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THE MACHINIST

ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

RNI No 71129/98

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The MACHIE is back

And only the best will get it!
If your shopfloor is truly super then nominate now.
Details on Pg. 32

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Issue Highlights

- Technology: **Intelligent manufacturing**
- Defence: **Attaining self reliance**
- Interview: **'Wise' advice**

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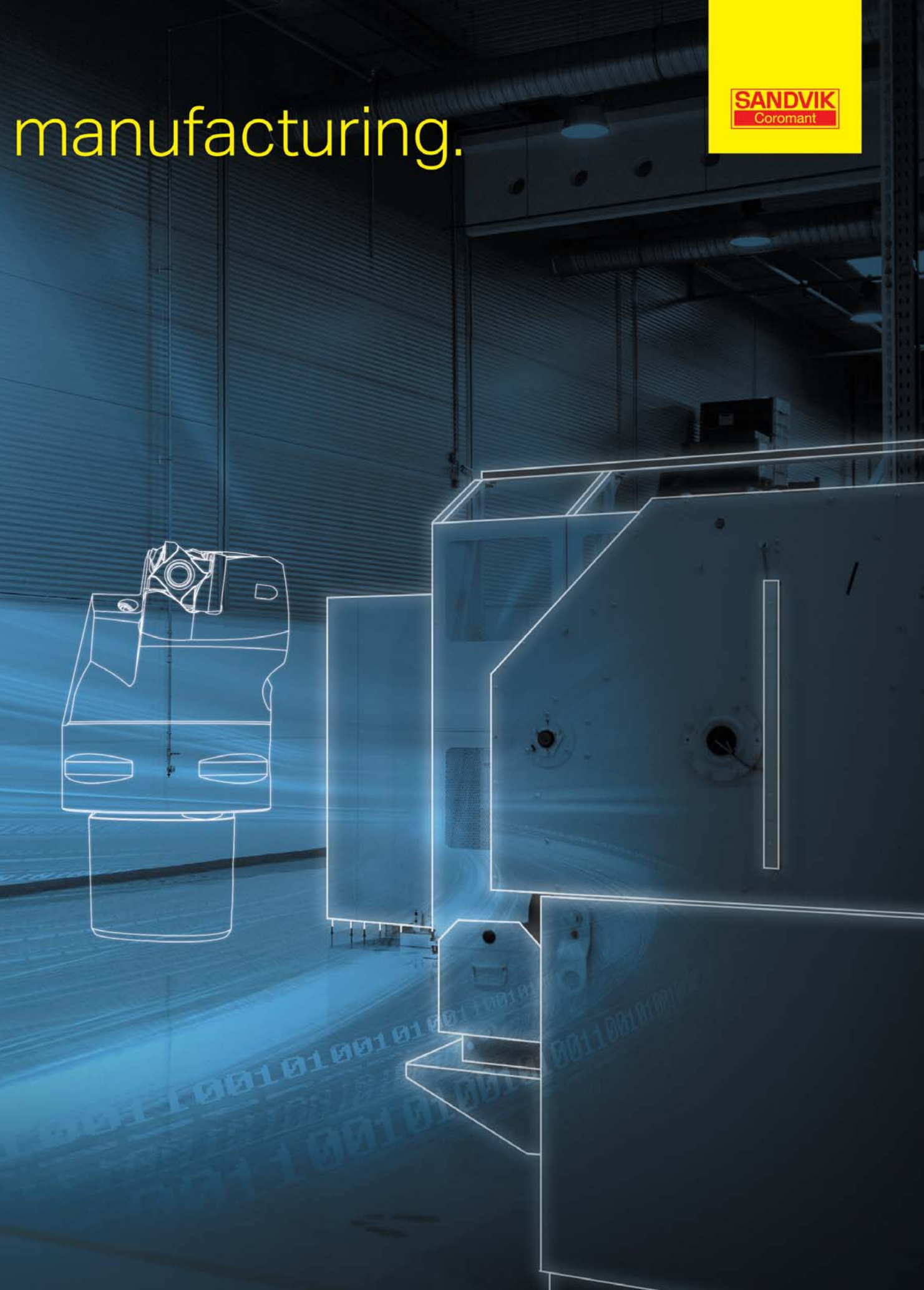

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The Machie is back!

The temperature soars in the month of May in India. Adding to the mercury's rise will be the competition heating up for the 2017 edition of 'The Machinist Super Shopfloor Awards'. And guess what? The location we have selected for this year's Machie is equally hot. Besides being known for its hot weather, Chennai is one of the top three manufacturing destinations in the country. So when we decided to change from the previous venue of Pune, the entire team whole heartedly agreed to take our Awards show to Chennai. Housing some of the finest manufacturing brands, Chennai – also known as the 'Detroit of India' – is an ideal location for a super brand like 'The Machinist Super Shopfloor Awards' and its coveted trophy – the Machie!

"BY THE WAY, WE HAVE ADDED THREE MORE CATEGORIES THIS YEAR – HUMAN RESOURCES, CORPORATE SOCIAL RESPONSIBILITY AND SUPPLY CHAIN MANAGEMENT. THE AIM IS TO MAKE THE PLATFORM AS COMPREHENSIVE AND AS RELEVANT AS POSSIBLE FOR INDIAN MANUFACTURING."

The last two editions of our Awards have been simply phenomenal; we have set benchmarks and we have created history. The third edition will obviously live up to this tradition and also be more. How? Well, only the winners of the Machie trophy will know that first hand. And to become a winner, you need to send in your shopfloor's nominations. For others, you can grab a copy of The Machinist with the post event coverage or watch the coverage on television! We will let you know when the time is right.

But right now, we are focused on the pre-event preparations. Just as many of you are busy preparing the nominations. By the way, we have added three more categories this year – Human Resources, Corporate Social Responsibility and Supply Chain Management. The aim is to make the platform as comprehensive and as relevant as possible for Indian manufacturing. And for those who haven't started working on their entries, let me tell you that the last date for sending nominations is March 27, 2017. So get going!

Editor & Chief Community Officer

THE MACHINIST
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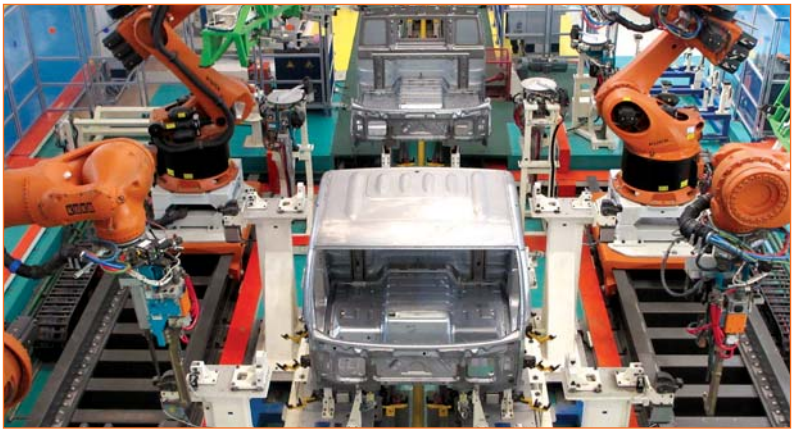

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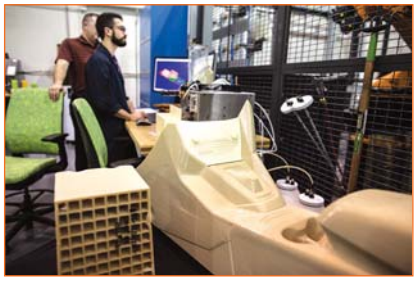

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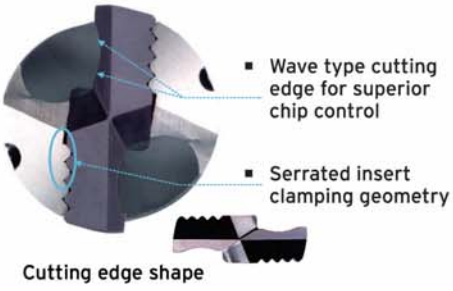

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Economic growth to be achieved through constant improvement: ASSOCHAM-EY report

A RECENT ASSOCHAM-EY report suggests that the government needs to continuously invest in improving the ease of doing business environment, develop sound infrastructure, and ensure availability of trained workforce as India is set on a growth trajectory that promises all-round development, economic welfare and strong macro-economic indicators.

"Improved governance, favourable conditions to conduct business, transparency in government procedures and responsive policy making with an immediate focus on effective implementation of government reforms will continue to evolve India into a preferred destination for foreign investment," highlighted the report titled 'India: Transforming through

radical reforms,' jointly conducted by ASSOCHAM and global advisory firm Ernst & Young (EY).

It also termed demonetisation as a major step aimed at strengthening India's proposition of becoming a transparent economy by curbing black money, terror financing and fake currency circulating in the economy.

It also said that the GST (goods and services tax) which is expected to be rolled out by July 2017, will further boost the economy by simplifying the indirect tax structure, and eliminating the cascading effect of taxes on customers and make doing business easier in the country.

Hailing the Centre's ambitious Make in India initiative, the report said that it has provided robust support to India's manufacturing sector, backed by domestic demand and many regulatory reforms. It has helped India become the sixth largest manufacturing economy in the world in 2016.

Reforms like 'Power for All', 'Smart Cities', 'Skill India' and 'Startup India' are expected to work in tandem with 'Make in India' to help the country achieve the goal of becoming a manufacturing hub, it added.

India and ADB sign $375 million in loans and grants for 800 km industrial corridor

THE ASIAN DEVELOPMENT BANK (ADB) and the Government of India signed here $375 million in loans and grants to develop 800 km Visakhapatnam-Chennai Industrial Corridor, which is the First Phase of a planned 2,500 km long East Coast Economic Corridor (ECEC). The Corridor is expected to spur development on India's eastern coast in line with the Government of India's Make in India policy to stimulate manufacturing, and Act East policy to integrate the Indian economy with Asia's dynamic global production networks.

ADB's approved loans comprise a $500 million multi-tranche facility to build key infrastructure in the four main centers along the corridor – Visakhapatnam, Kakinada, Amaravati, and Yerpedu-Srikalahasti in the State of Andhra Pradesh. The First Tranche of $245 million was signed today that will finance sub-projects to develop high-quality internal infrastructure in 2 of the 4 nodes of the corridor–Visakhapatnam and Yerpedu-Srikalahasti.

Another component of the approved ADB funds signed on 23.02.2017 was a $125 mn policy-based loan that will be used for capacity development of institutions engaged in corridor management, provide support to enhance ease of doing business and for supporting industrial and sector policies to stimulate industrial development.

Manufacturing production continues to increase in February 2017

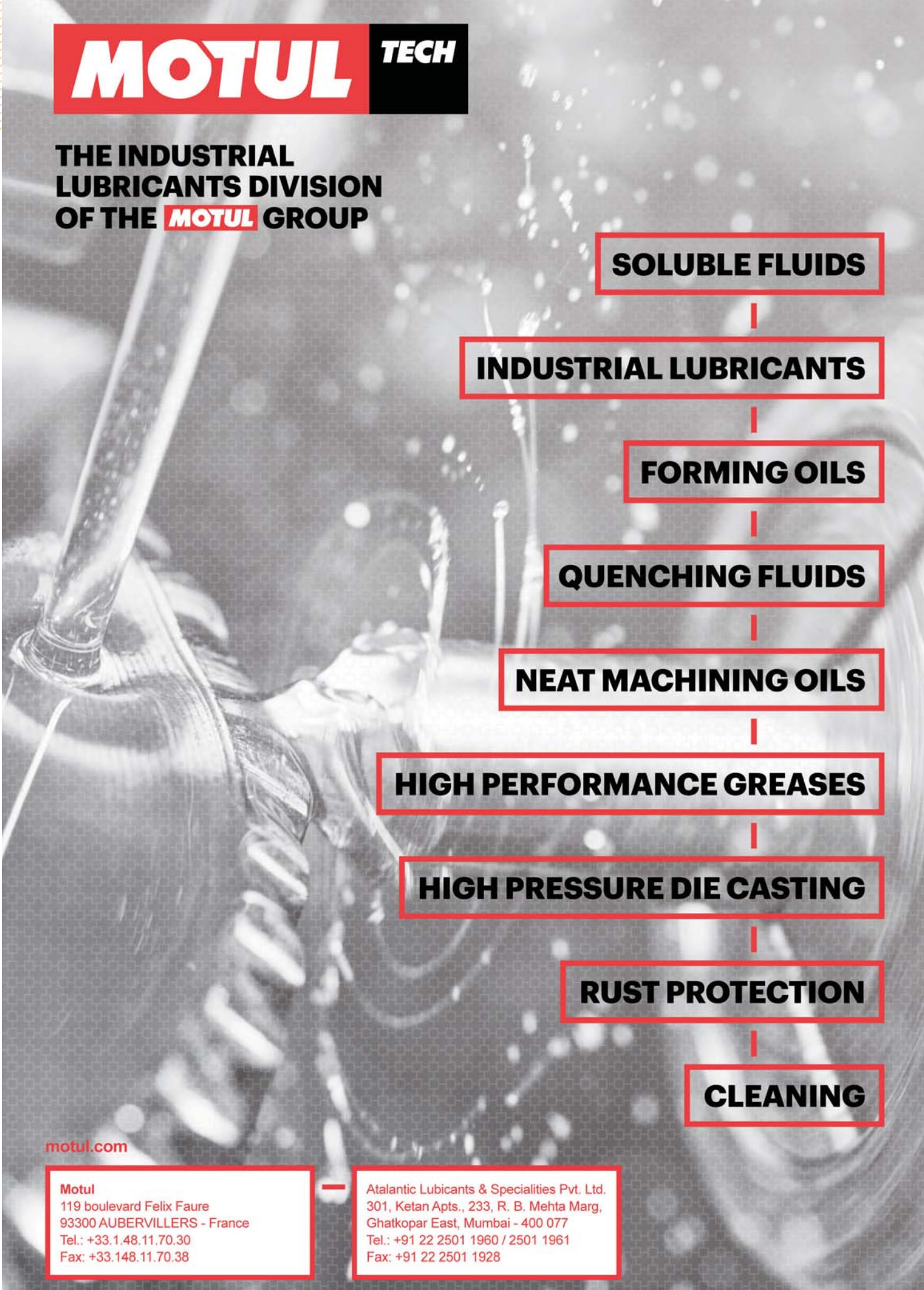
FEBRUARY data indicated that Indian manufacturing production continued to increase, as a rebound in export demand contributed to a stronger expansion of total new orders.

There was evidence of an intensification of inflationary pressures, with input costs rising at the quickest pace since August 2014 and output charge inflation climbing to a 40-month peak. Greater output needs encouraged some firms to step up buying levels, but production requirements were insufficient to generate job creation.

At 50.7 in February, up from 50.4, the seasonally adjusted Nikkei India Manufacturing Purchasing Managers' Index (PMI) – a composite indicator designed to provide a single-figure snapshot of the performance of the manufacturing economy – was above the neutral 50.0 value for the second month running and indicated that the health of the sector improved to a greater extent than in January.

That said, the latest reading was much weaker than the long-run series average (54.2), largely reflecting below-trend rates of growth for output and new business.

Higher levels of manufacturing production have now been recorded for two successive months, with the sector continuing to recover from December's downturn. The upturn in output reflected improved demand from both the domestic and external markets.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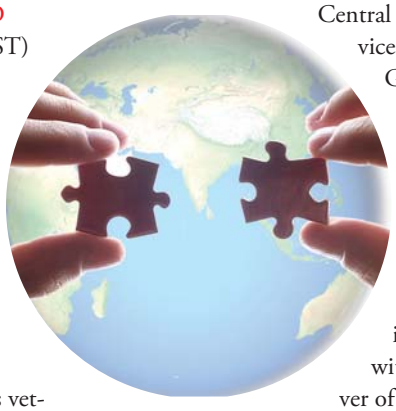
Central GST and Integrated GST Bills approved

THE GOODS AND SERVICES TAX (GST) Council, in its meeting held recently in New Delhi under the Chairmanship of the Union Minister for Finance & Corporate Affairs, Arun Jaitley has approved the draft CGST Bill and the draft IGST Bill as vetted by the Union Law Ministry. This clears the deck for the Central Government to take these two Bills to the Parliament for their passage in the on-going Budget Session.



Some of the main features of the two Bills, as finalized by the GST Council, are as follows:

i. A State-wise single registration for a taxpayer forfiling returns, paying taxes, and to fulfil other compliance requirements. Most of the compliance requirements would be fulfilled online, thus leaving very little room for physical interface between the taxpayer and the tax official.

ii. A taxpayer has to file one single return state-wise to report all his supplies, whether made within or outside the State or exported out of the country and pay the applicable taxes on them. Such taxescan be Central Goods and Services Tax (CGST), State Goods and Services Tax (SGST), Union Territory Goods and Services Tax (UTGST) and Integrated Goods and Services Tax (IGST).

iii. A business entity with an annual turnover of up to Rs. 20 lakh would not be required to take registration in the GST regime, unless he voluntarily chooses to do so to be a part of the input tax credit (ITC) chain. The annual turnover threshold in the Special Category States (as enumerated in Article 279A of the Constitution such as Arunachal Pradesh, Sikkim, Uttarakhand, Himachal Pradesh, Assam and the other States of the North-East) for not taking registration is Rs. 10 lakh.

iv. A business entity with turnover up to Rs. 50 lakhs can avail the benefit of a composition scheme under which it has to pay a much lower rate of tax and has to fulfil very minimal compliance requirements. The Composition Scheme is available for all traders, select manufacturing sectors and for restaurants in the services sector.

Mahindra to invest Rs. 1,500 crore in Nasik Project

MAHINDRA & MAHINDRA plans to make an investment of Rs. 1,500 crore at its Nasik and Igatpuri plants in Maharashtra. The project constitutes development and manufacture of its new product codenamed U321, covering joint investment at Nasik and Igatpuri.

The investment in the Nasik plant will be towards manufacture of vehicles, while investment in the Igatpuri plant will be for manufacture and supply of engines. The projects will qualify as 'Ultra Mega Project'.

