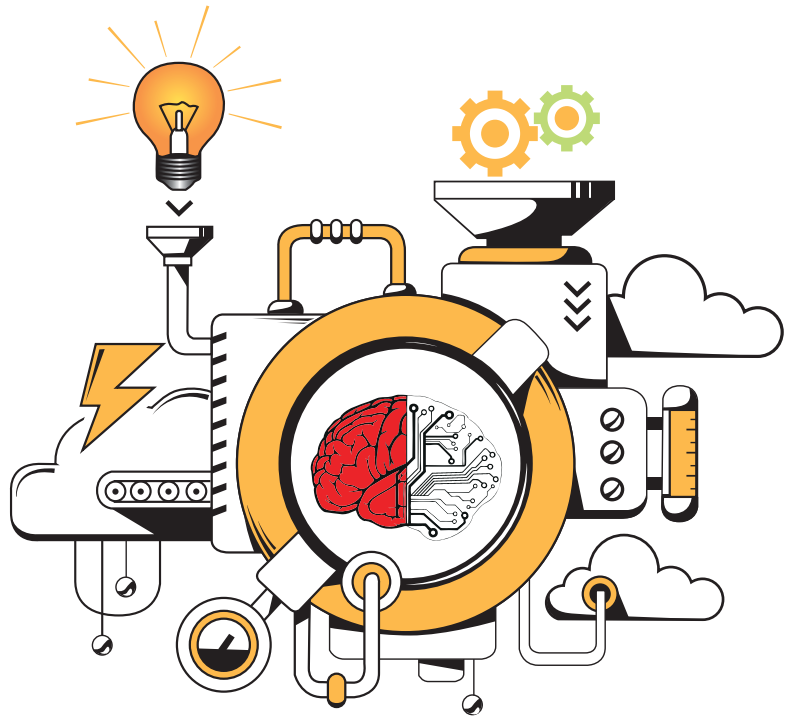
Artificial Intelligence in manufacturing

Technologies such as artificial intelligence and automation can help extracting more value

By N Vijay



In a recent Infosys-commissioned survey of 1,000 business and IT decision makers from large organizations across nine verticals, respondents from industrial manufacturing quoted the use of AI (Artificial Intelligence) and automation in the back office as one of the most influential trends in their business. Our experience with our clients points in the same direction, with almost every conversation highlighting the role of AI and automation in digital transformation.

However, the action on-ground is still fairly muted. We estimate that only 10-15 percent of industrial manufacturing organizations have taken meaningful action, such as adopting AI and automation in a holistic way in a production environment. Probably 30-40 percent have established proof-of-concepts in a single plant or production line, while the rest are still contemplating how to leverage the concepts.

The concept of completely automated smart factories with no manual labour is a very interesting one as it could challenge all the existing concepts of energy, lighting and power requirements in factories and plants, and bring in a lot of peripheral energy savings beyond the direct benefits.

The biggest problem seems to be a lack of clarity on how to harness the large amount of data available to drive meaningful or actionable insights. It is also quite difficult for manufacturing organizations to get different departments, such as supply chain management, production, sales and marketing, which have always worked in silos, to strike up the close collaborations that are a prerequisite for large scale success in AI/automation implementations.

That being said, we are seeing a number of interesting use cases mushrooming in different segments of the industry.

- ***Efficiency improvement***

A tier-1 automotive manufacturer – an Infosys client – sought our help in piloting a smart factory using AI technologies for dynamic real time prediction of production rate, based on OEM orders and operator station performance. Such use cases are numerous with enormous potential for companies looking to leverage AI. Another conglomerate currently uses AI to derive insights from a variety of data, including environmental conditions, to improve the operation of wind turbines.

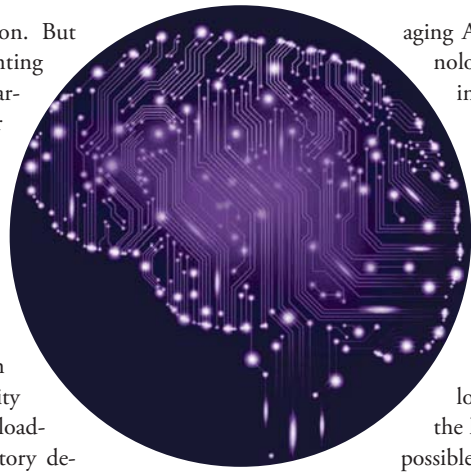
- ***Quality assurance***

A couple of years ago, we deployed sensors at a manufacturing plant that was facing numerous product paint chipping issues, and traced the problem to excessive oxygen levels in the paint shop. A simple fix to monitor the oxygen levels at the facility through sensors had the potential to save them millions of dollars of recalls in addition to increasing end consumer satisfaction. Similarly, in today's world, AI technologies are proving significantly superior to human quality assurance teams even in tasks such as visual inspection of parts. Where issues do slip through the cracks, organizations can use digital technologies to ease the redressal mechanism by automating the processing of claims and warranties.

- ***Supply chain optimization***

Traditionally, most production was planned to create a

certain output, with periodic revision. But now some organizations are experimenting with using unstructured data – on market, weather or supply conditions, for example – to inform and automate production planning and drive output based on demand in real-time. This is one of the most exciting applications for digital technologies in manufacturing. We deployed such a track and trace pilot solution for a large manufacturing organization in one of their plants to give them visibility to line side stock inventory, trailer unloading sequence plan, and future inventory demand from customer orders.



- ***Product Diagnostics***

Today's products are loaded with multiple sophisticated sensors (some of them have thousands of sensors on them) that send a large amount of information back. The ability to harness this information in a meaningful way, not just to improve the product and the consumer experience but also for data monetization, will be key. Numerous manufacturing companies have created separate sub-units/companies to focus on data enabled insights and we expect this trend to only become more pronounced.

- ***User experience improvement***

With business customers of manufacturing companies also demanding a better user experience, influenced by the trend in consumer industries, manufacturers are turning to digital, AI and automation technologies to fulfil their expectations. There is an increasing trend of using chatbots and other interactive technologies in all facets from internal information querying to customer service. Enterprises are gathering real-time supply chain information to update customers on order or delivery status. In the not too distant future, factory managers in need of shop floor information will simply need to ask their computer bot and AI technologies will be able to process various sources of data to get them the required information.