Discussing the company's expansion plans, Dr. Pawan Goenka, Managing Director, Mahindra & Mahindra Ltd. said, "The Mahindra Group would like to express its deep and sincere gratitude to the Government of Maharashtra for its visionary industrial policies and efficient governance practices.

Asia infrastructure needs exceed $1.7 trillion per year

INFRASTRUCTURE needs in developing Asia and the Pacific will exceed $22.6 trillion through 2030, or $1.5 trillion per year, if the region is to maintain growth momentum, according to a new report by the Asian Development Bank (ADB). The estimates rise to over $26 trillion, or $1.7 trillion per year, when climate change mitigation and adaptation costs are incorporated.

The report, Meeting Asia's Infrastructure Needs, focuses on the region's power, transport, telecommunications, and water and sanitation infrastructure. It comprehensively examines current infrastructure stocks and investments, future investment needs, and financing mechanisms for developing Asia.

"The demand for infrastructure across Asia and the Pacific far outstrips current supply," said Takehiko Nakao, President, ADB. "Asia needs new and upgraded infrastructure that will set the standard for quality, encourage economic growth, and respond to the pressing global challenge that is climate change" Nakao added.

BASF makes R&D investment in India

BASF GROUP has inaugurated its new Innovation Campus Asia Pacific, located in Mumbai. The project will involve a total expected investment of up to €50 mn from BASF Group, and marks the Group's largest R&D investment in South Asia. All global research operations at BASF Innovation Campus Asia Pacific (Mumbai) will be housed under BASF Chemicals India Pvt Ltd. The new innovation campus will expand the company's existing R&D activities in India to include global and regional research on a wide range of specialty chemicals. Topics will cover personal and home care, process development, organic synthesis, crop protection, etc.

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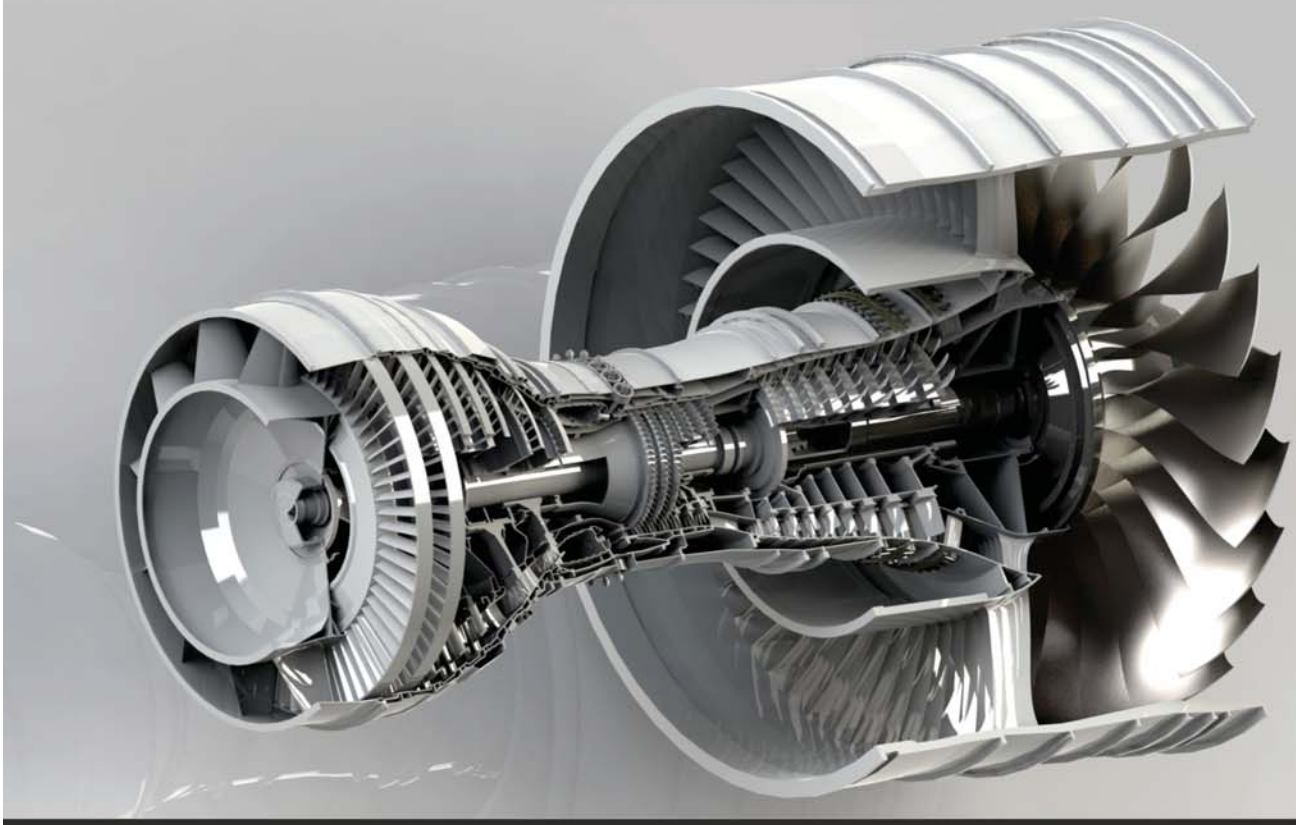

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• MARK YOUR DIARY •

A list of key events happening between March 2017 to December 2017, both nationally and internationally.

Automotive Engineering Show
March 21–23, 2017
New Delhi
www.aes-show.com

ACMA Automechanika New Delhi 2017
March 21–24, 2017
New Delhi
http://acma-automechanika-newdelhi.in.messefrankfurt.com/newdelhi/en/exhibitors/welcome.html

ProMat 2017
April 3–6, 2017
Chicago, (US)
www.promatshow.com

AMTEX 2017
April 12–15, 2017
Mumbai
www.amtex-expo.com

Hannover Messe
April 24–28, 2017
Hannover (Germany)
www.hannovermesse.de

BLECH India
April 27–29, 2017
Mumbai
www.blechindia.com

INTEC 2017
June 1–5, 2017
Codissia Trade Fair Complex, Coimbatore
www.intec.codissia.com

SPS Automation India
June 08–10, 2017
Mumbai
www.spsautomation-india.in

AutomationExpo 2017
August 09–12, 2017
Bombay Convention & Exhibition Center, Mumbai
www.automationindiaexpo.com

Delhi Machine Tool Expo
August 10–13, 2017
New Delhi
www.mtx.co.in

EMO Hannover
September 18–23, 2017
Hannover
www.emo-hannover.de

ExCon
December 12–16, 2017
BIEC, Bengaluru
http://excon.in

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Rolls-Royce wins $1.7 billion order

Rolls-Royce has won a $1.7bn order from Singapore Airlines for Trent 1000 engines to power 19 Boeing 787 Dreamliner aircraft. The engines will be covered by Rolls-Royce's flagship engine service, TotalCare, which improves engine reliability, increases time on wing, and maximises the engine's contribution to business performance.

This builds on a previous SIA Group order for Trent 1000 engines to power 50 787s, made in 2013. Twelve of those aircraft are now in service with SIA subsidiary Scoot and are also covered by TotalCare.

Eric Schulz, Rolls-Royce, President – Civil Aerospace said, "The Trent 1000 has real momentum in the marketplace, winning more than 60 per cent of engine competitions in the last six years. We are excited and honoured by the continued confidence of Singapore Airlines in the Trent 1000 engine, and in particular our latest and most advanced version, the Trent 1000 TEN."

Rolls-Royce to open Service Delivery Centre in India for Indian Air Force

Rolls-Royce has announced plans to open its first Service Delivery Centre (SDC) in India to deliver improved support for over 750 defence engines that power the aircraft of the Indian Armed Forces. It will be located at the Manyata Technical Park in Bengaluru and will offer localised engineering and technical support designed to improve frontline capability for the Indian Air Force and Navy. The SDC will be offer expertise in fleet management, service engineering and supply chain co-ordination as well as being the base for field service representatives that can be quickly dispatched to frontline bases in India. The SDC will also offer improved support for manufacturing, assembly and test for our longstanding partner Hindustan Aeronautics Limited (HAL). Dr Glenn Kelly, Rolls-Royce VP Customer Business India - Defence, said, "The announcement of our first SDC in India demonstrates our commitment to providing the best support possible for the Indian Armed Forces and our partners at HAL."

Zoom Air acquires Bombardier's CRJ Series aircraft

Bombardier Commercial Aircraft congratulated Zoom Air, India's newest airline, on the recent launch of CRJ200 regional jet service with aircraft acquired from a third party. The airline has joined Bombardier's family of more than 100 CRJ Series aircraft owners and operators.

"The CRJ200 aircraft greatly complement our business model and will help our growth strategy, while providing excellent operational flexibility and passenger comfort," said Koustav M. Dhar, Chief Executive Officer and Director,

Zoom Air. "We are excited by the potential these aircraft offer in allowing us to access new routes and destinations that are currently underserved – connecting businesses and people across the country."

Aequs to open high-end aerospace manufacturing facility in Goa

Aequs has announced to that it will open a high-end multi capability aerospace and defence manufacturing facility in Tuem, Goa. This is the first venture of its kind in the private sector in India, which will manufacture high-end components & systems for aerospace and defence sector and support the 'Make in India' initiative.

The new facility will be established with an initial investment of Rs. 500 crore towards development of physical infrastructure, plant, machinery and equipment and is strategically located at the Industrial cluster (EMC) Tuem, Goa.

The new Aequs facility will be a multi-capability precision engineering with CNC machines and new age technology to design and produce precision components for the Indian Defense sector. It will also support the 'Skill India' initiative by upskilling employees in the fields of precision manufacturing and other new age technologies, thus bringing a key capability in aerospace manufacturing in the country.

During the deal signing, Aravind Melligeri, Chairman and CEO, Aequs said, "The new facility in Tuem, Goa is a sign of our commitment towards the Indian defence sector. The sector relies heavily on imported equipment and technology.

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Endo-atmospheric interceptor missile test successfully conducted by DRDO

DRDO conducted the successful launch of the interceptor missile Advanced Area Defence (AAD) from Abdul Kalam Island, Odisha. The endo-atmospheric missile, capable of intercepting incoming targets at an altitude of 15–25 km successfully destroyed the incoming missile. All the mission objectives were successfully met.

The weapon system radars tracked the target and provided the initial guidance to the interceptor which could precisely home on to the target and destroyed it in endo-atmospheric layer.

The complete event including the engagement and destruction was tracked by a number of electro-optical tracking systems using infrared imagery. Radars and telemetry stations tracked the target and the interceptor till the destruction of the target. The launch has proved the Ballistic Missile Defence (BMD) prowess of the country.

CPWD to build HAL's Greenfield helicopter factory

Hindustan Aeronautics Ltd (HAL) has signed a Memorandum of Understanding (MoU) with Central Public Works Department (CPWD) for execution of infrastructure development works at HAL's new Greenfield helicopter facility at Tumakuru. The MoU was signed at a programme held as part of Aero India 2017 recently.

Under this collaboration, HAL and CPWD are set to execute stage 1 construction. T Suvarna Raju, CMD, HAL, Narendra Kumar, Additional Director General, CPWD, V Natarajan, General Manager, Helicopter Division, HAL and other senior officers were present on the occasion.

"The project spread over 615 acres of land allotted by the Government of Karnataka will house infrastructure for production and testing facilities, self-sufficient manufacturing capabilities of a wide range of helicopters of 3-ton to 12-ton class", says T. Suvarna Raju, CMD, HAL.

Prime Minister Narendra Modi had laid the foundation stone for HAL's new helicopter manufacturing facility at Biderehalla Kaval, Gubbi Taluk, Tumakuru last year.

Mahindra Aerostructures wins Saab contract for sheet metal components

Saab has awarded a long-term contract to Mahindra Aerostructures for the supply of sheet metal components for Airbus door assemblies.

The components include skins and detail parts that will be produced by Mahindra in their facility near Bengaluru. The parts will be shipped to Saab facilities in Sweden for integration into door assemblies for the single-aisle program.

Saab Aerostructures, part of the SEK 27 Bn Saab Group, is a leading Tier 1 in the global aerospace industry and a design-to-build partner to OEMs on several major aircraft programs.

Jindal gets high nitrogen steel technology from DRDO

Defence Metallurgical Research Laboratory (DMRL), Hyderabad, a premier research laboratory of Defence Research and Development Organization (DRDO) and Jindal Stainless (Hisar) Ltd (JSHL) signed the Licensing Agreement for Transfer of Technology of High Nitrogen Steel (HNS) for armour applications. Speaking on the occasion the Minister of State for Defence, Dr. Subhash Bhamre congratulated DMRL and DRDO for their outstanding achievement in developing a breakthrough technology for armour applications and complimented JSHL for partnering with DRDO. The Minister noted that HNS technology is a step forward towards Army's quest for lighter and high performance armouring material compared to the currently used materials. JSHL is a stainless steel manufacturer, with facility at Hisar (Haryana), backed with strong production facilities including the triplex refining route, which is used for production of HNS.

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'Printing' the future!

3D printing could bring immense benefits for automotive production, including the ability to produce lighter-weight parts that could lead to greater fuel efficiency.

Ford Motor Company is exploring how large-scale one-piece auto parts, like spoilers, could be printed for prototyping and future production vehicles, as the first automaker to pilot the Stratasys Infinite Build 3D printer.

Capable of printing automotive parts of practically any shape or length, the Stratasys Infinite Build system could be a breakthrough for vehicle manufacturing – providing a more efficient, affordable way to create tooling, prototype parts and components for low-volume vehicles such as Ford Performance products, as well as personalised car parts. The new 3D printer system is housed at Ford Research and Innovation Center in Dearborn.

"With Infinite Build technology, we can print large tools, fixtures and components, making us more nimble in design iterations," said Ellen Lee, Ford technical leader, additive manufacturing research.

Ford is the first automotive company to trial this technology with Stratasys, and is currently exploring potential applications for future production vehicles, like Ford Performance vehicles or for personalised car parts

An emerging technology for manufacturing

Wider adoption of 3D printing has been driven by recent technology advances, new areas of application and government support, according to Global Industry Analysts. By 2020, the global market for this emerging technology is expected to reach $9.6 billion, the organisation reports. As 3D printing becomes increasingly efficient and affordable, companies are employing it for manufacturing applications in everything from aerospace to education to medicine.

3D printing is not yet fast enough for high-volume manufacturing, but it is more cost efficient for low-volume production. Additionally, minus the constraints of mass-production processes, 3D-printed parts can be designed to function more efficiently.

3D printing could bring immense benefits for automotive production, including the ability to produce lighter-weight parts that could lead to greater fuel efficiency. A 3D-printed spoiler, for instance, may weigh less than half its cast metal counterpart. The technology is more cost efficient for production of low-volume parts for prototypes and specialized race car components. Additionally, Ford could use 3D printing to make larger tooling and fixtures, along with personalised components.

"With Infinite Build technology, we can print large tools, fixtures and components, making us more nimble in design iterations."

Ellen Lee, Ford technical leader, additive manufacturing research.

How it works

With 3D printing, specifications for a part are transferred from the computer-aided design program to the printer's computer, which analyzes the design. The device then goes to work, printing one layer of material at a time, then gradually stacking layers into a finished 3D object. When the system detects the raw material or supply material canister is empty, a robotic arm automatically replaces it with a full canister. This allows the printer to operate unattended for hours – days, even.

Benefits of 3D printing

Using traditional methods to develop, say, a new intake manifold, an engineer would create a computer model of the part, then have to wait months for prototype tooling to be produced. With 3D printing technology, Ford can print the intake manifold in a couple of days, at a significant cost reduction. 3D printing is not yet fast enough for high-volume manufacturing, but it is more cost efficient for low-volume production. Additionally, 3D-printed parts can be designed to function more efficiently.

Source: Ford Motor Company

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INTERVIEW

'Wise' advice!

Professor **Elliott Weiss**, an expert faculty on technology and operations at Darden, was in India recently. In an exclusive interaction with The Machinist, he shared interesting insights about 'Lean Practices'.

By Niranjan Mudholkar

About Professor Elliott N. Weiss

Oliver Wight Professor of Business Administration Elliott N. Weiss teaches in the Technology and Operations Management area at Darden School of Business, University of Virginia. He has extensive consulting experience for both manufacturing and service companies in the areas of production scheduling, workflow management, logistics, lean conversions and total productive maintenance.

The Darden School of Business, University of Virginia, uses the case method, where each one of the class is a different case study. Over 30 years of his teaching experience at Darden, Professor Elliott N. Weiss has done more than 150 case studies. He also spends a lot of time talking to shopfloor professionals to make his teachings relevant to his students. Darden also has extensive executive programs as well where Weiss' students are actual managers with real work experience. This gives him a very good objective perspective into how shopfloors are functioning and how they should be functioning.

Weiss also loves to draw parallels between operations management on the shopfloor with day to day life. And he says that his students find it easy to adopt and understand. He believes that principles that are applicable on the shopfloors are also applicable on the services business as well as in day to day life.

"What I try to do is to make them adopt these principles in their daily life and see if it makes any difference. Whether they are getting out of the house, or making toast or doing the laundry or raising their kids, I encourage them to relate with the principles of operations management. In fact, I assign them projects where they are required to apply the principles of operation management to their own life. So not only do they have to learn it in the classroom but also have to adopt these lessons in their day to day life. And it works," says the Professor. He has students who have improved their tennis games by applying 'leaning thinking' to their games. And one student also learnt how to 'optimise' baby feeding in the middle of the night!

> "Lean is creating value through strategic elimination of waste. The idea is to get rid of processes or steps that are not adding value. Industry 4.0, with use of technology and artificial intelligence, also works towards the same goal."

Indian manufacturing is going through a very dynamic phase. On one hand it needs to provide employment to hundreds of thousands of young people (who are either unskilled or semi-skilled) and at the same time it needs to adopt advanced technologies like automation and robotics to stay relevant and competitive. How can these two seemingly opposite aspects be balanced? "I think they are complementary rather than contradictory. It's not one or the other; it's both of them simultaneously," he believes.