- ***Energy savings***

The concept of completely automated smart factories with no manual labour is a very interesting one as it could challenge all the existing concepts of energy, lighting and power requirements in factories and plants, and bring in a lot of peripheral energy savings beyond the direct benefits. These secondary benefits in itself could be large for companies having huge manufacturing costs like many industrial manufacturing companies have.

All these applications, while interesting, are just the beginning. The real value is in leveraging AI, automation and other digital technologies to keep operations running uninterrupted forever. Here's an example: Today, a number of manufacturing companies are monitoring data from equipment installed at client sites to continually track their performance. When there is a dip, the configured parameters are revised automatically. In case a failure state is imminent, a 'fix' is also sent out automatically. When all of this is put into a design loop, it creates a situation where, with the help of data and total automation, it is possible to proactively maintain the equipment to remain up and running at all times.

This allows manufacturers to adopt an entirely new 'servitization' model to serve their clients. In this model, enterprises, which have the confidence that their products will never stop running, can offer them 'as-a-service' to customers instead of selling them outright. This is a win-win arrangement: since customers pay for the equipment based on uptime they avoid heavy capital expenditure, while manufacturers get the benefit of a regular revenue stream and a sustained customer relationship.

The story of other industries tells us that manufacturing organizations, which embrace digital, AI and automation quickly will leave the rest behind. But as mentioned at the outset, only a small proportion of industrial manufacturing companies have made progress in this area that may be considered substantial. We believe IT providers can play an important role here by guiding manufacturing industry on the path to adoption, heling them navigate their next in this space.

A manufacturer should ensure that the IT transformation partner not only understands its business but also has implementation experience cutting across industries and geographies. The IT partner should be able to apply its knowledge from prior implementations in other sectors by contextualizing it to the requirements of industrial manufacturing. A provider who offers to do a pilot project to establish proof of concept is very likely a worthy choice.

Since harnessing raw data into actionable insight is a key challenge for manufacturers, the provider should have the analytical capability to derive insight from unstructured and structured data and serve it up in consumable form. Finally, the presence of a proven AI platform, complete with business apps and ready to use cases, should be considered a huge factor in the prospective partner's favour.

In the not too distant future, factory managers in need of shopfloor information will simply need to ask their computer bot and AI technologies will be able to process various sources of data to get them the required information.

The author is the Vice President & Head – Industrial Manufacturing, Americas at Infosys

WABCO to supply power steering system to Tata Motors

WABCO Holdings Inc. has bagged its first major steering system deal in India following its September 2017 acquisition of U.S.-based R.H. Sheppard, a key supplier of industry-leading steering technologies for commercial vehicles. Demonstrating WABCO's strong commitment to expand and to globalize its steering business beyond the U.S., this latest supply agreement with Tata Motors in India represents an important first milestone in delivering leading steering solutions to customers internationally.

WABCO's M110 heavy-duty hydraulic power steering gears and assemblies meet Tata Motors' power-steering performance and reliability requirements. M-Series gears have been the industry design standard since 1986 and use the highest quality materials and components manufactured to extremely rigorous tolerances.

"This landmark steering technology agreement with Tata Motors is another example of WABCO's powerful ability to globalize our rich technology portfolio," said Jorge Solis, WABCO President, Truck, Bus and Car OEM Division. "Further augmenting our advanced driver assistance and braking

systems with our industry-leading steering capability makes WABCO uniquely placed to serve OEMs in every market."

"We are delighted that the introduction of WABCO's industry-leading steering systems for the first time in India further differentiates our strong partnership with Tata Motors, while helping them to meet this additional level of demand," added P. Kaniappan, MD, WABCO India. "As the only commercial vehicle supplier able to offer both braking and steering capabilities in India, WABCO is uniquely placed to provide our customers with increasingly higher levels of automation."

Hyundai Motor India signs MoU with ASDC

Hyundai Motor India Ltd has signed a MoU with Automotive Skills Development Council (ASDC) to conduct training & create job opportunities for unskilled manpower above 18 years of age and having qualification of 8th grade and above. Under this agreement, the training program will be conducted at six Hyundai dealerships associated with Hyundai's World-Class Technical Training Academy-HTTA across India. After the successful completion of the program, the students will be offered an opportunity to work in Hyundai workshops for aftersales jobs such as Service Support Technician and Washer.

Commenting on the association with ASDC, S J Ha, Director- Sales & Marketing, Hyundai Motor India Ltd. said, "We are proud to sign this MoU with ASDC. We work with ITI's and Polytechnic institutes in every state where we absorb close to 99 percent students in different entities in the Hyundai India ecosystem. This MoU will further boost our commitment towards skilling and employing the youth of India."

Speaking at the occasion, Nikunj Sanghi, President, ASDC said, "We are happy to partner with Hyundai Motor India in this Skill Development initiative. This association is a benchmark in the industry and aims at strengthening the Government of India's vision of Skill India in employment generation."

Dana to provide e-Drivetrain to Mecalac

Dana Incorporated has been collaborating with Mecalac to develop a customized e-Drivetrain system for the new Mecalac e12 electric compact wheeled excavator. This vehicle earned the Energy Transition Award earlier this year as part of the 2018 Intermat Innovation Awards.

With the proven Mecalac 12MTX as a base frame, this version is the world's first compact wheeled excavator powered entirely by electricity. Featuring Spicer® 112 axles and a Spicer 367 shift-on-fly transmission, the Mecalac e12 wheeled excavator delivers the range, performance, and compact size required to support modern urban construction sites.

"As the European construction market embraces the trend toward zero-emission standards for small to mid-sized vehicles, our customers are demanding great strides in efficiency while also requiring reliable performance," said Jean-Baptiste Rousseau, technologies manager at Mecalac. "Dana was able to adapt the 12MTX drivetrain to add electric drive capabilities within our existing vehicle architecture. With their technical expertise and open collaboration, we developed an optimal solution and accelerated the delivery of this vehicle to market."

Tata Motors bags an order to supply electric vehicles to Cognizant

Tata Motors announced that it will supply Tigor Electric Vehicles (EVs) to Cognizant. Cognizant will deploy the EVs in its Hyderabad campus as part of its commitment to a sustainable environment. Tata Motors has partnered with Volercars, a leading mobility solutions company that will be delivering this integrated solution with the value added service to Cognizant including on ground operations & fleet management. A batch of 10 vehicles was handed over by Tata Motors team to Cognizant officials, at an event held in the company's Hyderabad campus.

Leveraging the One Tata solution for EVs, Tata Motors will collaborate with other Tata Group companies to provide a consolidated solution with respect to vehicles, charging infrastructure, maintenance services and financial assistance for procurement and functioning of the Tigor EVs. As part of this order, Tata Power will supply and install two fast charging stations at the Hyderabad campus of Cognizant while Tata Motors Finance will provide the financial assistance need to procure the vehicles.

Commenting on the deployment of Tigor EVs, Shailesh Chandra, President –Electric Mobility Business and Corporate

Strategy, Tata Motors said, "We at Tata Motors, are extremely committed to the Government's vision of e-mobility in India. We are excited to be associating with Cognizant to provide them with a comprehensive solution towards the goal of a sustainable future, with our 'One Tata' approach, involving our other group companies. We will continue to strengthen our portfolio of EV offerings across our passenger and commercial vehicles, to meet future requirements."

Exicom to provide Li-ion batteries to Kinetic Green

Exicom partners with Kinetic Green to provide them advanced Lithium-Ion Batteries for application in their E-Rickshaws. E-Rickshaws are going to become back bone of Indian Transport System as they provide noise and pollution free "first & last" mile connectivity in the most economical manner. According to an Exicom official statement, the use of Exicom lithium-ion batteries in E-Rickshaws have many benefits including high Energy Density leading to low weight thereby operating for more kilometers between charges, fast charging time of two hours, long life of 1500+ cycles, low self-discharge, higher efficiency i.e. 25% low charging cost, zero maintenance, no requirements for water Top- Up, option of two cycles per day and many others.

Anant Nahata, Managing Director, Exicom said, "Kinetic Green's selection of Exicom as its partner is a testament of our world-class battery and charging infrastructure solutions. We're thrilled to play a significant role in our country's transformation towards electric mobility."

Honda, Panasonic to collaborate on battery sharing

Honda Motor Co., Ltd. and Panasonic Corporation plan to conduct a research experiment in Indonesia on battery sharing using the Honda Mobile Power Pack (Mobile Power Pack) detachable mobile battery with electric mobility products, including electric motorcycles powered by the Mobile Power Pack. The two companies are planning to begin the research experiment in December 2018. This research experiment will be conducted as one of the projects subsidized by Japan's New Energy and Industrial Technology Development Organization (NEDO)*1 under the theme of a "research experiment of mobile battery sharing as distributed energy resources."

As the third largest motorcycle market in the world, Indonesia is facing an issue with air pollution associated with the increase in traffic volume. To address this issue, the Indonesian government has announced a policy to facilitate the widespread use of electric mobility products. While being environmentally-responsible, electric mobility products still have some issues that need to be addressed, including range and charging time. The Mobile Power Pack and mobility products powered by it are expected to solve such issues and provide a boost to the widespread use of electric mobility products.

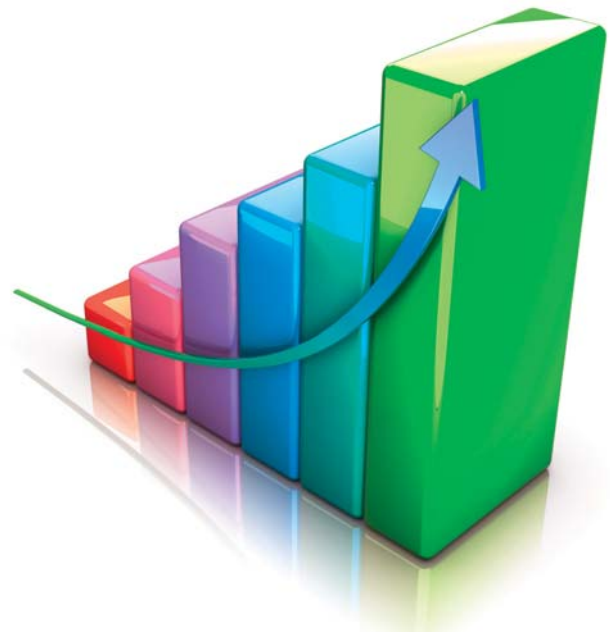
For this research experiment, the two companies will install charging stations at several dozen locations, which will charge multiple units of the Mobile Power Pack simultaneously and supply fully-charged Mobile Power Packs to users at any time. Users of electric mobility products who experience a low battery level can stop at the nearest charging station and exchange their Mobile Power Pack for a fully-charged one and get back on the road.

Manufacturing output on the rise

India recorded its second strongest manufacturing PMI since January 2018 reflecting the improvement in the industry's health.

Manufacturing conditions across India improved at a modest and slower pace at the start of the quarter, reflecting softer rises in output, new orders and employment. On the price front, input cost inflation eased from June's multi-year high and was broadly in line with the series trend. Subsequently, firms raised their output charges at a modest and slower pace. Meanwhile, business sentiment towards the 12-month outlook for output strengthened to a three-month high.

The Nikkei India Manufacturing Purchasing Managers' Index® (PMI®) posted 52.3 in July, down from 53.1 in June. Although modest, the latest improvement in the health of the manufacturing sector was the second-strongest (behind June) since January. Indian manufacturing output rose in July, thereby stretching the period of expansion to 12 months. Despite easing from June's six-month high, the latest upturn was marked and stronger than the current sequence of growth. Anecdotal evidence pointed to favourable market conditions.



Business sentiment towards the 12-month outlook for output strengthened to a three-month high.

Growth continues

New business rose for the ninth consecutive month in July. Moreover, the rate of expansion was marked despite easing from June's six-month high. Panellists attributed new client wins to strong underlying demand. Mirroring the trend for new business, new export orders rose for the ninth month in succession during July. Although softening slightly since June, the rate of expansion was solid. Panellists commented on strong demand from international markets for Indian goods.

Reflecting sustained periods of growth in output and new orders, firms were encouraged to raise their staffing levels for the fourth successive month in July. However, staff recruitment slowed to a marginal pace. At the market group level, jobs growth was evident in intermediate and investment goods.