He thinks that the abundance of young people is a big advantage that India has over many other countries. It means easy availability of work force that's relatively cheap on the global scale. So for labour intensive operations, India is the place to be. At the same time you have the IITs and the IIMs that are producing world class talent. Given the overall scenario, I think both labour intensive operations and advanced automated operations can co-exist in India," he adds. The problem, he says, is with poor infrastructure. "Without good infrastructure and availability of basic utilities, 'Make in India' will not work the way it is expected to. Equally important is to tackle the bureaucratic obstacles and the corruption resulting out of it," he cautions.

How do you marry lean with 'Industry 4.0'? "Lean is creating value through strategic elimination of waste. The idea is to get rid of processes or steps that are not adding value. Industry 4.0, with use of technology and artificial intelligence, also works towards the same goal. So they are complementary," he says.

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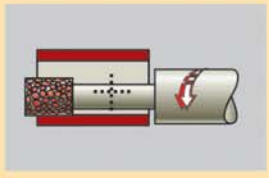
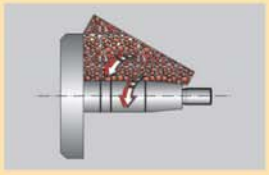


FIG-200 SPL CNC
BIG BORE GRINDER

FIGT-300 CNC
FOUR STATION TURRET

FIGE-150 CNC
ID / OD GRINDER

CNC Cylindrical Grinding



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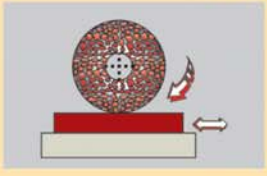
LONG SHAFT GRINDER

AWH-2000 CNC
HEAVY DUTY GRINDER

SWH-400 CNC
AUTO LOADING

Surface Grinding



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SG-63
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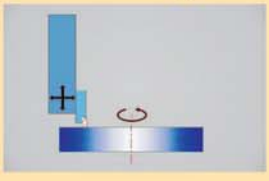

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DAIMLER TRUCKS & BUSES APPOINTS MARTIN DAUM AS NEW MEMBER OF THE BOARD OF MANAGEMENT WITH EFFECT FROM MARCH 1, 2017

Daimler AG appointed Martin Daum (57) as the Member of the Board of Management with responsibility for the Daimler Trucks and Daimler Buses divisions effective as of March 1, 2017. The appointment is for a period of five years. He succeeds in this position to Dr. Wolfgang Bernhard, who is leaving the company of his own volition and for personal reasons.

"With Martin Daum, we are appointing a very successful and experienced executive to the Board of Management as Head of the Daimler Trucks and Daimler Buses divisions," stated Dr. Manfred Bischoff, Chairman of the Supervisory Board of Daimler AG. "He looks back on 20 years of experience in the industry and knows the cyclical commercial-vehicle business from all perspectives. We are convinced that he will successfully meet the upcoming challenges in the next years, continue along the successful path of Daimler Trucks & Buses and further strengthen their worldwide leading positions."

NATARAJAN CHANDRASEKARAN APPOINTED AS NEW CHAIRMAN OF JLR

Natarajan Chandrasekaran announced as Director and Chairman

Natarajan Chandrasekaran has been appointed Director and Chairman of the Jaguar Land Rover Automotive plc board.

Chandrasekaran is Chairman of Tata Sons and also holds the following positions: Director on the board of the Reserve Bank of India, board member of Tata Steel Limited and board member of TCS Foundation.

HIROTO SAIKAWA APPOINTED AS NISSAN CHIEF EXECUTIVE OFFICER

At the recommendation of Chairman of the Board and Chief Executive Officer Carlos Ghosn, the Nissan Board of Directors has decided that as of April 1, 2017, Hiroto Saikawa will assume the position of Chief Executive Officer. Mr. Ghosn will continue to serve as Chairman of the Board of Directors, and he will seek a renewal of his mandate at the company's general shareholders meeting in June 2017.

This planned management evolution follows Ghosn's leadership of the recent expansion of the Renault-Nissan Alliance to include Mitsubishi Motors, which positions the Alliance among the top automotive groups in terms of scale.

As Chairman of all three Alliance companies, and as Chief Executive Officer of the Renault Group, Mr. Ghosn wishes to focus more of his attention on the expansion and stewardship of the Alliance, as its Chairman and CEO. In this role, he will ensure that the opportunities available to Alliance members are fully harnessed.

GM AND HONDA ANNOUNCE EXECUTIVE LEADERSHIP OF FCSM

General Motors Co. and Honda have announced the executive structure for their recently established joint venture company, Fuel Cell System Manufacturing, LLC (FCSM). Suheb Haq of GM will serve as the first president of FCSM, and Tomomi Kosaka of Honda will be the new company's vice president. Haq and Kosaka will be responsible for operations, overseeing the start-up of the JV and on-going manufacturing operations. GM and Honda plan to rotate the positions of president and vice president every two years. Haq most recently was director of GM Operational Excellence. Kosaka was president & CEO of Honda of America Mfg., Inc., responsible for manufacturing operations of three auto plants and an engine plant in Ohio.

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THIERRY LESPIAUCQ TAKES CHARGE OF VOLKSWAGEN PASSENGER CARS IN INDIA

Michael Mayer is completing his assignment as Director, Volkswagen Passenger Cars – India and will take up the role of 'Head of Sales and Marketing' for Volkswagen Passenger Cars – China; reporting in to the CEO of Volkswagen brand in China. Thierry Lespiaucq, MD – Volkswagen Group Sales India Private Limited, will take charge of Volkswagen Passenger Cars in India until further notice. Under Mayer's leadership since June 2014, Volkswagen Passenger Cars in India prepared and implemented substantial expansion of its product portfolio with the launch of Beetle in 2015, followed by Ameo and GTI in 2016, and Tiguan and Passat, which have been planned for 2017. He also spearheaded the SARVOTTAM initiative, a bouquet of multiple initiatives focused at enhancing the quality and efficiency of Volkswagen customers' experience in India.

JOHANNES ROSCHECK IS THE NEW PRESIDENT OF AUDI DO BRASIL

Dr. Johannes Roscheck is the new President and CEO of Audi do Brasil. With great expertise in the automotive sector and knowledge of the Brazilian market, Roscheck, who is an Austrian, has served as CFO in the brand's production unit in Curitiba already in the 1990s.

Industrial Engineer expert in engine and automobile production, Dr. Johannes Roscheck holds a degree in Industrial Engineering in Austria, and later achieved a PhD in Mechanical and Industrial Engineering. The new Managing Director has more than 20 years of experience in the automotive sector, with international practice in the areas of Finance and Production. Within Audi, he held several executive positions at Audi in Hungary, the United States, Germany and Brazil, having held other positions in the Volkswagen Group and consulting firms as well.

KAMAL BALI: NEW CHAIRMAN OF CII KARNATAKA

Kamal Bali, Managing Director, Volvo India Private Ltd has been elected as the Chairman of CII Karnataka State Council for the year 2017-18. His name was announced at the meeting of the reconstituted Southern Regional Council held in Bangalore recently.

Bali was the Deputy Chairman of CII - Karnataka for the year 2016 -17. Kamal Bali, 58, joined the Volvo Group in India in April 2014, as Managing Director and a Board member of the company. With an illustrious career spanning over three decades, predominantly in the automotive industry, Kamal has worked for well-known Indian brands and established multinational corporations in India. He has had an insightful experience in the functional areas of sales, marketing and supply chain, before taking over P&L responsibilities in the year 2002.

DARREN EDWARDS IS THE NEW VP/MD OF BOEING DEFENCE AUSTRALIA

Boeing has named Darren Edwards as Vice President and Managing Director of Boeing Defence Australia (BDA), the company's largest international subsidiary. He succeeds Ken Shaw, who had been appointed vice president of Supply Chain for Boeing Global Services.

Edwards will be based at BDA's head office in Brisbane, where he will also serve as a board member of Boeing Australia Holdings and a member of the Boeing Australia leadership team led by Boeing Australia, New Zealand and South Pacific President Maureen Dougherty.

Edwards returns to BDA after serving as its chief operating officer from 2011 to 2015. He spent a decade prior with Boeing in Australia and in the U.S. in leadership roles spanning the Boeing Service Company, Supplier Management and Boeing Defense, Space & Security.

Edwards' most recent position was general manager Australia and New Zealand of Salentis, where he led the development of bids and tenders for global government and commercial customers.

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The MACHIE is back

The 2017 edition of The Machinist Super Shopfloor Awards has been announced. Even we are keen to know who will take home the coveted Machie trophy. If you think your plant deserves it, then nominate now.

Partners

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Date: May 11th 2017

Location: Chennai

By Swati Deshpande

It's that time of the year again! Nominations for The Machinist Super Shopfloor Awards 2017 are now open! The ceremony will have a new look and feel with the new venue. However, what is important for now is the nomination process that more or less remains the same.

What's new is the categories. The 2017 edition will have three new categories— Human Resources (HR), Corporate Social Responsibility (CSR) and Supply Chain Management. So, there are three more avenues to get more recognition. The previously known category of 'Technology Adaption' is coming to you in a new way. Since it is an age of 'Industry 4.0', we have renamed it as Digital Manufacturing.

The Categories for nominations are:

- Safety
- Productivity
- Digital Manufacturing
- Innovation (Product/ Process)
- Green Manufacturing
- Machining Excellence
- Quality
- Human Resources (HR) new
- Corporate Social Responsibility (CSR) new
- Supply Chain new

As we set the stage for new winners, we would like to hear suggestions from the industry. Its awards for the industry, and hence it should be the way you want it. With this thought, we have created a contest–Your Awards Your Way. If you have any suggestion for us on the conduct of the award function, you can share it with us and we would like to incorporate it.

Venue

The Machinist Super Shopfloor Awards 2017 will be held at Chennai, the Detroit of India. As the city has the recognition as the auto hub, it would definitely be an honour for the winner to receive an award in prestigious city.

As mentioned before, the nomination process has already begun and we are flooded with the confirmations from most of the top-notch companies in the manufacturing space.

For more information on the nomination process, you can log on to http://supershopfloorawards.themachinist.in/

Only the best shopfloor will bag the 'Machie'!

Previous editions

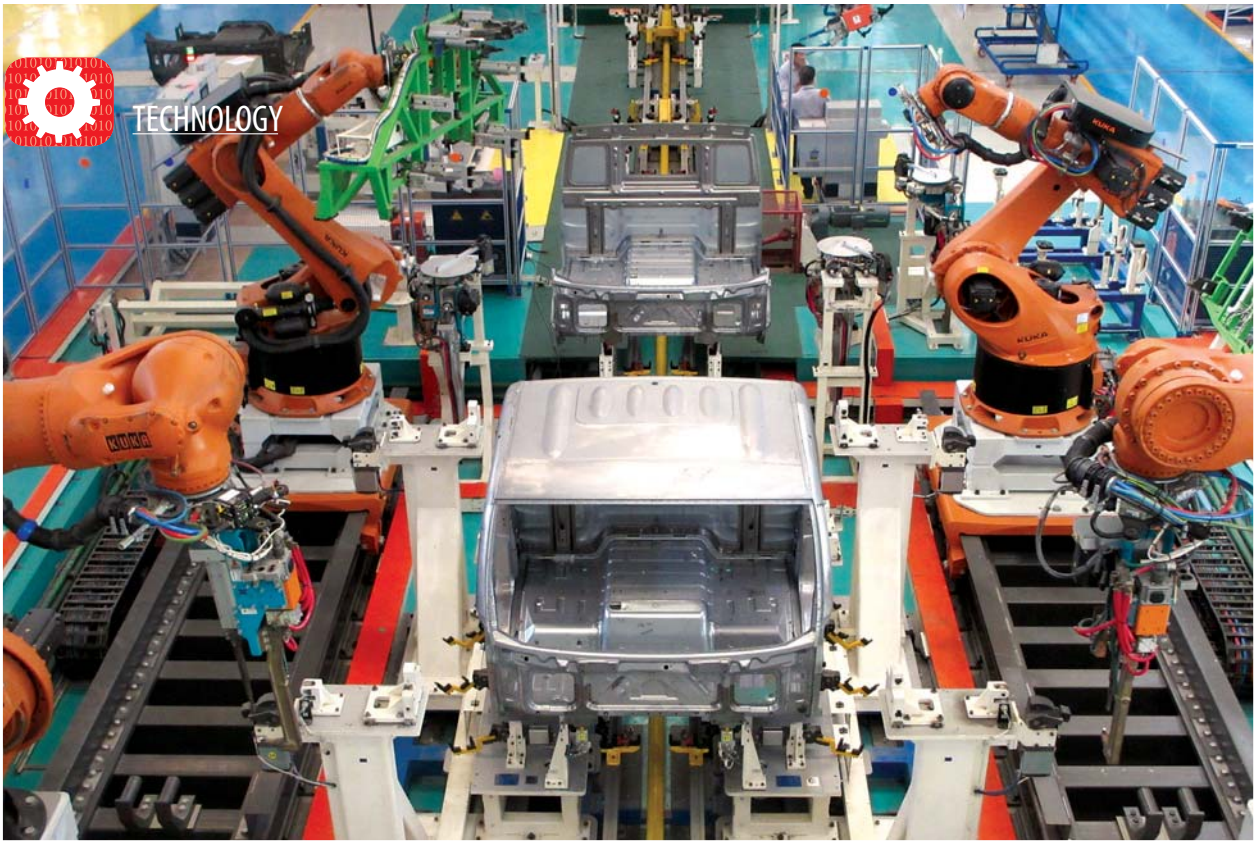
Going little down the memory lane, let's look back at the previous edition of the awards. We created a benchmark in 2015 by establishing an awards platform for the manufacturing industry. This edition was graced by Kalraj Mishra, Union Minister of MSME (Government of India).

Taking the platform to the next level, we added glamour quotient to the ceremony in 2016. Red-carpet ambience and telecast on the national business channel took the ceremony to the new heights. It would not be wrong if we say that now Super Shopfloor Awards is known as the Oscars of the Indian manufacturing industry.

Testimonials of previous editions

> The event was very crisp with improved precision. The timing selected for the program was suitable for most of the participants. The CEO Panel Discussion was very well organised and conducted. Overall ambience, food, entertainment program and award presentation was just perfect! Kudos to all the proud recipients of 'Machie'! I wish all the very best to the team of 'The Machinist', and hope to see you again next year!!
>
> **Shriram Date,** Eaton Fluid Power Ltd.

> The 'red carpet' treatment to the manufacturing industry will boost their moral to work harder. Hats off to the idea of a 'Life Time achievement Award'! Eminent industrialists joining the CEO forum discussion on hot topic of Industry 4.0 was a welcome step. Blending musical entertainment with the award function was a risky cocktail, however towards the end we all felt this was the right blend.
>
> **Hemant Watve,** MD & CEO, Wilo Mather and Platt Pumps Pvt. Ltd.



Moving towards **digital era**

Harihar P, Senior Vice President, Manufacturing and Project Planning, Ashok Leyland Ltd says smart manufacturing gives way to high degree of flexibility.

By Swati Deshpande

In the times when the government is promoting digitalisation, the manufacturing sector is going though the similar transformation towards digital age. We can see the implementation of solutions such as Industry 4.0, Internet of Things, etc. which looked like distant future till yesterday. More & more companies are focusing on implementation of smart manufacturing solutions. Speaking on the same, Harihar P, Senior Vice President, Manufacturing and Project Planning, Ashok Leyland Ltd said, "In the current market dynamics, smart manufacturing has transformed manufacturing process to strengthen the balance sheet of any organisation. This process of adaptation of change in processes goes beyond shop floor, networking of internal and external stakeholders, achieving scalability with best quality to keep costs under control."

"Smart manufacturing gives way to high degree of flexibility, ranging from adaptation of more variety with velocity to move from push to pull system. This is a collaborative approach to build intelligent factory with adaptability, resource efficiency, automation and ergonomics to face challenges of a volatile and cyclic industry,"

Harihar P, Senior Vice President, Manufacturing and Project Planning, Ashok Leyland Ltd

Indian industry is now progressing towards creating global footprint. More industries are trying to leverage on technology upgrade and migrate to Industry 4.0 which helps in creating future factories.

"Smart manufacturing gives way to high degree of flexibility, ranging from adaptation of more variety with velocity to move from push to pull system. This is a collaborative approach to build intelligent factory with adaptability, resource efficiency, automation and ergonomics to face challenges of a volatile and cyclic industry," he further added.

Human machine interaction

Ashok Leyland is a 68 year old organisation that has scaled up its manufacturing footprint in India and abroad while

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embracing new technologies. "Even though our manufacturing plants were established at different times, technology in each plant is less than 10 years old. We have also maintained a good blend of human-machine interaction with strategic initiatives focusing on quality, cost, ergonomics, safety and automation," Harihar mentioned.

"This has significantly benefitted the organisation in terms of market share, balance sheet and financials. Strong financials have not only enabled us to extend our product portfolio from 1.25T to 49T, but also helped us in focusing on non-auto sectors, apart from enhancing capability and social status of our human resources. This has further given impetus to us to take up key challenges of market swing, product upgrade and meet stringent legal and statutory requirements focusing on customer requirements with digital touch," he continued.

Ashok Leyland's shopfloor in the Pantnagar plant

Industry 4.0 is now being looked at the path towards achieving technological leadership by creating a "Smart Factory" with suitable integration of customers and partners in business and value processes creating the foundation of Internet of Things

Obviously large enterprises are implementing new technologies. However SMEs are also equally curious and open on embracing digital age. Speaking on the same, Harihar asserted that as Indian government is promoting digitisation, large industries are embracing smart manufacturing. SMEs are experiencing how automation and new technologies are changing their landscape and hence are looking at ways to embrace these technologies to become visible.

"From the SMEs perspective, transformation will be very challenging considering the investment involved in the processes which include training of their work force. Hence, options like retrofitting or conversion of existing processes would be beneficial. Additionally, few SMEs could work together and embrace new technology with collaborative approach to optimise the cost as well as get exponential benefit of operational efficiency," he continued.

Training & development

Any transformation begins with apt awareness and knowledge amongst the employees about the new technologies and operations. Smart manufacturing solutions are no exception to this. "Smart factories require an incredible amount of effort in building competencies towards know-how and techniques, hence training and skill enhancement need to undergo metamorphosis. It requires more electronics and latest technology supported by a holistic eco-system which demands re-shaping of the industry structure at every step and in turn redefines boundaries, necessitating seamless skill enhancement," opined Harihar.