New orders placed at Indian manufacturing firms rose in July. The rate of expansion was marked despite softening from June's six-month high. The latest expansion was linked to strong underlying demand, according to respondents. As was the case with output, new business rose in consumption and intermediate goods.

"Despite easing from June's six-month high, the latest upturn was marked and stronger than the current sequence of growth. Anecdotal evidence pointed to favourable market conditions."

Increased production requirements also prompted firms to engage in input buying for the second consecutive month during July. That said, the rate of growth remained modest. Meanwhile, manufacturing companies raised their pre-production inventories during July, albeit only marginally.

Indian manufacturing companies faced higher input costs during July, thereby stretching the current period of inflation to 34 months. The rate of increase eased from June's near four-year high and was in line with the series trend. Survey respondents mentioned that steel and crude oil were among the key items that increased in price.

Looking ahead, Indian manufacturing companies held optimistic projections for output in the next 12 months. Expected improvements in demand, promotional activities and

expansion plans were the key factors behind confidence. The level of positive sentiment strengthened to a three-month high during July but remained below the historical average.

Rise in output

As has been the case since August 2017, Indian manufacturing output rose at the start of the quarter. Despite easing from June's six-month high, the rate of expansion was marked overall. Favourable demand conditions were cited by panellists as the key factor behind greater production.

New orders placed at Indian manufacturing firms rose in July. The rate of expansion was marked despite softening from June's six-month high. The latest expansion was linked to strong underlying demand, according to respondents. As was the case with output, new business rose in consumption and intermediate goods.

Orders from abroad continued to rise in July. Despite softening from June's four-month high, the respective seasonally adjusted index signalled a solid rate of expansion in new export orders. There were reports of strong demand from international markets for Indian goods. Growth in consumption and intermediate goods outweighed the decline in investment goods.

As has been the case in each of the past four months, outstanding business in India's manufacturing sector rose in July. Delayed client payments and higher production requirements led to greater backlogs. That said, the rate of accumulation remained marginal as the vast majority of respondents (98%) registered no change in backlogs.

Marginal rise in employment

Post-production inventories fell for the twelfth consecutive month during July. The rate of contraction was marked despite easing to the slowest since February. Ongoing growth in output and new work reportedly placed pressure on post-production stocks, according to anecdotal evidence.

"Mirroring the trend for new business, new export orders rose for the ninth month in succession during July. Although softening slightly since June, the rate of expansion was solid."

Indian manufacturing companies faced higher input costs during July, thereby stretching the current period of inflation to 34 months.

"In response to ongoing growth in output and new orders, Indian manufacturing companies raised their payroll numbers for the fourth successive month during July."

In response to ongoing growth in output and new orders, Indian manufacturing companies raised their payroll numbers for the fourth successive month during July. That said, job creation slowed from June's six-month high to a marginal pace. Employment levels increased in intermediate and investment goods.

Indian manufacturing companies raised their average selling prices during July, thereby stretching the current period of inflation to one year. According to panellists, the passing on of higher cost burdens to clients was the main reason behind higher average selling prices. However, input cost inflation was modest and softened from the preceding month.

As has been the case since October 2015, input prices rose in July. Inflation was broadly in line with the series average despite softening from June's near four-year high. Increasing raw material prices were widely reported, with steel and oil highlighted in particular as rising in price.

Optimistic projections

Inflation was evident across all market groups, as was the case with output charges. After adjusting for seasonal variation, the Suppliers' Delivery Times Index registered just above the neutral 50.0 threshold during July. Notably, the vast majority of panellists (99%) noted no change in average lead times since the preceding survey period. Faster delivery times were only evident in consumption goods.

A back-to-back monthly increase in purchasing activity was registered in July. Where an increase was reported, panellists reported that strong demand conditions contributed to greater input buying levels. However, the rate of growth eased slightly from June's four-month high and was modest.

As has been the case since March, pre-production inventories rose during July. Despite quickening to the fastest since April, the rate of accumulation was only marginal. At the market group level, growth in postproduction inventories were recorded across consumption and intermediate goods.

Business confidence towards the 12-month outlook for output strengthened to a three-month high during July. Expected improvements in demand, promotional activities, and expansion plans were the key factors behind optimistic projections for output in the year ahead.

Source: IHS Markit

Sandvik Coromant opens new Technology Center

Sandvik Coromant India has opened its new global meeting place in Pune for productivity, application, machining and research in manufacturing. This 18,000 ft2 facility – one of only six such centres across the Sandvik Coromant portfolio present– is the result of an investment worth SEK 35 million (equals to Rs.27 crore). The other centres are Langfang in China, Schaumburg in USA, Queretaro in Mexico, Fair Lawn USA and Sandviken in Sweden Javier Guerra, President at Sandvik Coromant India, said: "It gives me immense pleasure to announce that, in our endeavour to offer cutting-edge solutions and expertise to customers, we now have a world-class Sandvik Coromant Center in Pune. The facility will be of great service to anyone who is interested in productivity gains, cutting-edge research and the future of global manufacturing."

Toyoda Gosei sets up new office

Toyoda Gosei Co., Ltd. has established the Gurgaon Office (engineering, sales) of Toyoda Gosei Minda India (TGMIN), a subsidiary in India, to increase sales in the rapidly growing market. The new office, located in a suburb of New Delhi, is a further step in localization of product development.

The new office is intended to speed up business by locating engineering and sales operations closer to the head office of its main customer, Maruti Suzuki India Limited. These operations were previously situated at TGMIN's head office in its Neemrana Plant. Together with this relocation, local development operations will be enhanced by increasing the number of employees and expanding facilities. By 2020 the number of engineering and sales employees will be increased to about 20 people.

Toyoda Gosei views India as an important market and is taking steps to enhance its production network there, including the scheduled start of operations of a new TGMIN Gujarat Plant in western India in October 2018. The company is targeting sales of 35 billion yen, over two times the current level, for all of India by 2025.