Speaking on the implementation Ashok Leyland, he stated, "We are constantly focusing on redefining training modules, restructuring skill development centers to make our resources fully geared up to face challenges upfront. We also believe in creating a more innovative environment with collaborative approach in training to have better understanding and maximise benefits."

Conclusion

Make in India initiative is triggering more global players' entry into the Indian market with latest technology, which in turn is leading to increasing competition. "This is pushing the industry further to review their strategies towards maximising efficiency, hence, the man-machine interface and the move towards intelligent manufacturing,"Harihar said.

"Indian industry is now progressing towards creating global footprint. More industries are trying to leverage on technology upgrade and migrate to Industry 4.0, which helps in creating future factories. Industry 4.0 is now being looked at the path towards achieving technological leadership by creating a "Smart Factory" with suitable integration of customers and partners in business and value processes creating the foundation of Internet of Things," he concluded.

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Why **automotive industry** needs **virtualisation?**

It's an age of digitisation. No industry is exception to this. In the automotive industry virtualisation is becoming more and more important. Here is an overview on the need of virtualisation.

By Debashis Panigrahi

The automotive Infotainment Industry has evolved from having standalone systems for various functions like infotainment, telematics, and diagnostics to more integrated systems with connectivity being the key. We have seen silos being broken and systems being more interdependent and inter-connected, resulting in real-time, on demand services like Spotify and Connected Diagnostics among others.

Virtualisation is the process of creating a software-based (or virtual) representation of something rather than a physical one, boosting efficiency and agility for all size businesses. The question is can the same solution which was used in Computer industry be used to solve the problem Automotive Industry is facing now.

The auto industry is at an inflection point and the key for success is going to be how Auto industry address the growing demand for connectivity, convenience and convergence (3Cs) i.e. connectivity of a smart device, convergence of a high end Cockpit and convenience/comfort of a luxury car.

The consumer industry has seen rapid innovation with short product life cycles ranging from 6 to 18 months. Consumer devices like Mobile phone, iPad have become feature rich with intuitive user experiences. The consumer who has experienced these devices is expecting the same experience in automotive cockpit.

Traditionally there has been one ECU per function in a car. Due to the demand of more features, OEMs have integrated multiple ECUs, resulting in explosion of ECUs in cars. The number of ECUs in high end cars has increased from close to 40 during late 2000 to 125+ now in high end cars. The con-

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sumer expects a feature packed cockpit at a lower cost. Hence, there is a pressure to optimize the cost of cockpit solution.

In order to fulfill the demands of the customer, we need to find a way that can potentially reduce costs, testing/integration efforts that come with complexity, maintaining the software integrity and security. A few years back, computer server industry was also facing a similar problem that was solved using virtualization.

Virtualisation is the process of creating a software-based (or virtual) representation of something rather than a physical one, boosting efficiency and agility for all size businesses. The question is can the same solution which was used in Computer industry be used to solve the problem Automotive Industry is facing now. Some of the key requirements from a virtualization solution, also called as Hypervisor or Multi-visor in Auto industry are:

- Different levels of criticality, for e.g. IVI needs to have a greater tolerance for faults than an instrument cluster
- Fault tolerance and recovery i.e. failure in one system should not result in failure of other system
- Graphics, video , vehicle network has to optimised so that critical CAN messaged are processed in time and application prioritization can be done

There are two approaches for solving the above problem, first is to modify the Hypervisor, which will need validation and re-certification effort and second is to make change in guest OS, which will be less risky due to localization of faults/changes and flexible. Hence, we recommended approach of making changes to guest OS for adaptation to different application/cluster needs.

Rapid innovation in Semiconductor industry with emergence of high-end SoCs with powerful IPs including GPUs, DSPs, Hardware support for virtualisation has enabled us to consolidate and functionally group the ECUs into various domains namely Cockpit domain, Power train domain, Safety domain, Body domain for e.g. Cockpit domain consolidates IVI, Instrument cluster, telematics control unit, Head up display functions.

Traditionally there has been one ECU per function in a car. Due to the demand of more features, OEMs have integrated multiple ECUs, resulting in explosion of ECUs in cars. The number of ECUs in high end cars has increased from close to 40 during late 2000 to 125+ now in high end cars. The consumer expects a feature packed cockpit at a lower cost. Hence, there is a pressure to optimize the cost of cockpit solution.

Sasken has developed a solution to consolidate the cockpit controller unit that includes mixed criticality functions like Instrument cluster having high criticality and medium criticality functions like IVI. Sasken's solution comprises of an infotainment system based on AGL 3.0, leveraging the work done by open source community and a market proven digital instrument cluster. This is also driven by the fact that many of the high-end SOCs integrate units like modem, DSP in a single SOC.

Connected car market worth **37.7 million units** by 2022

According to the new market research report "Connected Car Market by Hardware (Semiconductor Components, and Connectivity ICs- Wi-Fi, Bluetooth and Cellular), Application (Telematics, Infotainment, and Combined Telematics & Infotainment), and Geography - Global Forecast to 2022", published by MarketsandMarkets, the market is expected to grow from 5.1 million units in 2015 to 37.7 million units by 2022, at a CAGR of 35.54 percent during the forecast period.

Rising demand for embedded infotainment system, usage-based insurance (UBI), implementation of intelligent transportation system (ITS), and government mandates on telematics application are expected to drive the growth of the connected car market. Moreover, rapid urbanisation in Asia Pacific (APAC) countries also contributes to the growth of the connected car market.

Semiconductor component which includes microcontroller, FPGAs, DSPs, and memory chips has the largest market share in North America. The high adoption rate of telematics and infotainment applications along with the presence of major semiconductor companies such as Intel Corporation (U.S.), Texas Instruments, Inc. (U.S.), Qualcomm, Inc. (U.S.), Micron Technology, Inc. (U.S.) and NVidia Corporation (U.S.) along with automobile manufacturer such as General Motors Company (U.S.) and Ford Motors Company (U.S.) are driving the growth of the connected car market for semiconductor components in North America.

Telematics application which includes eCall, fleet management, remote diagnosis, and usage-based insurance (UBI) services is expected to grow at the highest CAGR during the forecast period. The government mandates on telematics application, implementation of intelligent transportation system (ITS), rapid urbanisation, and rising demand for UBI are expected to drive the connected car market for telematics application during the forecast period.

Source: MarketsandMarkets

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Opportunities abound for **Indian investors** in the Gulf

By Khalid Al Rumaihi, *Chief Executive of the Bahrain Economic Development Board*

India is home to a large number of innovative, successful companies and as they look to expand internationally, the logistical, cultural and business links to the GCC make it an obvious location for growth.

But when many people think of the Gulf region, it is still oil that invariably springs to mind.

Yet the Gulf remains one of the most exciting investment opportunities in the world. The fast growing, affluent, and increasingly well-educated population, along with increasing integration within global trade and travel flow have been strong long-term drivers of growth. While the low oil prices have undoubtedly created challenges, we also see it as an opportunity in disguise. It has prompted fresh waves of economic diversification and reform efforts across the Gulf Cooperation Council (GCC) countries, reducing reliance on hydrocarbons and encouraging development across a broad range of sectors.

My conversations, meetings, and panel session at the recent World Economic Forum Annual Meeting in Davos, centred around two key themes relevant to continued growth and diversification of the GCC, both of which have far-reaching consequences for international investors. One was the critical importance of both the physical infrastructure projects and the soft infrastructure in areas such as regulation, education and preparing for the new data revolution, to improve the overall business environment and drive forward improvements in productivity. The second was the gradual paradigm shift from the public to the private sector as the main driver of regional economic growth.

This is the new domain of GCC governments- the enabler of economic growth via the reforms that it enacts. As these reforms open up more areas of the economy and ease access for international investors, Indian businesses will reap the benefits.

Bahrain has realised for some time the vast positive impact of liberalising its business environment and of encouraging the development of non-oil sectors.

At the beginning of the economic diversification efforts in the 1970s, Bahrain quickly established itself as a regional financial services centre. The State Bank of India opened its first office in Bahrain in 1997 and since then other Indian banks, such as ICICI, Canara Bank and Bank of Baroda, have followed.

Another example, in 2003, Bahrain introduced the Telecom Regulatory Authority to open up its telecommunications industry to competition by awarding licenses to external providers. The industry expanded from the sole national provider in 2003 to over 20 different operators today and its contribution to GDP has grown by about 4-5 percent over the last 6 years.

These reforms have not only led to growth within the telecoms sector itself, they have also helped to support the development of sectors such as ICT, where companies like Tech Mahindra, Tata Consultancy Services and Mindteck have established bases in Bahrain to access the opportunities in the GCC market.

We are aware that our strategic geographical location makes us a natural gateway to the Gulf and as such, want to provide the best environment for overseas companies to access other markets. Indian manufacturing companies, for example, can utilise state-of-the-art transport networks and logistics facilities to export their products to customers throughout the region, in particular the large consumer base in Saudi Arabia.

2017 is a big opportunity for the combined GCC market, which is currently valued at around $1.5 trillion and is expected to reach $2 trillion by the end of 2020, to enhance its offering to international investors.

Improvements to both the physical and the soft infrastructure will create the supportive environment that will allow international investors to thrive and access the huge potential of the GCC. The onus is then on the companies themselves to take advantage.

Building the future: **the potential of the Gulf**

*An interview with **Husain Rajab,** Director of Manufacturing & Logistics at the Bahrain Economic Development Board*

What are the overall growth prospects for Bahrain?

Bahrain was one of the first countries in the Gulf region to diversify its economy away from the hydrocarbons industry. Looking at the performance of the overall economy, the modern day picture is actually one of considerable resilience. During the first three quarters of 2016, the Bahraini economy expanded by a real 3.6 percent. Within this, non-oil growth reached a remarkable 4.7 percent and Bahrain's well-diversified economy is poised to continue growing.

Increased investment in infrastructure is playing a significant role in driving growth in Bahrain and there are over US$32bn worth of projects (comparable to our GDP) in the pipeline across a range of sectors, opening many doors for Indian companies. Aluminium Bahrain (ALBA) is undergoing a $3bn Line six expansion project bringing the company's production capacity to around 1.3 million tonnes per annum. Bahrain Petrochemical Company's (BAPCO) is undergoing a $5bn modernization project that aims to boost the processing capacity of its Sitra oil refinery to 360,000 barrels per day.

What specific incentives do Indian and other international manufacturers benefit from by locating in Bahrain?

Bahrain and India have a long shared history, with 4000 years' worth of commerce between the nations. India is one of the world's fastest-growing economies, and therefore recognises the opportunities of operating in an environment such as the GCC region.

The Government of Bahrain is focused on ensuring ease of business for international investors who seek to access the GCC market. This includes a number of incentives and measures which successfully attract foreign investment; such as a highly competitive taxation system, a skilled local workforce, 100 percent foreign ownership in most sectors, competitive prices for office spaces, and unrivalled access to Saudi Arabia, which is considered to be the largest market in the Gulf Region.

In addition to duty free access throughout the GCC and Greater Arab Free Trade Area by the Greater Arab Free Trade Agreement (GAFTA), we have an FTA with the US, allowing companies to export to the world's largest market.

Could you give us an overview of Bahrain's manufacturing sector?

Bahrain is one of the pioneers of the regional downstream hydrocarbons sector, and the MENA region is expected to have a 10 percent share of the global petrochemical production in the next few years. A large aspect of this is the chemicals and plastics sector, which represents the highest number of planned industrial projects in the GCC, posting robust growth and an upward trajectory. As a result, Indian manufacturing companies like Chemco Group recently invested $10m in Bahrain in order to serve the packaging requirements for the region, and JBF Bahrain which expanded from one line to three for greater versatility.

Bahrain's strategic location in the heart of the Gulf makes it a gateway to the region and a bridge between the east and the west. The Kingdom continues to make substantial investments in its modern logistics infrastructure to support the operations of manufacturing companies that export their products around the region and beyond.

What are the specific opportunities for Indian companies within these sectors?

Opportunities exist across a wide range of manufacturing industries. Bahrain's thriving aluminium sector attracts world-class casting and extrusion companies. The construction industry is similarly exciting; as the sector expands, Bahrain needs more Building Information Modelling capabilities in country, as well as design engineering. Indian companies have good expertise in both areas. Another interesting subsector is heating, ventilation and air conditioning (HVAC). Temperatures are predicted to increase on average by 2–4° C by 2046 in the Gulf, which will increase the demand for HVAC products. The expansion of consumer demand in the GCC is also creating demand for fast-moving consumer goods that cannot be served by imports alone. Large international businesses are increasingly basing operations in Bahrain to manufacture products for the region.

Strengthening ties with India

*An interview with **Dharmi Magdani**, Regional Director for India at the Bahrain Economic Development Board*

What is the purpose of the Bahrain Economic Development Board and how does it contribute to the development of the Kingdom of Bahrain?

The Bahrain Economic Development Board (EDB) is an investment promotion agency which provides advice on business growth and investment opportunities in the Kingdom. We are here to support businesses from around the world that are considering setting up in Bahrain and we provide guidance to relevant government ministries and regulators, assist with all applications and permits, and offer an aftercare programme that ensures those businesses' needs continue to be met during their time in Bahrain.

How is the EDB contributing to enhancing trade ties with India?

The EDB has offices based at the Bahrain Embassy in Delhi and another in Mumbai that provide information and support that is specifically tailored to interested investors in the South Asia and India region.

As the EDB's Regional Director, I am on hand to assist companies throughout the process and would encourage any businesses with queries on Bahrain's business environment, investment opportunities or its liberal lifestyle to get in touch.

We organise international roadshows to India so that we can showcase the best that Bahrain has to offer directly to investors. The EDB and the most senior members of government conduct regular visits to India, including HM King Hamad who visited in 2014.

The EDB also attends summits based in India, such as the Nasscom BPM Summit and the WEF India Forum, promoting Bahrain as an investment destination as well as organising workshops and seminars.

What Indian manufacturing companies are already based in Bahrain?

A number of large Indian corporations, in particular financial services, ICT and manufacturing companies, have based their regional operations in the Kingdom.

Indian manufacturing companies such as Chemco and JBF Industries are well-established here and others are increasingly looking towards the Gulf region and to Bahrain, which can provide a business-friendly gateway to this market. In the past year, both Electrosteel and Ion Exchange have invested in facilities here to better serve the region. Additionally, the

Confederation of Indian Industry has its first Middle East office in Bahrain.

What is life like for Indians living in Bahrain?

Indians have been part of Bahrain's community for centuries and most find living in Bahrain extremely enjoyable, as do expatriates from other nations- Bahrain is ranked 9th globally and first in the region for Expat Living in HSBC's 2016 survey. There are currently 350,000 Indian residents in Bahrain, the Kingdom's largest single expatriate community.

The Manama Souq is home to a 200 year old Hindu temple and Indo-Bahrain cultural organisations are thriving, with the Bahrain India Society, the Bahrain Keraleeya Samajam and the Indian Club as a few examples.

What stands out about Bahrain is that expatriate communities are not isolated—far from it, in fact. Instead of keeping to gated compounds, families live across the island, fully integrating with the multicultural community around them. The standard of healthcare is extremely high, as is the quality of education, which is particularly important to Bahrain. In addition to Bahraini, British and other foreign institutions, The Indian School, founded in 1950, is one of the largest expatriate schools in the Arabian Gulf.

Perhaps most importantly, people from all corners of the world have been finding their way to Bahrain throughout its long history, and always received a warm welcome. Indians deciding to make it their home in 2017 will find it no different.

For more information on investing in Bahrain, the Bahrain EDB has two dedicated offices in India in New Delhi and Mumbai headed by Ms Dharmi Magdani.
Email: dharmi.magdani@bahrainedb.com

Success Stories

JBF

JBF Bahrain, a subsidiary of JBF Industries Ltd., has operated in Bahrain since 2013 when it invested US$200 million in the construction of a factory at the Bahrain Industrial Investment Park (BIIP). It is one of the ten largest manufacturing companies in the Kingdom and one of the ten largest manufactures of bottle-grade chips and polyester films internationally, exporting to over 50 countries including the USA, Canada and several European nations.

According to Kunjan M. Choksi, General Manager at JBF Bahrain, the operating environment was a critical factor in choosing Bahrain: "Bahrain has a deserved reputation as an easy place to do business, operating costs are competitive and crucially there is excellent access to GCC markets and beyond."

Bahrain is ranked second in the Middle East and North Africa for ease of doing business by the World Bank in its Doing Business 2016 report and JBF benefits from supportive regulation. For example, duty on imported raw materials has been waived, allowing JBF to utilise foreign resins. Bahrain's Free Trade Agreement with the United States of America is crucial for the company, as it allows them to export hassle-free to their largest consumer base.

As well as an advantageous location close to Bahrain's main port, Khalifa Bin Salman, the BIIP has direct motorway

access via the nearby King Fahd Causeway to Saudi Arabia, the region's largest single market. For JBF, therefore, the logistics of processing and transporting products across the region is a quick and simple one.

The company is well-supported by its local employees, as well as the over 300 Indian staff. Mr. Choksi praised the availability of talented Bahrainis, saying: "Our Bahraini workforce is skilled, highly motivated, bi-lingual, and willing to try new things".

Electrosteel

The Indian-based company Electrosteel, the world's third largest producer of Ductile Iron (DI) pipes and ancillary products, opened a $6.6 million warehouse in Bahrain in 2016 as a supply hub for pipes, fittings, valves and other components. Electrosteel was already a supplier to the Bahrain Electricity and Water Authority and saw the opportunity to locate part of its operation in the Kingdom to better cater to water infrastructure projects in the region.

Assistant General Manager Mr Awadh Shukla explained: "Bahrain offers companies like Electrosteel relatively low operational costs, competitive rates on land and the availability of skilled and motived local workforce. We were very happy to move here and it is proving to be the right decision."

One key factor was the strategic location of Bahrain and the high quality logistics and transport infrastructure with proximity to the new port, airport and the causeway to the biggest market in the region, Saudi Arabia. This is important because only about 10 percent of the products supplied from the warehouse are for Bahrain itself, 90 percent are for export to the rest of the region. The warehouse is a starting point which will pave the way for further expansion in Bahrain as Electosteel looks to provide a 'one stop solution' for water projects across the GCC region and beyond.

Electrosteel is committed to continue developing and delivering quality products to its customers. Creating a hub in Bahrain offers a natural gateway to the $1.6 trillion market in the GCC to meet a growing demand.

Innovators wanted!

A firm can virtually innovate in any area such as products, services, processes, business models, user experience, selling processes and many more as long as it aligns with its strategic areas of focus.

By Sudeendra Koushik and Pragya Dixit

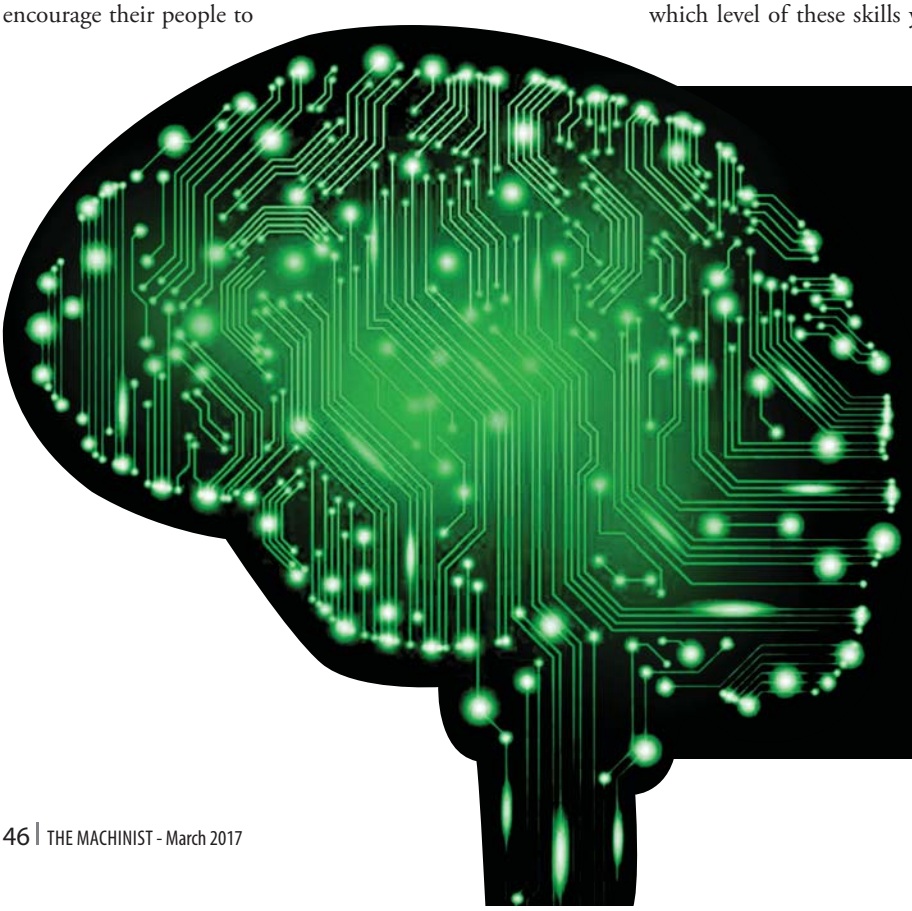
"Very few of our ideas turn out as good innovations leading to new products and services". This is a complaint very often heard from senior leaders across organisations. This often stems from the fact that many of the ideas seems to be of very poor quality. This is a problem faced by most companies though they have the best of the talents available on the planet and are very competent and experienced in their domains. They still have to deal with this frustrating situation. Why is this so?

Delivering business relevant innovation is the key for any firm which wants to grow its top line using innovation. A firm can virtually innovate in any area such as products, services, processes, business models, user experience, selling processes and many more as long as it aligns with its strategic areas of focus.

To continuously develop successful new products and services, we need a pipeline of innovations to select from, since every innovation will not be successful. Often organisations encourage their people to come up with 'ideas' to achieve this. Will this increase the number of ideas that become real businesses? Answer is no. First of all, an idea is just an idea and is not at all an innovation. Ideas are just thoughts or part of solution at best. With the best of the talent, processes and intentions, what is missing? What can be done to ensure more ideas become profitable businesses?

Let us peel the onion further and see what is behind this problem. As leadership, we expect our people to innovate but we often forget that they are neither formally educated nor trained to be innovators. To understand this better let us look at how we hire talent. When hiring talent, say mechanical engineers the business unit requests its HR partner regarding the required educational qualification, domain experience needed for the job along with the roles and responsibilities. The HR partner can suggest the right profiles for the job based on this.

Let us now say you want to recruit 'Innovators'? What would be the discussion between you and your HR partner? It is very difficult to establish which skills you want to have in this innovator because there is no clear 'list of skills' and at which level of these skills you want your innovator to be at.



"As leadership, we expect our people to innovate but we often forget that they are neither formally educated nor trained to be innovators."

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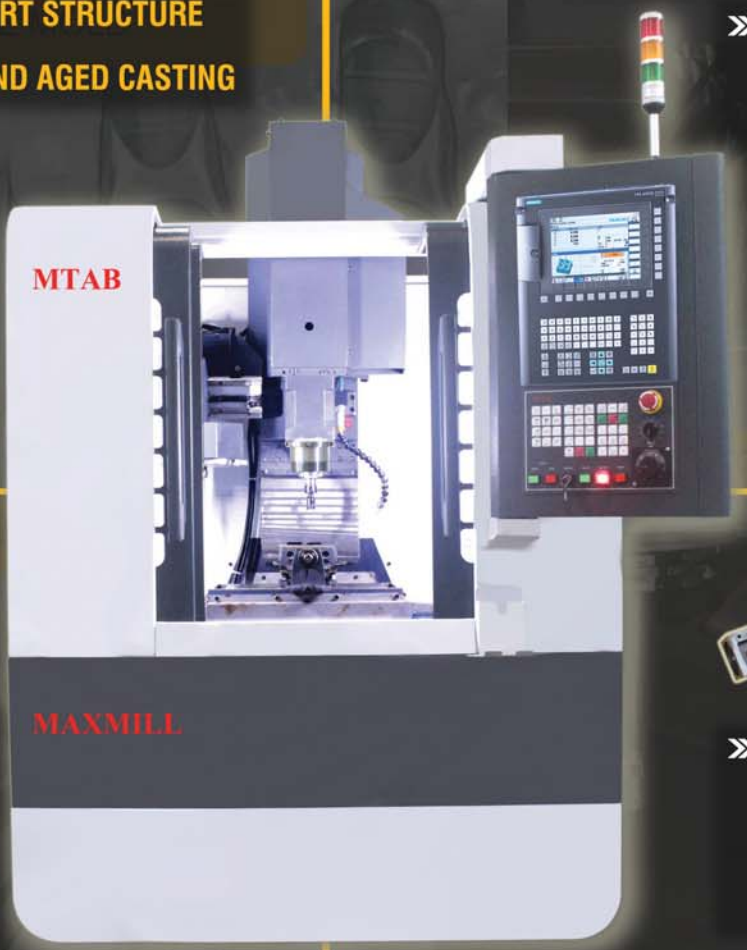

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The innovator must understand the business case to pursue an innovation and appropriately pitch it.

Remember we want to hire innovators since we want innovation. They cannot become innovators just because we want innovation. They should be either formally educated as innovators or be given a focused training on the job for being innovators.

While there is no formal education to train innovators (like we train mechanical or software engineers), most on the job trainings focus on 'Innovation' as a process and not on 'Innovators'. This won't help people become better innovators as they can't change much as individuals. Now comes the worst part for the people from whom we expect innovation. We make the results of their efforts as innovators, a part of their appraisal cycle and obviously reward or penalise for performance or non-performance respectively. This is an unfair method to manage innovators since we are expecting people to do something which they are not trained to do and we are linking their reward and recognition to this. This can lead to frustration for both the employees and the organisation as efforts do not yield results as often and as much as it should do.

Very often the root cause of low business relevant innovation is because of a fundamentally wrong approach of starting with ideas. We need to solve a pain point to expect a higher rate of success because someone will be willing to pay for your innovation. While solving any problem won't guarantee success, picking the right problem, what we call the 'valuable problem', is the key to achieve successful innovation. These problems can be in the present or in the future. Problems in the present are more certain and hence less risky while the possible problems in the future are riskier but more rewarding too.

A world class innovator is efficient in finding a valuable problem before, pursuing the process of idea generation. This ensures that when this valuable problem is solved there is real chance of finding customers and hence cranking up the top line. If the innovator pursues ideas first, a valuable problem becomes evasive and hence finding success with the so-called innovation is almost impossible. This explains why starting with ideas is not the best way to pursue innovation.

As an example, if I come up with an 'idea' it is like developing a medicine without knowing the sickness it should cure. On the other hand, knowing the problem will help me develop a cure for the same effectively. Thus, encouraging people to come up with ideas is a very unscientific method to achieve innovation. This means we are basically approaching our innovation in an ad-hoc, trial-and-error method.

A world class innovator can make a difference and let us understand the role of the 'Innovator' in this. A typical innovation journey has three phases – Ideation, Implementation and Value Realisation phases. A successful innovator should play one role in each of these phases – Artist, Scientist and Industrialist.

As an Artist, the innovator explores all the possible problems and possible solutions. The important aspect of this phase is to identify all possible opportunities and identify the most valuable ones amongst them. As a scientist, the innovator ensures that data is used to convert idea to reality, explore the existing solutions and select possible solutions using a proof of concept. As an Industrialist, the innovator must understand the business case to pursue an innovation and appropriately pitch it.

> "A typical innovation journey has three phases – Ideation, Implementation and Value Realisation phases. A successful innovator should play one role in each of these phases – Artist, Scientist and Industrialist."

If an innovator can successfully don these three roles he can be assured of great deal of success. These skills are domain agnostic and can be used effectively in any domain. This will ensure a scientific and more certain way of being a world class innovator. Let us present a case study here. A set of 80 young engineers of a technical competence center could come up with 190 business relevant ideas within a couple of weeks spending few hours per week using this process.

Innovation versus innovator is like painting versus the painter. A painter can create a great painting and an innovator can create a great innovation. To be a world class innovator there are certain skills to develop to be used during the journey of this innovation. Skills are those that we are not born with but we can learn, like we were not born with writing skill but we learnt it.

Organisations can map the innovation journey to the skills they need from their innovators. This will make the whole process more scientific and more importantly repeatable.

Sudeendra Koushik is Chief Innovator, and Pragya Dixit is Chief Intrapreneur of Prasu, a consulting firm. They are also co-authors of the book titled "A Conversation with the Innovator in You".

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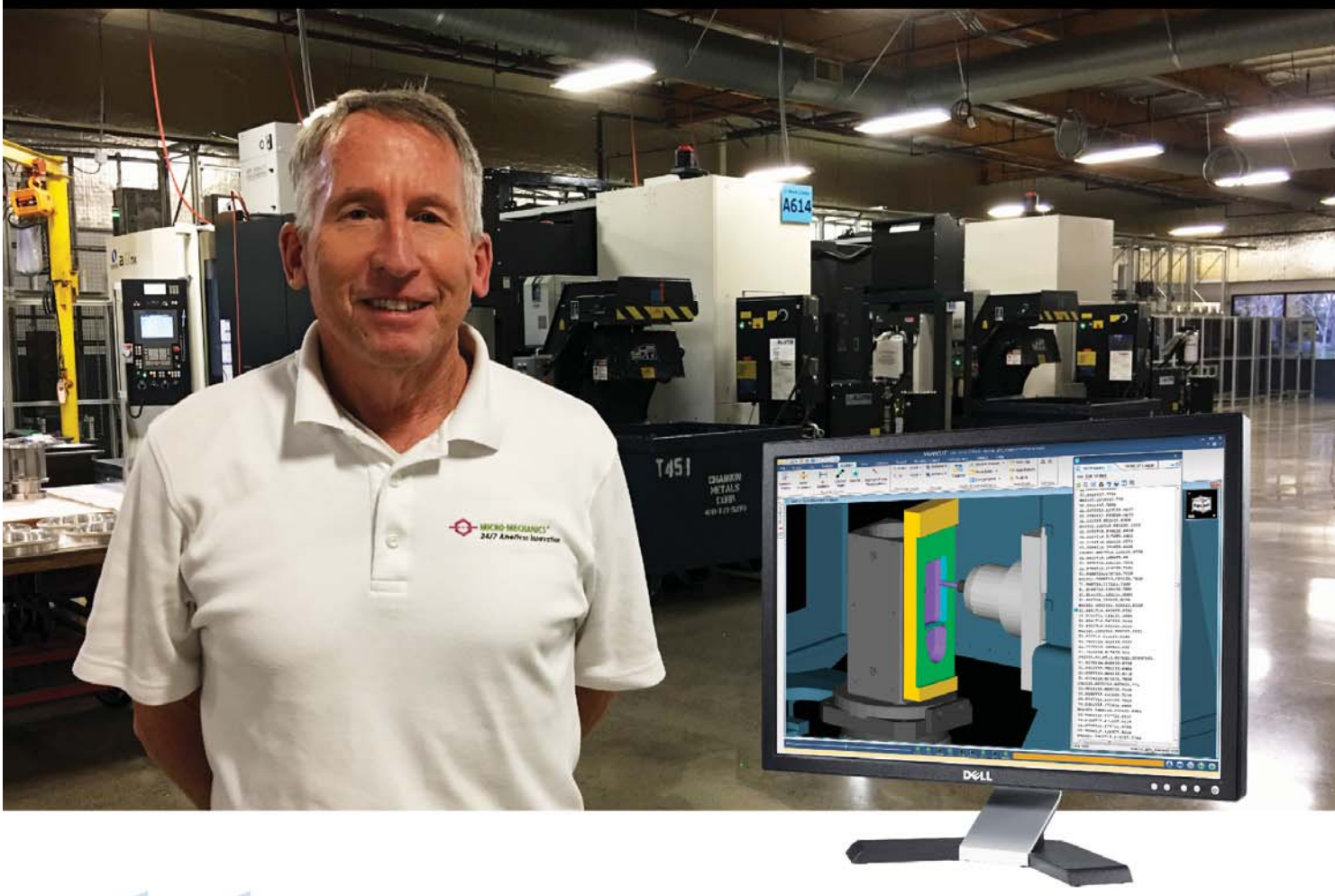

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Defence sector holds immense potential

Shujaul Rehman, CEO, Garware-Wall Ropes Ltd speaks to The Machinist about the company's foray into the defence segment.

RADOME, a structural, weatherproof enclosures used to protect an antenna

By Swati Deshpande

Q. Tell us about Garware Wall Rope's business into defence sector?

Garware-Wall Ropes Ltd. (GWRL) is one of India's leading players in the technical textiles sector providing specialised solutions to global customers in aquaculture, agriculture, sports, geosynthetics, industrial, coated fabrics, etc. Today, our country imports half of its defence requirements. This opens an opportunity to develop them indigenously. We aim to grow our technical textile business by focusing on developing products catering to the defence segment. However, the gestation period in this sector is high as compared to other sectors and hence one needs perseverance to deliver quality products and generate of revenue.

We entered this sector a few years back and have developed some innovative products. Also, we are working on developing new products which should aid our growth in this segment.

Q. Defence sector is gaining importance since last couple of years. How has the friendly policies and Make in India initiative impacted the business in the segment?

Considering the business potential, defence is an attractive segment. Over time, there has been an impetus on ensuring ease of business. For example, today, most of the tenders are routed through e-Portals. The 'Make in India' initiative has generated a lot of interest as can be seen by the number of companies which have forayed into the defence sector in the recent past. In the area of technical textiles, we want to substitute some of the defence imports and thereby started working with some of the defence research organisations. We have already developed and supplied two products —the RADOME and an aerostat balloon. Going forward, we envisage widening our product basket and increase our share in the defence sector.

Q. Role of R&D in the defence sector is crucial. In this regard, tell us about Garware Wall Rope's capabilities.

Our mission is to provide innovative application focused solutions to our customers. This mission is has been driving our growth across business segments. Hence, innovation is a critical focus for us and is driven with passion by our R&D team comprising of technical experts in various disciplines who work together in our Govt. recognised R&D centers at Pune and Wai.

Q. Tell us about your manufacturing capabilities and capacities.

We have two manufacturing facilities located at Pune and Wai. Spread across 14 acres of land, Pune plant manufactures ropes, PPMF Yarns, Twines, SPM System, Geo Textiles and Metal Gabions. Wai plant is spread over 29 acres and manufactures all types of twines, nets and coated fabrics. The core philosophy for our manufacturing is operational excellence. We deploy various tools like Lean Sigma, JH, etc. to ensure that our customers get quality and reliable products every time.

Q. The company has designed Flexible helimat for the defence sector. Can you please tell us briefly about it?

This is an innovative product used to prevent the dust from entering the engine section of chopper when a chopper lands on an unprepared ground. This enhances the longevity of the engine while minimising any damages that may occur to the engine in the event of landing.

Q. The company has developed Inflated Structures for Radars in conjunction with DRDO. Can you please tell us about the project and the product?

RADOME's are structural, weatherproof enclosures used to protect an antenna. The materials used in building a RADOME allow a relatively un-attenuated electromagnetic signal between the antenna inside the RADOME and outside equipment. RADOMEs are used to protect the surfaces of the antenna from the effects of environmental exposure. Initially, the RADOMEs used to be imported from other countries at a high cost. We had closely worked with ADRDE (DRDO) and developed RADOMES for the defence sector. Once the proof of concept is established and the same inducted in defence, this will result in huge savings for the defence sector.

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Setting the **tone!**

Walter Tools India celebrated the fifth anniversary of its New facility in Pune at Hinjewdi recently. The occasion was marked by the visit of **Mirko Merlo,** President & CEO, Walter AG and **Pawel Duzniak,** President Market Area - Europe & India, Walter AG. The Machinist caught up with both the spokespersons along with **Brajesh Kumar,** MD, Walter Tools India Pvt. Ltd.

Pawel Duzniak, Mirko Merlo and Brajesh Kumar at the Walter Tools India Technology Center

By Niranjan Mudholkar

How's the business been for Walter from the global perspective?