Tata Technologies to set up aerospace and defence centre

Tata Technologies signed a Memorandum of Understanding (MoU) with the Vidarbha Defence Industries Association (VDIA) at the 'Made in Vidarbha in Aerospace and Defence' summit held last week in Nagpur. This partnership will lead to the setting up of a new state-of-the-art aerospace and defence centre in Nagpur. The MoU was signed in the presence of the Chief Minister of Maharashtra, Devendra Fadnavis. In alignment with the 'Make in India' initiative, this centre will help establish Maharashtra as the preferred investment destination for aerospace and defence manufacturing, promote indigenous and modernised technological capabilities and develop skilled resources to support Micro, Small and Medium Enterprises (MSMEs) to be globally competitive in the aerospace and defence sector. This will be done by setting up 'NIRMAN', a not-for-profit common facilitation centre for aerospace and defence and 'UDAN', an initiative to create high-end skilling centres and provide competency-based education for engineering institutes and universities. The partnership between Tata Technologies and VDIA supported by the Government of Maharashtra, will promote the state as an aerospace and defence manufacturing and export hub.

Samsung inaugurates world's largest mobile factory in Noida

Prime Minister Narendra Modi has opened Samsung Electronics' new mobile phone manufacturing facility–The World's Largest Mobile Factory–in Noida, Uttar Pradesh. Samsung India also launched its 'Make for the World' initiative, whereby it aims to export mobile handsets produced in India. With this facility, Samsung will double its current capacity for mobile phones in Noida from 68 mn units a year to 120 mn units a year, in a phase-wise expansion that will be completed by 2020. "Our Noida factory is a symbol of Samsung's strong commitment to India. Samsung is a long-term partner of India. We 'Make in India', 'Make for India' and now, we will 'Make for the World'. We are aligned with Government policies and will continue to seek their support to achieve our dream of making India a global export hub for mobile phones," said HC Hong, Chief Executive Officer, Samsung India.

BFW inaugurates a new manufacturing facility in Hosur, Tamil Nadu

Bharat Fritz Werner Ltd. (BFW) has recently inaugurated a smart manufacturing facility in Hosur, Tamil Nadu. The first phase is spread across 35,000 sqft. that includes significant numbers of modern mother machines to enable integration of existing foundry facility with machining capability. The second phase will expand to 60,000 sqft. Ravi Raghavan, MD & CEO, BFW said, "This wonderful machine shop will be converted into a smart manufacturing set up when fully operational in next few months." Both the facilities will double the machine building capacity of BFW and will help meet the growing industry demands and remain a strong manufacturing presence for years to come. Its aim is to not only increase profits and remain a global competitor, but also retain and nurture skilled workers. A K Kothari, Chairman, Kothari Group, said, "Now BFW can be called truly a one stop shop or one window company where all range of machines are available in the metal cutting machine tool industry."

Pratt & Whitney opens two eLearning Centers

Pratt & Whitney recently celebrated the opening of two e-learning centers in India. The centers are equipped with modern facilities, tools and technology to support teachers and students. These resources include computers, wireless internet, digital projectors, display screens, audio systems, software, and furniture. Another 25 e-learning centers are planned to open by the end of 2018.

"At Pratt & Whitney, we are committed to improving the communities in which we live and work," said David Carter, senior vice president, Engineering, Pratt & Whitney. "These e-learning centers have grown to be an incredibly impactful educational resource for students, and we look forward to supporting the next generation of scientists, engineers and business professionals in India."

CERATIZIT India commissions the next generation coating plant

CERATIZIT India has announced its expansion with the setting up of a coating plant unit for inserts at Uluberia industrial area near Kolkata, to cater to the demand for Indian and other Asian markets. With the new coating device, the capacity for producing coated inserts will increase by approx. 40%. The inauguration ceremony was attended by Sam Schreiner, Ambassador of Luxembourg to India.

CERATIZIT India, has already been manufacturing hard metal products in Bengal for 22 years. CERATIZIT India has become an integral part of the CERATIZIT Group's global production network and is now responsible for the supply of cutting tools for the entire Asian region. The new coating device is an advanced Chemical Vapour Deposition (CVD) coating plant. The multilayer coating technique will enhance tool life and increase performance to a great extent. The considerably enhanced surface finish has a positive influence on both chip flow and wear resistance which can be achieved with this new coating. The special multi-layer structure additionally provides increased toughness to the cutting edge. Combined with improved adhesion the new coating technology in CERATIZIT India is perfect for machining metals at high speeds. The new plant will be one of the best in class plant in surface engineering. This plant is environment friendly and is having zero discharge system.

thyssenkrupp Elevator announces new complex in the US

thyssenkrupp Elevator has announced a new, world-class headquarters near The Battery Atlanta in Cobb County, Georgia. The thyssenkrupp Elevator Americas complex will house more than 900 full-time employees, which represents approximately 6% of thyssenkrupp Elevator Americas total workforce across North America. Upon completion, the new complex will include three facilities anchored by a state-of-the-art, 420-foot tall elevator qualification and test tower, the tallest of its kind in the U.S. "Our focus and commitment to move people safely, comfortably and efficiently–today and in the future–is at the heart of our business, and it requires continued access to top talent, enhanced collaboration and greater operational efficiencies," said Rich Hussey, CEO of thyssenkrupp Elevator Americas.

The **Future of Tomorrow**

The demand of energy efficient motors has started increasing at a tremendous pace.

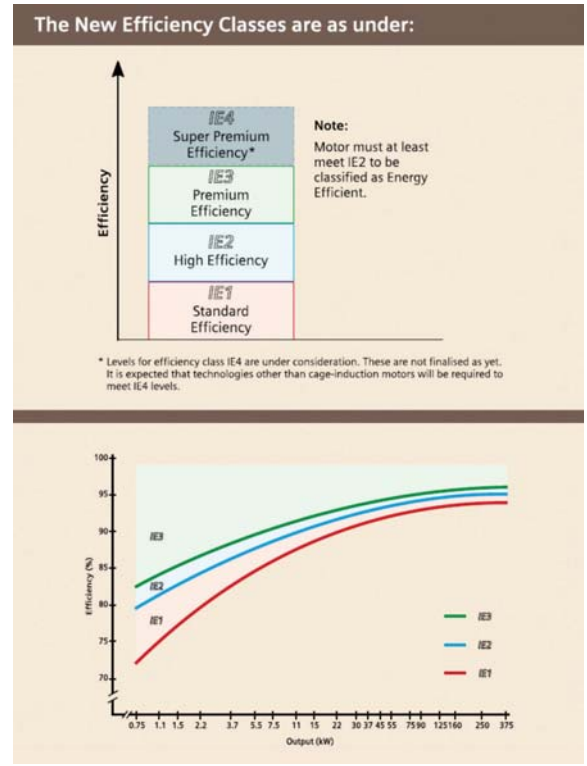
By Abhishek Dhupar

The year 2018 has been a significant year for the electric motors industry especially for LT motors market due to the implementation of Minimum Energy Performance Standard. With the Quality Control Order (QCO) being issued by Department of Industrial Policy & Promotion (DIPP) under Ministry of Commerce (Government of India) which has enforced IS 12615:2011 with IE2 motors as MEPS w.e.f January 1, 2018. This has certainly raised the bar for improving efficiency standard for motors in India. Eventually, the demand (and usage) of energy efficient motors (specifically IE2, IE3) has started increasing at a tremendous pace and has also helped in curbing the imports of standard and sub-standard efficiency motors (IE1 & below) in India.

At present, the LT Motor market size is approximately Rs.3200 crore, of which energy efficient motors comprises of 41 percent which till last year was 22 percent. The QCO has addressed the need for implementing energy efficiency in the motor system under new purchases. However, the existing, old and less efficient motors, already working in all the industries need to revamp or retrofits. Though many leading corporates have started implementing replacement of old motors with IE3 efficiencies, it will still take many years of sales of new, energy efficient motors to have a discernible impact on the overall efficiency of the installed stock.

To address this issue, Energy Efficiency Services Ltd. (EESL) has initiated a National Motor Replacement program. This program shall supplement the DIPP regulations and standards in two ways. For one, it will address the replacement of the installed stock of IE1 and sub-IE1 motors (with IE3), which is outside the scope of regulations. Secondly, it will bring down the costs of IE3 motors, and stimulate the voluntary adoption of these for new requirements, thus taking the market higher than the MEPS of IE2 mandated from 01.01.2018.

"The National Motor Replacement program will stimulate the voluntary adoption of IE3 motors for new requirements."

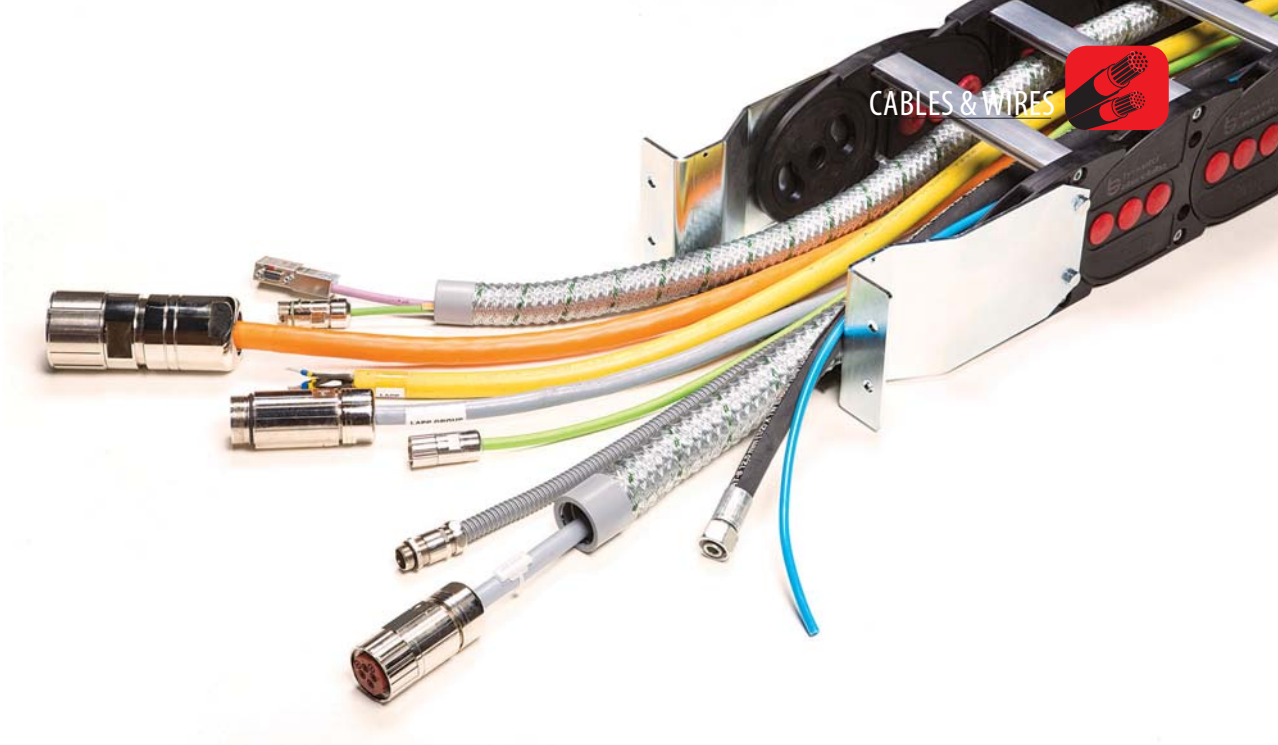


"At present, the LT Motor market size is approximately Rs.3200 crore, of which energy efficient motors comprises of 41 percent."

EESL has partnered with the International Copper Association (ICA) India for creating awareness amongst industrial end users and support in demand aggregation. The program aims to replace 120,000 electrical motors in the range of 1.1 kW to 22 kW, 4 Pole in the first phase, focusing on pumps, fans/blowers, and compressors applications. Motors which are more than 10 years old, pertaining to efficiency class IE1 or below and have been rewound multiple times, are being considered for replacement with IE3 motors as per IS 12615.

Under this scheme, end users can procure IE3 motors of reputed brand with three years warranty at a much lower price than the retail market price. The payback period of the motors will come down to less than two years. Motors can be procured either at an upfront cost (PMC mode) or at an easy finance option (ESCO mode) where the industry can pay the same from the monetised energy saving.

The author is Program Manager: Motors & Motor Driven Systems, ICA India



Dynamic cables for flexible applications

Know which cable is suitable for your applications.

Does a cable break if it is bent or twisted too much? Not if you choose the right cable for the required application. This article explains where the challenges lie and the technical ideas that LAPP is using to overcome these issues as the leading supplier of connection solutions.