Mirko Merlo: From a global perspective, we are reasonably happy. What I mean with that is that we have achieved a great majority of our targets last year in 2016. For the fourth year in a row, we have executed our strategies successfully. This is the part that makes us happy and satisfied. We have been reasonably successful. I use the word reasonable is because I feel that we could have done it better and we want to do better. But the market is getting tougher and tougher for us. The environment is very challenging. Competitors are all doing well. So we need to put more efforts to stay ahead, which I think we will do in 2017.

"India is playing a strategic role within the Walter Group in a sense that India is one of the countries where we see growth."

Mirko Merlo, President & CEO, Walter AG

How do you see the India operations from the global point of view?

Mirko Merlo: India is playing a strategic role within the Walter Group in a sense that India is one of the countries where we see growth. In our business, we see a kind of stagnation market wise for the last couple of years overall. But India is one of the markets where we see growth and we are constantly surprised by the number of opportunities in this market.

Considering the market conditions, manufacturing companies need to be both agile and flexible. How does Walter Tools help in this scenario?

Brajesh Kumar: Value proposition is one thing that everybody expects. In the metal cutting and manufacturing industries they need some value to be added to their operations on a daily basis to remain competitive. That is where Walter Tools helps them as partner by providing them with value proposition through innovative cutting tool technologies, product quality and expert engineering services.

As far as mutual understanding and cooperation is concerned, customers always see us as a long term partner and we see them as a long term partner. We believe in being a partner; not just being a supplier. That's always a long-term relationship.

What kind of support do you provide to your India operations from the global headquarters?

Mirko Merlo: Our Indian operation is pretty much independent compared to other markets. Everything that you would consider 'business as usual' is driven and coordinated by our people in India. We do support the India team when it comes to business development as well as when there are challenges that go beyond the regular. Also, we play a role during development projects or global projects where one or more partners from different countries are involved. For example, when we develop something with a global company, chances are that we have already done something similar. So rather than re-inventing the wheel, we provide support with aim to give something better than what we have already done. Another place where we help is in terms of providing technology which is not available on the local level either because it is a super special application or because it is an extremely challenging operation, where they need some extra expertise. I would say that on the '80:20 rule', they are capable of handling every request that they receive from the customers. In fact, India is supporting other countries in Asia, which is a good thing from an Indian perspective.

> "We may consider increasing localisation when the volumes will produce a kind of economy of scale where it makes business sense."
>
> **Duzniak,** President Market Area - Europe & India, Walter AG

Pawel Duzniak: Additionally, I would say that the main support is to develop local knowledge. We try to be as close as possible with our customers and the closest you can get is when you have local support with strong knowledge. Transfer of knowledge is a big support from the global headquarters. As Mirko said, in cases of complex projects, experts from global headquarters get involved. However, the main strategy is to be as local as possible.

Q At present Walter Tools India imports majority of its standard offerings from its parent German manufacturing facilities. Any plans to increase localisation in near future?

Pawel Duzniak: Of course, we can't say what the whole development is going to be in the next two years to three years from now. It depends very much on the development of our business in India. We may consider increasing localisation when the volumes will produce a kind of economy of scale where it makes business sense.

> "Many times customers don't want to carry out developmental activities at their production lines. So they need a competent partner to work with them. That's where we play a role with our Technology Center."
>
> **Brajesh Kumar,** MD, Walter Tools India Pvt. Ltd.

Q I understand that your Technology Centre in India plays a key role in enabling customers to cope with technology oriented market challenges. Please tell us more about the same.

Brajesh Kumar: As Walter Tools, we often talk about "Engineering Kompetenze". That is the only thing that can deliver. And we are helping our customers to deliver that by honouring our commitment to them. It could be process, it could be tooling or it could be commitment about cost reduction per component during the machining. And this particular Technology Center is helping me to prove all these things in the actual manufacturing atmosphere. So my customers can come to this center and see for themselves. This helps us strengthen their belief and trust in our commitments.

Many times customers don't want to carry out developmental activities at their production lines. So they need a competent partner to work with them. That's where we play a role with our Technology Center. We help them for developing certain complex components. We make sure that this partnership is going to help them in completing their developmental projects satisfactorily.

So in both respects, the Technology Center is helping us help our customers grow.

Q India also needs to bridge the huge industry-academia gap in terms of creating industry ready engineers. What can we expect from Walter towards this cause?

Brajesh Kumar: The fact is that none of the universities in India is dealing with tooling or its technology. Even within the mechanical engineering curriculum, tool engineering gets very little focus. So there's not much focus on tooling specifically.

However, we are very much connected with the technical schools and diploma colleges. We always try to help them in execution of their projects in the final years. Most often, engineering students do not get touch a cutting tool before actually taking up a job. So we openly invite relevant institutes to bring their students to our Technology Center and let them experience the latest in the field of tooling. We have displayed the latest tools at the Center and students can physically touch and feel these tools. Our application engineers and our training managers also visit the colleges and technical schools where they conduct technical seminars and provide information to the students; it is likely that tomorrow some of these students could be our partners, employees or customers.

Tool for transformation

As IoT technologies and services transform the automobile ecosystem, this ecosystem is witnessing a steady influx of new players and a continued evolution in the roles of key stakeholders and the balance of power among them.

By Ashish Gulati

The Indian auto industry is one of the largest in the world and it accounts for 7.1 per cent of the country's Gross Domestic Product (GDP). According to Brand Equity Foundation the two wheelers segment is said to be the leader in the Indian Automobile market with 81 per cent market share owing to a growing middle class and a young population. Moreover, the growing interest of the companies in exploring the rural markets has further aided the growth of this sector.

Market scenario

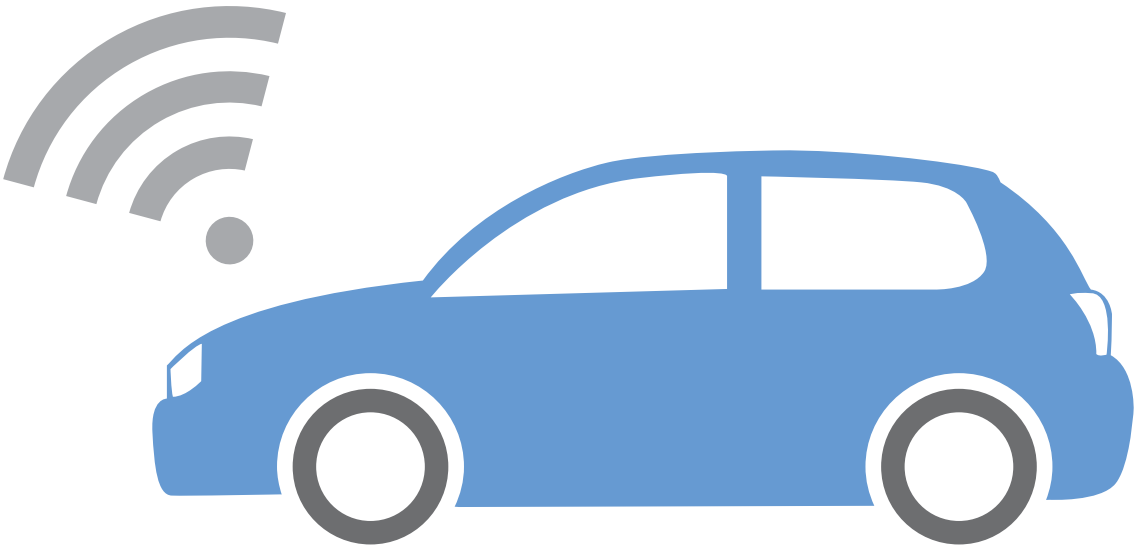
The overall Passenger Vehicle (PV) segment accounts for 13 per cent market share. India is also a prominent auto exporter and has strong export growth expectations in the near future. In April-January 2016, exports of Commercial Vehicles registered a growth of 18.36 per cent over April-January 2015. As per Indian brand equity foundation, several initiatives by the Government of India and the major automobile players in the Indian market are expected to make India a global leader in the

Two Wheeler (2W) and Four Wheeler (4W) segments by 2020. Sales of passenger vehicles had increased by 16.7 per cent to 258,000 units in August 2016 driven by better-than-expected monsoon and strong buying sentiment*. Sales of commercial vehicles grew by 1.53 per cent to 52,996 units. The two-wheeler industry also performed well. Motorcycle sales grew 22 per cent to 1 million units, while overall two-wheeler sales grew 26.3 per cent to 1.64 million units.

"Nowadays automakers connect their vehicles in two different ways: First is Embedded connections i.e cars use a built-in antenna and chipset. Second one is Tethered connections which are used in hardware to allow drivers to connect to their cars via their smart phones."

Emergence of the 'Connected Car'

Globally, companies are pouring money into the Internet of Things, and one area of particular interest to investors is



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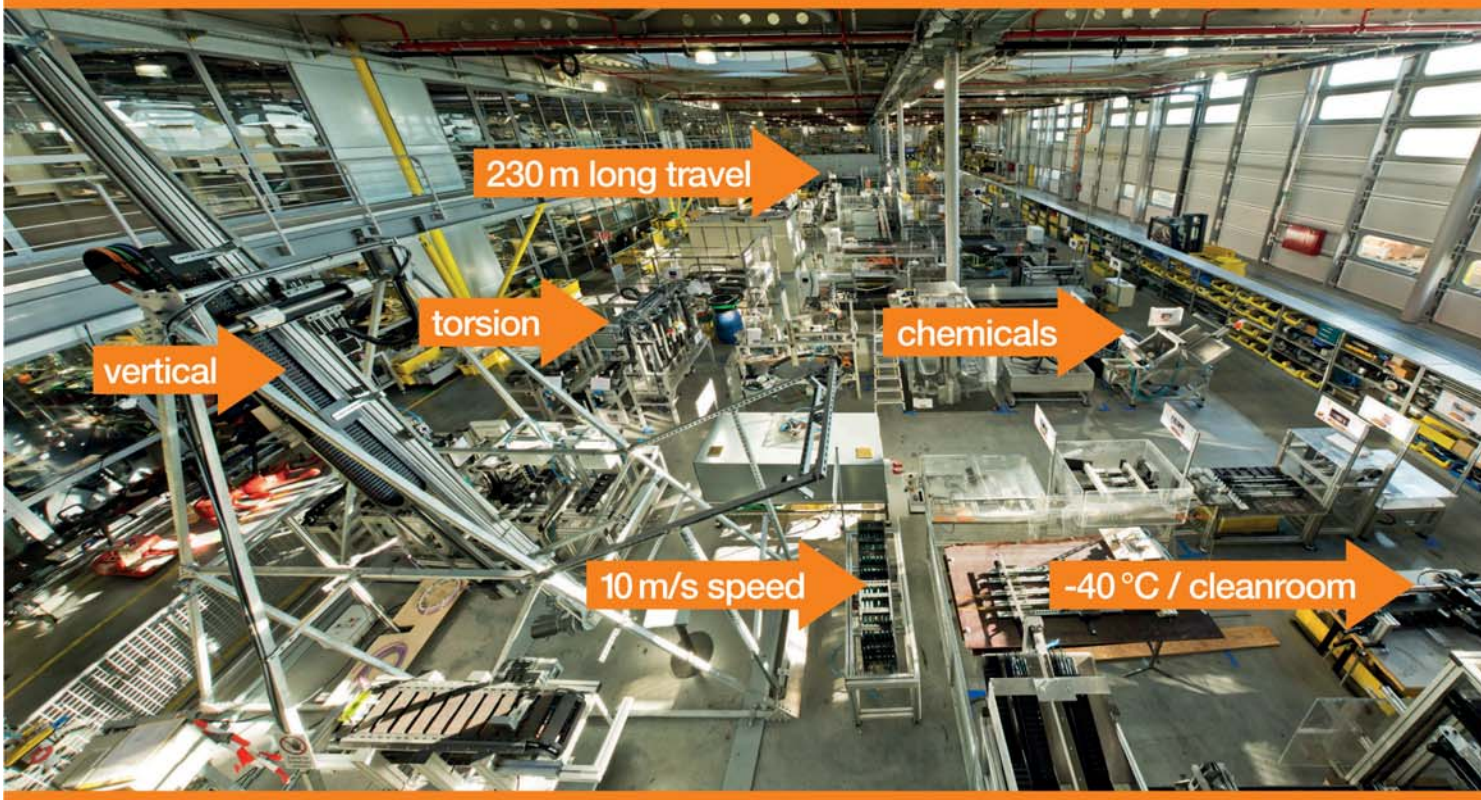

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The overall Passenger Vehicle (PV) segment accounts for 13 per cent market share. India is also a prominent auto exporter and has strong export growth expectations in the near future.

"IoT Connected cars". According to the Business Insider, automakers have been constantly noticing the growing trends with significant business opportunities for connecting their cars. It is expected that 381 million connected cars would be on the roads by 2020. This is up from 36 million in the year 2015. In addition connected cars will generate $8.1 trillion worth or revenues between 2015 and 2020.

Nowadays automakers connect their vehicles in two different ways: First is Embedded connections i.e cars use a built-in antenna and chipset. Second one is Tethered connections which are used in hardware to allow drivers to connect to their cars via their smart phones. Furthermore, app integration is becoming commonplace in today's vehicles. Google Maps and other navigation tools have begun to replace built-in GPS systems. As per Markets and Market, the automotive IoT market is expected to grow from US$ 15.87 Billion in 2015 to USD 82.79 billion by 2022, at a CAGR of 26.75 percent during the forecasted period

"The Government of India aims to make automobile manufacturing the main driver of 'Make in India' initiative, as it expects the passenger vehicles market to triple to 9.4 million units by 2026, as highlighted in the Auto Mission Plan (AMP) 2016-26."

Behind the scenes

The connected vehicle has been the most visible and familiar example of the IoT technology. But as cars become increasingly software-driven, the real IoT developments in the auto industry are behind the scenes, as automakers and software providers both lay claim to the driver's seat. Gartner predicts that by 2020, more than 250 million vehicles will be connected globally, with the number of installed connectivity units in vehicles worldwide increasing by 67 percent and with consumer spend on in-vehicle connectivity doubling. Deloitte's consumer research suggests that drivers of the next generation want their cars to act as smart phones on wheels. They would like to remain connected and productive while on the go, consider fully connected vehicles among the most beneficial futuristic technologies. Moreover, they would be ready to pay a sizeable amount for a vehicle that meets all their technology needs and wants.

The ecosystem

As IoT technologies and services transform the automobile ecosystem, this ecosystem is witnessing a steady influx of new players and a continued evolution in the roles of key stakeholders and the balance of power among them. Of particular interest is the evolving relationship between automakers and software providers. Each has a viable claim on the driver's seat in the rapidly changing auto-industry ecosystem, even as each new generation of services promises to throw into question just how long one might have their hands on the wheel and can keep them there.

Make in India boost

In India the Government encourages foreign investment in the automobile sector and allows 100 per cent Foreign Direct Investment (FDI) under the automatic route. The Government of India aims to make automobile manufacturing the main driver of 'Make in India' initiative, as it expects the passenger vehicles market to triple to 9.4 million units by 2026, as highlighted in the Auto Mission Plan (AMP) 2016-26. The government has formulated a Scheme for Faster Adoption and Manufacturing of Electric and Hybrid vehicles in India, under the National Electric Mobility Mission 2020, to encourage the progressive introduction of reliable, affordable, and efficient electric and hybrid vehicles into the country.

Way ahead

The Future of IoT will become increasingly important in transportation and logistics in the next several years, especially as self-driving cars hit the road in increasing numbers. But this is just one area that IoT will totally transform according to Business Insider intelligence. Nearly all sectors across industries would be impacted by the IoT revolution and we have to see how this revolution transforms our day to day lives in the near future.

The author is Country Head, Telit India.

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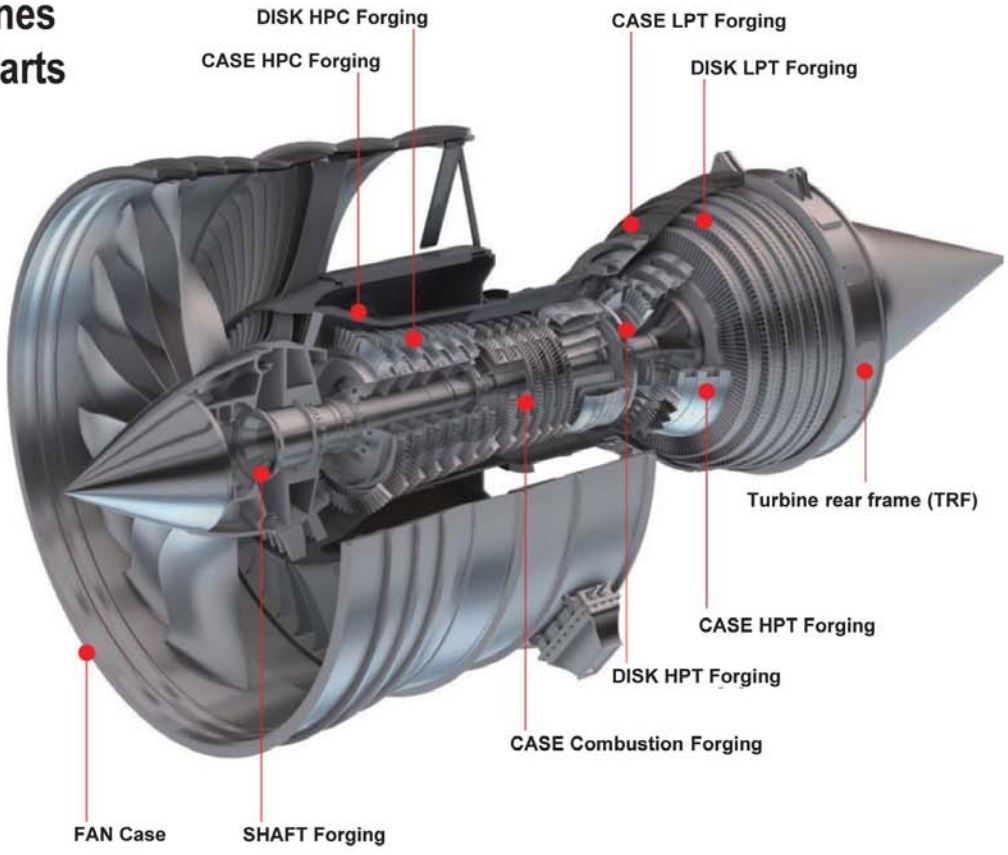

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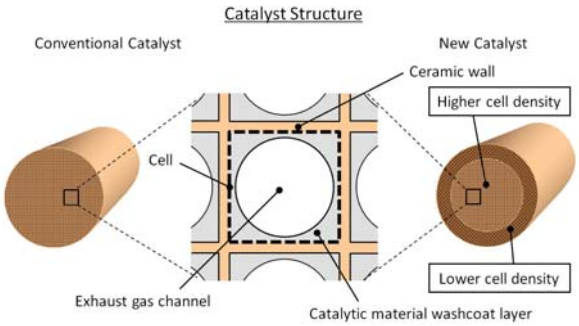
Toyota's introduces new exhaust purifying catalyst

Toyota Motor Corporation has announced the commercial availability of a new, smaller catalyst that uses 20 percent less precious metal in approximately 20 percent less volume, while maintaining the same exhaust gas purification performance. The design is the world's first integrally-moulded Flow Adjustable Design Cell (FLAD) substrate, with a different cell cross-sectional area at the inner portion compared to that at the outer portion. Innovative design and manufacturing technologies have allowed for the mass production of the new catalyst, which will gradually be installed in new vehicle models, starting from the Lexus LC 500h later this year.