Cables have long been high-tech products. There is now a wide range of options when it comes to the material, processing methods and preassembly. This variety is necessary as the demands placed on cables, particularly regarding flexibility, have risen sharply over the last few years. One of the most gruelling places to install a cable is in a power chain. Here servo cables such as the ÖLFLEX® SERVO FD 796 CP and the ETHERLINE® or HITRONIC® fibre optical data cables are placed very close to one another. They move to and fro during a machine's power cycle, sometimes faster than 5 m/s with accelerations over 50 m/s2. In highly dynamic applications, several things must be borne in mind in order to accommodate the demand for increased service life while guaranteeing lower space requirements, reduced weight and a small minimum bending radius.

The material, particularly that used in the sheath, determines whether a cable can withstand movements over long periods of time and most combine several properties, e.g. fire behaviour or resistance to oil, chemicals and cleaning agents.

Three types of movement

There are three different types of movement in cables:

- ***Torsion:*** the cable is twisted about a longitudinal axis. Pure torsional movements are found in wind turbines where the cables run from the rotating nacelle down to the tower;
- ***Drag chain:*** the cable is bent, sometimes millions of times, in the drag chain;
- ***Winding and unwinding:*** this is where cables are unreeled from drums, for instance in stage applications or on live TV, then reeled back onto them and stored after the event.

The material, particularly that used in the sheath, determines whether a cable can withstand movements over long periods of time and most combine several properties, e.g. fire behaviour or resistance to oil, chemicals and cleaning agents. PVC continues to dominate the market for sheath materials, but there are other materials such as thermoplastic elastomers (TPE) or polyurethane, which is the first choice for highly dynamic applications, e.g. in the ÖLFLEX® Servo FD 796 CP servo cable. Polypropylene is particularly good at insulating the core in flexible applications as it features excellent electrical insulation properties while also being very strong with a low density.

Flexible braiding

The screening braid plays an important role in a cable's flexibility. It blocks out interference from other cables, e.g. from motors or live cables. It is important that most of the screening braid is covered; no gaps should appear, even when the

cable is bent. The braiding angle is the decisive factor here: the shallower it is, the more turns can be made in the wires in the braided shield per metre of cable, the thicker the braiding. Unfortunately, this also makes the cable more expensive as more material is needed.

The ETHERLINE® FD Cat. 6A Ethernet cable, which is used for robot monitoring or inspecting finished products using camera systems, is an example of excellent shielding. Suitable for use in power chains, the ETHERLINE® TORSION Cat. 6A can even be used in applications where the cable is twisted. Until now, cables in accordance with Cat. 6A with data transmission rates of up to 10 Gbit/s were only possible in fixed or slightly flexible installations.

Glass fibres can also bend

Fibre optic cables are the only option if you want even higher data rates. Users can choose between three fibre types: plastic optical fibres (POF) for shorter distances of up to 70 metres, plastic cladded fibres (PCF) for distances of up to 100 metres and glass fibres for even larger distances and applications requiring the highest data rates. In principle, all fibre types are suitable for flexible applications as long as the recommended bending radii are observed. However, in order to achieve the highest possible transmission performance, the bending radius in fibre optic cables should be at least 15 times greater than the diameter. While a lower bending radius will not cause it to break, it will lead to increased attenuation, meaning that light is lost in the tight curve and the signal quality will drop.

Textile fabric as strain relief

The material enveloping the fibres largely determines whether a fibre optic cable can withstand movements. Aramide fibres, i.e. synthetic fibres that give bulletproof vests or fibre-reinforced plastics their exceptional properties, are often used here. If the cable is stretched, the textile sheath absorbs the tensile force and prevents the fibre optic cable from also being stretched.

Each cable type undergoes rigorous testing at LAPP before being recommended for a particular application. In these tests, LAPP engineers test the torsion of cables for wind power plants in an old lift shaft by twisting the cables over a total length of 12 metres. This process is extraordinary in the cable industry. Other manufacturers test shorter cable lengths twisted at more acute angles and extrapolate this data to estimate the figures for longer cable lengths. LAPP just dosn't rely on what's written on paper but check every cable in realistic conditions.

Everything from one supplier

Customers are increasingly requesting preassembled cables, i.e. cables with mounted connectors that are often already built into the energy chain. LAPP Systems, a subsidiary of the LAPP Group, has long provided these kinds of preassembled integrated systems. Customers like to be safe in the knowledge that all components are perfectly matched, particularly in flexible applications. Under the new name of ÖLFLEX® CONNECT, LAPP is now bundling all global preassembly activities for customers, including consultation. To this end, the company is expanding its corresponding production and preassembly capacities in America, Europe and Asia. The customers thus benefit from customised solutions, high quality thanks to the optimum interaction of all components and expert on-site consultation.

Source: Lapp India

UPDATE

Boeing invests in metal 3D printing company - Digital Alloys

Boeing has announced its investment in Digital Alloys, Inc., a Burlington, Mass.-based company developing high-speed, multi-metal additive manufacturing systems that produce 3D-printed parts for aerospace and other production applications. Digital Alloys' Joule Printing™ technology can rapidly combine multiple metals into each part, which enhances thermal, electrical, magnetic and mechanical properties. The process allows metals like titanium and high-temperature alloys to be 3D-printed for parts that could be used on Boeing products.

"Our investment in Digital Alloys will help Boeing produce metal structural aerospace parts faster and at higher volume than ever before," said Brian Schettler, managing director of Boeing HorizonX Ventures. "By investing in companies with emerging additive manufacturing technologies, we aim to strengthen Boeing's expertise and help accelerate the design and manufacture of 3D-printed parts to transform production systems and products."

Additive manufacturing generates value for Boeing by reducing the cost and time needed to design, build and deliver products to customers. Today, Boeing has more than 60,000 3D-printed parts flying on space, commercial and defense products. This investment is the latest example of the company's commitment to additive manufacturing innovation.

Plastic ball bearings compete against metal bearings

xiros is up to 60% lighter and 40% more cost-effective than the metallic version

In Cologne, the company igus operates the world's largest test laboratory for plastics in moving applications. More than 12,000 tribological tests are conducted every year at the motion plastics specialists. These include tests that investigate the use of a wide variety of materials in the most varied environments in real test. This time: xiros flanged ball bearings and metal bearings in salt water. The use of lubrication-free and maintenance-free tribo-plastics enabled the xiros bearing to be completely convincing in the experiment.

The engineers of the igus test laboratory filled a container with saltwater from the sea and heated it to +80 degrees Celsius. Then two bearings were put inside for 120 hours: a classic 2-hole flange bearing made of metal and a xiros flange bearing made of xirodur B180, a high-performance plastic that has been optimised by igus for years in terms of wear and media resistance. Both bearings were not completely covered in the test, but exposed to air in order to trigger the corrosion effect.

Metal bearing begins to corrode after a few hours

The test result spoke clearly in the end. After just a few hours, the metal bearing began to corrode. At the end of the test, significant traces of rust were visible on all bearing components. Unlike the bearing of plastic, the xiros flange ball bearing was not corroded even after 120 hours in the aggressive salt water and high temperatures. There is no colour change and no trace of rust. A clear advantage especially in cleanroom applications and using in food and medical technology, where rust poses a hygiene risk. The xiros ball bearings usually consist of four components: the inner and outer rings as well as the cages made of plastic and the balls made of stainless steel or glass. Unlike metal bearings, the wear-resistant polymer bearings enable a very smooth and hygienic dry operation without a single drop of lubricating oil and are maintenance-free. Their long service life can be easily calculated online. In addition, the plastic bearings are electrically insulating, temperature-resistant from -40 to +80° Celsius, non-magnetic, 60 percent lighter and up to 40 percent more cost-effective than comparable metal bearings. They are suitable for absorbing medium loads and due to their reliability, have been preferred by customers around the world for many years, for example, for use in conveyor belts, labelling, handling and packaging machines as well as in filling machines.

Unlike metal bearings, the wear-resistant polymer bearings enable a very smooth and hygienic dry operation without a single drop of lubricating oil and are maintenance-free.

Source:
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Enerparc commissions solar project for BFW

Enerparc India has commissioned an 980 kWp solar project at Bharat Fritz Werner Ltd. (BFW) located at Bengaluru, Karnataka. The project has been constructed and executed by Enerparc through its investment special purpose vehicle, which would sell the solar power to BFW on a long term.

The project is second of Enerparc's growing solar rooftop portfolio in India, it is one of the benchmarks for the company as innovative non-penetrative mounting methods are used coupled with Enerparc's priority on quality and safety. Speaking about the association with BFW, Santosh Khatelsal, the Managing Director of Enerparc India, said, "We are very glad to be associated as a sustainability partner with a prestigious company like BFW.

This project will help Enerparc to add another leading brand in its portfolio of 1.2 GW as an Independent Power Producer across the world."

LVD launches new products

At EuroBLECH, LVD puts the focus on flexible automation solutions and cell manufacturing for increased production efficiency. LVD's Industry 4.0-ready laser cutting, bending, punching and software technology make for an easy and smooth transformation to a more competitive workshop.

- ***World premiere*** - ToolCell XT automated tool changing press brake with extended tool storage capacity. In response to having even more flexibility to tackle small batches, high part mix and increased part complexity in a wider variety of materials and thicknesses. The new ToolCell XT will enable users greater flexibility and maximized throughput.
- ***World premiere*** –Dyna-Cell takes electric press brake automation to a new level for high-speed bending of small to medium size parts. Based upon LVD's field proven Dyna-Press, LVD's new compact robotised bending solution delivers faster art to part times, rapid change overs, increased throughput and lower cost per part.
- ***Ultra-high-speed Electra FL 3015 fiber laser cutting machine*** features a new 10 kW laser source to cut a wide range of ferrous and non-ferrous materials as fast as the thermal process allows without dynamic compromise. A 10-shelf Compact Tower (CT-L) keeps pace with the Electra to efficiently load, unload and store parts and material.
- ***Easy-Form 80/25 press brake*** is the ultimate smart bending machine. Equipped with the Easy-Form Laser in-process angle monitoring and correction system, this press brake adapts in real-time the ram position to ensure the desired angle from the first bending operation. The bending process is not interrupted and no production time is lost.
- ***Strippit PX-1530 punch press*** can punch, form, bend and tap to efficiently complete multiple processes, including complex, three-dimensional parts. A Flexible Automation system (FA-P) makes fast work of loading/unloading and part picking for uninterrupted production flow.
- ***CADMAN® Suite*** is LVD's answer to full process integration and optimised process flow. CADMAN looks at the big picture and helps streamline the complete fabrication process – from production control, communication, planning and management to punching, bending and laser cutting – through integrated, database-driven software. The complete CADMAN Suite will be demonstrated.

Combined rotational and angular compensation on the end-effector

As the world's first angular compensation unit for robots, the SCHUNK AGE-W combines rotational and angular compensation around all three axes. In doing so, parts without a precisely defined position can be handled quickly and precisely. The module provides the necessary flexibility to the end-effector during bin picking, for automated loading and unloading of machine tools, as well as for handling and assembly applications with inaccuracies in the components' positions. Grippers and other actuators connected to the robot via the SCHUNK AGE-W, can excellently adjust their position to the respective workpiece position without having to record the process in detail via a vision system and without having to precisely calculate the gripping strategy every time. This saves time in programming and during operation. Around the direction of the X and Y axes, compensation is between 0° and +/- 13°, and between 0° and +/- 19° around the Z axis (rotation). Optimum deflecting torques are achieved by individually adjusting the centering force with compressed air. If the unit is switched into its rigid position, the locking ensures a high centering accuracy of +/- 0.09 mm using the proven ball mechanism and therefore ensures maximum process reliability in subsequent operations. Monitoring of the locking is possible by using inductive proximity switches. The anodized aluminium housing and hardened stainless steel compensation elements ensure a long service life and minimum maintenance. The unit can be connected to various robots without using adapter plates since the flange pattern is standardized in accordance with DIN EN ISO 9409-1-125. The maximum horizontal handling weight is 22.7 kg.

For more info, contact: Satish Sadasivan
SCHUNK Intec India Pvt Ltd
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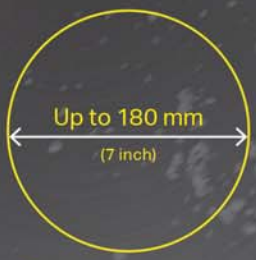

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