Increased usage of catalytic precious metals to clean exhaust gas and improve air pollution issues present many issues, including increased costs and resource depletion. Toyota has conducted extensive research and development into finding solutions to help improve the purification efficiency of catalytic precious metals, such as finding the optimal substrate shape and length, as well as modifying the cell wall thickness and cross-sectional area. Other R&D efforts include selectively washcoating precious metals and other catalytic materials, and changing catalytic substrate cell density in line with exhaust gas flows.



Mercedes-Benz Vans to invest in new products and services

Mercedes-Benz Vans plans to invest in total more than €2 billion in 2017 and 2018 in the expansion and renewal of its product portfolio and for new services. The main areas of investment include the new Mercedes-Benz pickup and the next generation of the Sprinter large van, as well as innovative overall concepts all around the products of Mercedes-Benz Vans. As one of the first concrete results of the strategic initiative for the future, adVANce, Mercedes-Benz Vans Mobility GmbH will start with the launch of the first products in mid-2017 with its range of new rental, sharing, leasing and fleet-management services from one source. It is also planned to double the number of adVANce employees from the current total of approximately 200 to 400 by the end of the year.

A significant part of the investment by Mercedes-Benz Vans in 2017 will be for the on-going modernisation and expansion of the worldwide production network – especially in view of preparations for the new models. This year the division will invest approximately 260 million euros at the German Sprinter plants in Düsseldorf and Ludwigsfelde alone.

Volkswagen India announces new product line-up for 2017

Volkswagen has announced its India line-up for 2017. Strong products backed by an enhanced network of sales and service outlets, Volkswagen is all set to introduce its popular global products in the Indian market, the Tiguan and the Passat. Beginning with the made-in-India, made-for-India Ameo in 2016 and recent introduction of the GTI, Volkswagen continues to expand its product portfolio. It brings to India market this year, the Tiguan that has already won hearts of SUV enthusiasts in Europe and the new Passat. Both the vehicles will offer superior safety features, power, performance and class–leading driving dynamics and comfort.

Pininfarina joins hands with Hybrid Kinetic Group for electric cars

Pininfarina S.p.A. has signed a trade agreement with Hybrid Kinetic Group Ltd, a company that specialises in the business of electric cars. According to the agreement, Pininfarina will support Hybrid Kinetic in the turnkey development of an electric car from the styling concept and development of the vehicle to the engineering development and virtual and physical validation for series production. The collaboration agreement, worth about 65 Million €, will have a total duration of 46 months.

Silvio Pietro Angori, CEO of the Pininfarina Group commented, "Hybrid Kinetic has chosen to cooperate with the Pininfarina Group thanks to the set of skills and technologies in the field of sustainable mobility that we have developed over several years.

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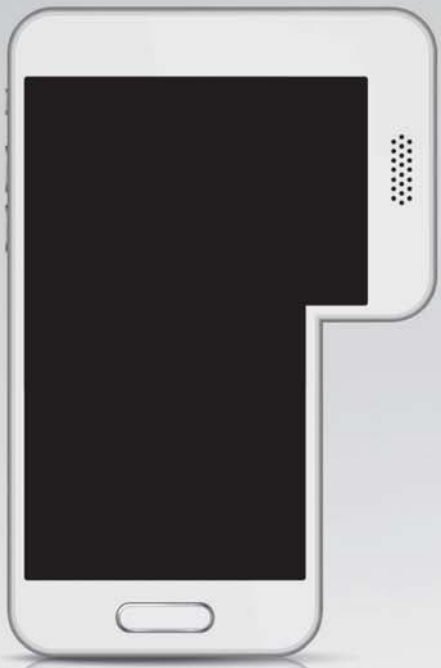

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Scania introduces a digital platform to connected services

Scania recently launched Scania One, which provides a single digital environment to a host of connected services for fleet owners and drivers. With one-quarter million connected Scania vehicles, Scania One provides coherent and simple access to efficiency-enhancing services.

Through Scania One, fleet owners and drivers will have access to the most relevant connected services that can simplify and improve their transport assignments. It constitutes an open customer platform for existing and coming Scania services as well as external content in the versatile Android tablet device.

"Scania One is our framework for seamlessly and efficiently integrating both current and coming services in a single environment," says Christian Levin, Executive Vice President, Head of Sales and Marketing, Scania. "I am convinced that these services, taken together, will significantly contribute towards greater efficiency and thereby higher revenues for transport companies."

Dana Inc. to acquire USM's Michigan Operations

Dana Incorporated has announced a definitive agreement to purchase axle housing and driveline shaft manufacturing operations from U.S. Manufacturing Corporation (USM). Under terms of the agreement, Dana plans to acquire USM's Warren, Michigan, assets in exchange for $100 million in cash. This acquisition will increase Dana's revenue from passenger and commercial vehicle manufacturers and will transition significant purchased content to vertically integrated supply. It will also provide Dana with new product and process technologies for lightweighting.

The acquisition of USM's Warren operation allows us to capitalise on an important opportunity that will strengthen the supply chain for several of Dana's most strategic customers and programs," said Jim Kamsickas, Dana president and CEO.

Ford invests in artificial intelligence firm Argo AI

Ford Motor Company has announced it is investing $1 billion during the next five years in Argo AI, an artificial intelligence company, to develop a virtual driver system for the automaker's autonomous vehicle coming in 2021 – and for potential license to other companies.

Founded by former Google and Uber leaders, Argo AI is bringing together some of the most experienced roboticists and engineers working in autonomy from inside and outside of Ford.

The team of experts in robotics and artificial intelligence is led by Argo AI founders Bryan Salesky, company CEO, and Peter Rander, company COO. Both are alumni of Carnegie Mellon National Robotics Engineering Center and former leaders on the self-driving car teams of Google and Uber, respectively.

"The next decade will be defined by the automation of the automobile, and autonomous vehicles will have as significant an impact on society as Ford's moving assembly line did 100 years ago," said Ford President and CEO Mark Fields.

ZF inaugurates India Technology Center in Hyderabad

ZF Friedrichshafen AG has inaugurated its first Technology Center in India in Hyderabad, Telangana. The ceremony took place in the presence of K. Chandrashekar Rao, Chief Minister of Telangana, Dr. Stefan Sommer, CEO of ZF Friedrichshafen AG, Mamatha Chamarthi, Chief Digital Officer and executive lead for the India Technology Center (ITC) and other senior government and ZF officials.

The ZF ITC strengthens ZF's presence in the country with anticipated investment plans of €15 million over the next five years. The ITC will foster high-end innovations which will focus on bringing advanced technology to India as well as localizing more strategic business activities including research, design and development for global market initiatives. It also aims to leverage one of the finest academic research communities and the increasingly recognized rich and diverse talent pool for global development projects.

ZF CEO Dr. Stefan Sommer said, "At ZF, we are experiencing substantial growth in many regions, and this is especially true in India. In a dynamically changing and increasingly digital world, speed is of the essence and we are proud to have been able to complete the set-up in a short period of time."

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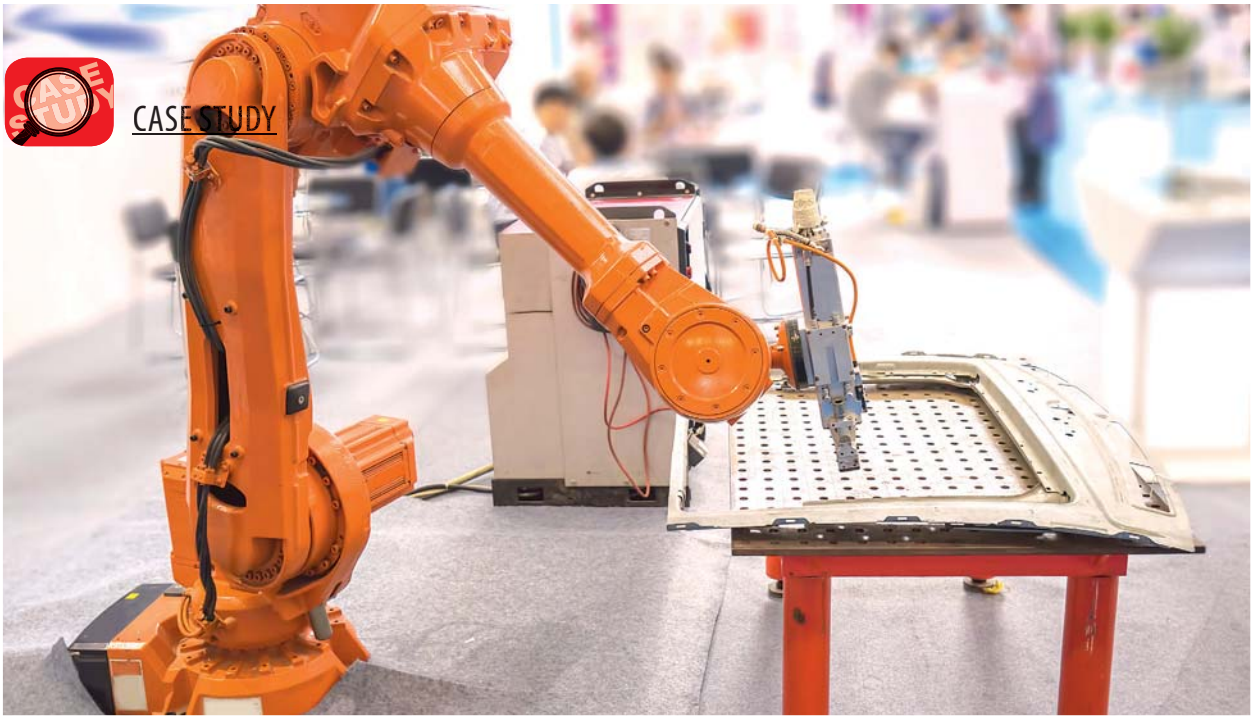

Photo courtesy: LAPP India PVT. Ltd

Hybrid cable solutions to **define Automation**

Cables are essential par of automation. Here is an overview of the role they play in the successful operations.

By Marc Jarrault

Cables are the backbone of industrial automation sector. The last two decades have witnessed developments in automation technology that is changing the nature of manufacturing industry today. The increased penetration of technology into the industry has gained a competitive advantage for players in the manufacturing world. This evolution has generated a demand for hybrid and single-cable solutions that are compact and light and use minimal space and promise high speed.

Characteristics of cables for robotics and automation

Robots today are seen working alongside people across sectors be it lifting heavy loads or accurately apply paint over and over with exact precision. Their movement sequences look like highly choreographed routines featuring extreme bending and rotary motions, demanding the highest levels of flexibility, stability, and durability from all the components, integrated cables, and cable systems used. The failure of just one component brings the entire production line to a standstill, causing losses running into millions.

Key Applications:

- 3D-Applications of all kinds
- Industrial and Lightweight Robots
- Industrial Communication
- Factory Automation

Robotics in automation is used across segments like machine tools, textile, oil & gas to scale up production and define efficiencies.

- Sensor Technology
- Identification Systems
- Palettisers
- Mechatronic Systems
- Intelligent Imaging Technologies
- Handling Systems

Cables

Power control and data network (copper + Fiber cables) are special cables for corresponding assemblies. Most of the requests for the type of cable emanates from customer groups like, system integrators, machine maintenance firms, and robot manufacturers that have different product requirements. System integrators specialise in setting up production lines on behalf of production companies. These companies usually request unique assemblies such as a customized configuration of standard parts. Additionally, machine maintenance firms are responsible for the maintenance and servicing of machines.

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Robots today are seen working alongside people across sectors be it lifting heavy loads or accurately apply paint over and over with exact precision.

Their main role is to be able to source important replacement parts from an extensive product portfolio as fast as possible, as any delay can lead to downtimes causing financial losses.

Challenges

As robots are in constant motion there is a need for them to have stringent uptime requirements. Cables and connectors should keep pace and evolve to work with precision in the automation industry and must meticulously deploy cables to ensure no high-cost production failures. The challenge faced by robot manufacturers with exceptionally challenging applications is industry always prefers for "off-the-shelf' products which may not deliver the solution required. Each robot type carries out different movement sequences and is constructed in a different way.

Lack of tailored solutions: There's a strong pressure on robot component suppliers to supply high-quality customized products as standard cables if used in complex areas might result in problems in existing robot and production systems.

Lack of flexibility and stability: There's a requirement for cables to be highly flexible and have small bending radius. Cables should be able to withstand high torsional loads especially, in stud welding machines in the automotive manufacturing industry. The stud welding machine is automatically positioned by the robot and sets the studs for wiring harness assembly in the body shells. This requires the highest levels of flexibility and stability in cables used for greater efficiency and precision for better execution of movements and system productivity.

Space limitation: To avoid restrictions on the robot's movements, various cables are required to be laid over the robot axes in the smallest of spaces to assemble all necessary components, i.e. the welding cable, the data network and signal cable, air and protective gas conduits, in an outer sheath. This has led to a demand for cables with smaller customized cross-section cables for easy adaptation and use.

Creation of Electro Magnetic Compatibility (EMC): There is a challenge for creation of EMC for robotic cables, as copper braiding reduces the flexibility of the cable and impacts the life of the product. It is particularly tricky to achieve the high bending radius and torsional strength requirements to combine all components in a complex hybrid cable system for robot.

Lack of complete connectivity solutions: Of course, no system is complete without connecting all the individual components, and for this, the industry requires a reliable partner who lives up to customer requirements. Plug and play solutions like LAPP's ÖLFLEX CONNECT is a one-stop solution that saves manufacturers the time and effort in sourcing individual components and then integrating separately.

Future of Automation

Robotics in automation is used across segments like machine tools, textile, oil & gas to scale up production and define efficiencies. They are used not only by the big leading players but also by small and medium-sized enterprises in the sector. As systems are becoming mobile, affordable and flexible to help fast and easier reprogramming, making an interesting prospect for small and medium-sized to stir up high production volumes. Mega market players like Google, acquiring nine robotics companies last year promises cutting-edge innovative solutions in the segment. Against this backdrop, market experts are predicting technological developments to fuel the growth of new commercial market potential for robotics.

These futuristic factories represent the absolute pinnacle of technological expansion and manufacturing development, which is here to stay and grow. Greater intelligence will be required to manufacture cables for automated machines in near future. Therefore, manufacturers have to be more focused on the quality and service life of the cables, while making cabling decisions for automation. Thus, it is important to select appropriate power and control cable for smooth and reliable operations.

The author is the Managing Director of Lapp India

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DriveTech 2017: **Driving future** of the **automotive industry**

ET Edge recently organised an event in New Delhi focussing on the future trends in the automotive industry.

The automotive sector is a forerunner in the manufacturing industries and has always evolved at a fast pace adopting latest trends and technologies. The boost in automation, digitisation and new business models have revolutionised various industries and automotive is no exception. Disruptive trends that will transform the auto industry are on the rise and the Economic Times has always been on the forefront to discuss and analyse revolutions that have and will redefine India's manufacturing industry. The Economic Times brought together automobile experts at DriveTech 4.0, Automotive Technology and Engineering Summit, which was held on March 2, 2017 in New Delhi.

This high-profile event witnessed the participation of who's who of automobile industry in India, industry veterans, bright minds, and the most promising talents. The gracious presence of R. C. Bhargava, Chairman Maruti India, empowered the discussions of the day and set the tone. Bhargava shared his insights on the environmental concerns, autonomous cars, and the future of the Indian automobile industry. During his keynote address, he remarked "What is certain is that motorisation of India will proceed, it will happen. One of the most aspirational products that one desires to have is a car. What kind of technology the cars will use, what kind of cars will be made, whether we will have driverless cars is something only time will show." During the opening session the other speakers included Tom von Bonsdorff, Managing Director, Volvo Cars who shared insights on Clean Technology: Plug-in Hybrids and Sohinder Gill, CEO, Hero Electric who discussed the Future of Electric in India. "Growth of the Automobile Industry is largely on the basis of new product launches and that makes the designer a very powerful human being within the organization now; as opposed to a decade earlier," remarked Dilip Chhabria, Founder, DC Design during a fire side chat with Akshai Varde, Founder & MD, Vardenchi.

The attendees also got a sneak peek into M-Zero, the first Indian Super car which is created by Sarthak Paul, CEO, MMM. During his presentation he explained to the delegates how he created a the first electronic super car and he reiterated the importance of making in India and applauded the great engineering talent in India. The event also discussed the importance of technology and how it has disrupted the automotive industry. "Digital has opened up a number of avenues for the Auto sector to innovate across the value chain, whether that is in design, production, security and safety, customer engagement, connected systems or sales & marketing. This however will also mean reskilling and upskilling the workforce, creating an ecosystem that support the Digital value chain and a Digital mindset," added Rachna Nath, Partner and Head of Digital Consulting Services, KPMG.

Building on this thought, Pradeep Sreedharan, Vice President, Unlimit added "Major car manufacturer are looking at India and with a young population ,an up-beat GDP and an Internet savvy generation combined with the dream of every youngster to own a car - the market is explosive. While realisation of all benefits of autonomous cars would be years away due to structural challenges of any developing economy, but the next generation cars would significantly reduce the security risk, carbon emission, traffic congestion (in the long run) and saves cost. A combination of AI, cloud and connectivity would redefine the way we have experienced transportation than ever before in India".

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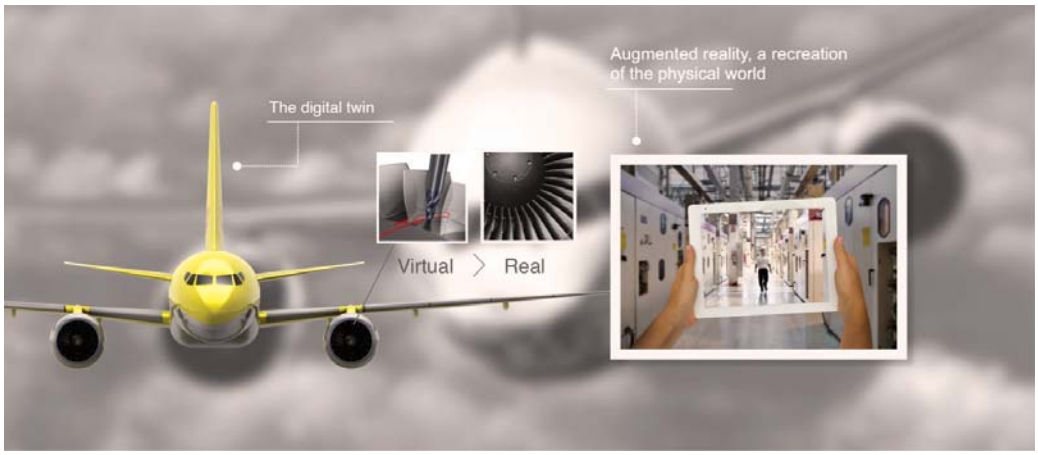


One of the ways manufacturing will become more intelligent will hinge upon virtual and physical system integration using digital versions of tools and augmented reality, allowing real-time data to become accessible remotely via the cloud.

Transforming manufacturing through **Big Data** and **Dark Data**

The manufacturing industry is transforming with latest technologies and approach of going digital. Read on to know more about role of Big Data.

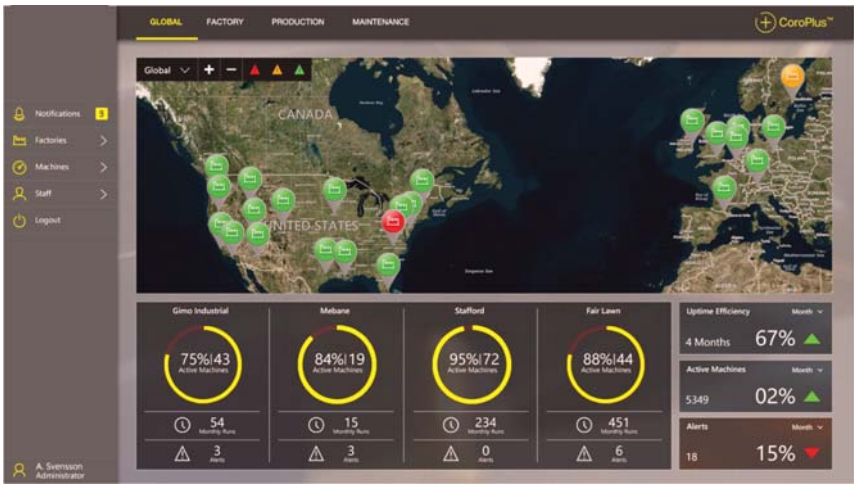
The term 'Big Data' is used across a wide and growing variety of industries and application areas. In recent years we have seen the use of big data by major retailers to track and better understand customer behavior and buying patterns, pharmaceutical companies and healthcare organisations to predict the spread of viruses and disease, and security and policing bodies to fight and prevent crime.

Now, big data is set to revolutionise manufacturing as the industry embraces Industry 4.0 and the factory of the future.

What big data effectively does is provide a company with the ability to analyse very high volumes of different types of information at very high speeds. For this reason the term is often characterised by the 'three Vs' of Volume, Velocity and Variety.

Big Data and the Factory of the Future

What big data effectively does is provide a company with the ability to analyse very high volumes of different types of information at very high speeds. For this reason the term is often characterised by the 'three Vs' of Volume, Velocity and Variety. And what is helping to make big data solutions commercially viable for budget-constrained manufacturers is the combination of steeply falling prices of digital storage, the growing trend towards the integration of sensors into every aspect of the production process, advanced digital connectivity

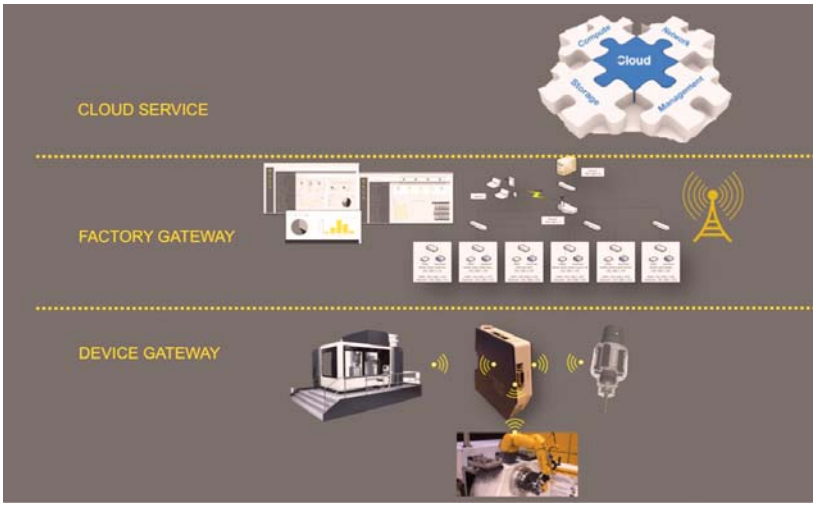


The success of manufacturing's digital future is based on the ability to create decisionmaking support tools that can be managed remotely from virtually any device using increasingly powerful online dashboards.

solutions that connect the two, and sophisticated software algorithms that mine and analyse the data that is subsequently collected.

In the factory of the future, big data will enable early and realtime insight into each and every aspect of the production process. It will be used to identify end-to-end manufacturing trends on a single production line, across multiple production lines and, indeed, across multiple manufacturing facilities. It will also provide better information on more localised issues such as the efficiency of a particular machine or even the wear of an individual tool.

What this means for the manufacturer is an unprecedented opportunity to make informed decisions that will help to improve productivity, reduce wastage, increase efficiency and, ultimately, drive up overall profitability.



With data managed through a cloudbased entity it will finally be possible to create true end-to-end solutions that ensure accuracy, consistency and connectivity from humans to humans, humans to machines and machines to machines. Digital connectivity solutions will enable companies to improve every aspect of the end-to-end production process.

Of course, the key to the success of any big data analysis is going to be the quality of the raw data. That's where the connected sensors, cameras and other data collection technologies that make up the Industrial Internet of Things (IIoT) and that are increasingly being integrated into the modern production environment come in. Many of these sensors will be collecting so called 'dark data' or 'wasted' data – data that has, until now, been impossible or commercially unviable collect.

The ability to stream and analyse information from thousands if not millions of such sensors in a manufacturing environment in real time significantly improves the manufacturing intelligence available to an organization. What this 'digital machining' approach means in practical terms is that it becomes possible to quickly and in a growing number of cases, automatically optimise and evolve production processes, predict failures, trigger maintenance operations, and automatically react to unexpected changes in production requirements. What's more, such benefits can be delivered without a reliance on the in-house skills that have, until now, been essential in realising even the most incremental manufacturing improvements.

Making use of the Cloud

Making use of big data doesn't necessarily mean that a company will need to invest in additional hardware for the processing of the information collected. Many companies, instead, will prefer to take advantage of the flexibility offered by Cloud based implementations that are at the heart of the IIoT. These solutions typically not only eliminate the need to purchase and manage IT equipment, but also provide the ability for information to be monitored from anywhere on any device via increasingly powerful online dashboards.

What this 'digital machining' approach means in practical terms is that it becomes possible to quickly and in a growing number of cases, automatically optimise and evolve production processes, predict failures, trigger maintenance operations, and automatically react to unexpected changes in production requirements.

That said, there will always be situations where it is not practical to stream key manufacturing data to systems held outside of a company. The good news is that new and emerging big data solutions – backed up by support from companies such as Sandvik Coromant who can help to interpret the data with a view to the end-to-end manufacturing process – means that the power of Cloud-based solutions and online dashboards can still be harnessed using in-house facilities.

Source: Sandvik Coromant

Part of global industrial engineering group Sandvik, Sandvik Coromant is at the forefront of manufacturing tools, machining solutions and knowledge that drive industry standards and innovations demanded by the metalworking industry now and into the next industrial era. Educational support, extensive R&D investment and strong customer partnerships ensure the development of machining technologies that change, lead and drive the future of manufacturing. Sandvik Coromant owns over 3100 patents worldwide, employs over 8,500 staff, and is represented in 150 countries.

Contact Person: Nikki Stokes

Measuring Sheet Metal Parts

Growing quality requirements as well as high pressure on reducing costs and time affect the whole sheet metal industry. In order to fulfil these demands, Design Engineers, tool makers relies on 3D metrology and 3D testing within the entire manufacturing process chain. The usage and complexity of high tensile steel parts in the automotive industry is drastically increasing. The optical measuring systems are used in stamping, bending, drawing, pressing and forming process chains to guarantee consistent quality assurance.

The full-field visualisation of results increases process reliability and the optical measuring system serves as a control element in the process chain.

GOM systems provide precise material properties for design and simulation by determining forming limit curves and flow curves. During try-out, sheet metal parts are inspected with an ATOS system for geometric and dimensional accuracy and with an ARGUS system for material thinning: part geometry, springback, trimming, hole pattern, material thickness and forming limit analysis.

Results delivered by optical measuring systems are not based on only points but on the entire surface. The full-field visualisation of results increases process reliability and the optical measuring system serves as a control element in the process chain. The actual state of the test parts is completely digitised, so that all process parameters can be specifically checked and adjusted.

The main advantages of these new technologies are:

- Coverage and visualisation of the complete parts in 3D and comparison with CAD or numerical simulation data.
- Fast measuring process in comparison with traditional single point based measuring systems.
- High resolution and accuracy, which exceed the demands in related applications.
- System mobility, which allows the measurement of parts at different places.

For more info, contact
APM Technologies
E-mail: sales@apmtechindia.com
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Indian factories to become smart & intelligent

Smart Factories, Internet of Things, Industry 4.0, etc. are some of the key areas that technocrats are talking today.

On this backdrop, Indian Machine Tool Manufacturers' Association (IMTMA) had organised Symposium on Smart Manufacturing at Bangalore International Exhibition Centre (BIEC), Bengaluru. Attended by more than 250 delegates from around 110 companies, the second edition of the Symposium focused on 'Evolving the Factory of the Future'. The two day symposium featured technical presentations, case studies, interactive sessions and panel discussions with industry experts.

The symposium was inaugurated by Rahul Gangal, Partner at Roland Berger Strategy Consultant. Delivering the key note address Gangal gave an overview of smart manufacturing in the Indian context and said, "There is an imminent need for a policy at national level in India for Industry 4.0. Exports will be boosted by the implementation of Industry 4.0. The government should introduce policies around Industry 4.0 to leverage Make in India campaign and improve India's industry competitiveness."

Interesting presentations made by technocrats covered subjects such as integrated smart automation, smart and cost effective automation, big data analytics for smart manufacturing, intelligent clamping and gripping, and many more.

Given the importance of the subject and wide coverage of topics, CEOs, top management executives, senior executives, practicing engineers, industry consultants and R&D specialists from manufacturing industries such as automotive, auto components, consumer durables, machine tools, tool rooms, aerospace, defence and railway units, general engineering and other discrete manufacturing industries participated in the symposium. Concurrently with the Symposium, an exhibition namely 'Automation Buzz' was held. It gave a platform to manufacturers of automation devices and systems, software and a host of automation solutions to display their technologies in the arena.

Going beyond all horizons - the S11 with extended functionality

The conversion to the new control in the S11 provides even more advantages for users of the small, powerful production cylindrical grinding machine.

Now the users of the new S11 - the smallest production cylindrical grinding machine in the STUDER Portfolio - can profit from the diverse advantages of the STUDER standard grinding cycles and the grinding software for offline programming StuderGRIND**. Using the software, StuderWINfocus together with Fanuc control provides the basis for a flexible scope of use, which increases customer benefit significantly.

"The customer naturally still has the opportunity to design his program as flexibly as possible using micro functions. With the STUDER standard grinding cycles, however, he has even more convenience and support with the S11," explains Christian Josi, Project Manager at STUDER. The uniform control platform guarantees program consistency on all machines running Windows operating systems. This is regardless of whether the program is programmed directly on the Control or is generated externally with StuderGRIND.

The S11 gives you great performance in a minimum of space.

Extended scope of application

The conversion to the new control in the S11 provides even more advantages for users of the small, powerful production cylindrical grinding machine. Up to now, they were only able to work at grinding wheel speeds of 50 m/s (in exceptional cases max. 80 m/s). Today thanks to the combination of a Fanuc Control and StuderGRIND HSG machining is possible with CBN grinding wheels and grinding speeds of up to 140 m/s. A new high-speed spindle has been designed especially for the S11. The S11 achieves an extremely high abrasion performance in a minimum amount of space.

Similarly, the S11 now also enables typical C-axis applications such as thread and form grinding. This is made possible by a new version of the workhead with C-axis function in combination with the software modules StuderThread or StuderForm. The new and reprofiling of grinding wheels thanks to an optimised clearing strategy with StuderDress and machining of longitudinal contours with StuderContour extends the scope of application of the S11.

Above and beyond this, the new S11 also features the SBS Dynamic Balance System. This combined system for contact detection by means of vibration measuring and for semi and fully automatic balancing of the grinding wheels, reduces downtime thanks to less air grinding. It also enables the process to be monitored, for example observation of grinding level noise.

Optimised accessibility and automation casing

STUDER offers the S11 in two different casing designs: The existing version is specially designed for manual loading or to be combined with small handling systems. The new casing is optimised for vertical loading with a top hatch. It is perfect for inter-linked production in which the machines are loaded and unloaded via portal cranes. Both designs stand out with their excellent accessibility and ergonomic features.

* The programming software StuderWIN focus with its standard grinding cycles is perfect for a the most different grinding operations and includes optimised input masks in which the user simply has to enter the application specific grinding parameters.

** The offline programming software StuderGRIND is made up of a variety of modules. The following modules are available on request for the S11:

- StuderDress for optimised clearing strategy, for profiling grinding wheels.
- StuderThread for thread grinding.
- StuderForm for form grinding.
- StuderContour for grinding longitudinal contours.
- StuderGeoImport for convenient use of workpiece geometry straight from a DXF file.

For more details: Contact Belinda Juhasz at belinda.juhasz@studer.com or visit www.studer.com

Ball bearings for confined spaces

igus has developed thin ring bearings in accordance with DIN 625 for small installation spaces and where very low weight is crucial. The xiros plastic ball bearings are, for example, suitable for a wide range of control systems in vehicles due to the freedom from lubrication and maintenance as well as very low friction. Temperature, ventilation or suspension dynamics - a lot can be adjusted in the car by means of various rotary controls. Here, the new xiros type 67 and 68 thin ring bearings are particularly suitable since an extremely low weight is crucial and usually only a small space is available. Also, igus offers this in two different materials (xirodur B180 and xirodur S180) in inner diameters between four and 30 mm. Special dimensions or customer-specific integrated solutions are also possible on request. For both xirodur materials, users can choose between balls made of stainless steel 1.4401 or glass, whereby the use of glass balls guarantees a completely non-magnetic version of the ball bearings. In addition, the use of plastic balls is possible on request for a further weight reduction.

Maintenance-free and lightweight

The xiros thin ring bearings from igus are suitable for application temperatures between -40ºC and +80ºC. They do not require lubrication and are corrosion free. In the largest test laboratory, various rotating and pivoting tests have proved that the bearings are suitable for several 100 million cycles within permissible loads. "As in all xiros ball bearings, the frictional torque of our thin ring bearings is also very low," says Marcus Semsroth, Head of the xiros ball bearings division, igus. "Thus, no breakaways can be felt when they are moved, which, for example, ensures very good haptics when used on rotary contols." For the correct selection, configuration and ordering, igus has developed easy-to-use online tools.

For more info:
igus GmbH
ocyrus@igus.de
www.igus.de/de/presse

High-speed picker with safety functionality

The SCHUNK EGP Safety is one of the world's first performance level d/SIL3-certified electric small component gripper on the market with omnidirectional gripping force safety. In combination with a special safety module it enables SOS and STO functions. If the assembly process is interrupted as a result of an emergency shut-down, the module automatically switches to safe operating stop. As opposed to existing solutions on the market the SCHUNK EGP Safety is supplied with power continuously in case of a safe operating stop, so that gripped parts are held reliably even without mechanical gripping force maintenance. As soon as voltage is applied the gripper switches back to regular operating mode without delay and without having to restart the system. The SCHUNK EGP Safety is controlled by a safety module and four inductive proximity switches.

Specialist for fast handling of small components

Compared with electrically operated small component grippers that are available on the market the SCHUNK EGP features high speed with simultaneous high gripping force, which can be adjusted in two or four steps, depending on the model. All electronic components are integrated within the device to save space. Brushless and therefore maintenance-free servo motors and a powerful junction roller guide ensure high efficiency and make the gripper a dynamic and high-performance specialist for demanding Pick & Place applications. Since the high-speed picker is based on the platform of the time-proven pneumatic SCHUNK MPG-plus small component gripper, it is ideal for conveniently converting existing systems from pneumatic to electric, with no loss of gripping force. The unit is controlled via digital inputs, which allows users in many cases to transfer the sensor of the SCHUNK MPG-plus to the SCHUNK EGP as well.

For more info:
Schunk Intec India Pvt Ltd
Ph.: 080-40538999
Email: info@in.schunk.com

New imaging, all-in-one multimeter

The new FLIR DM284 is unlike any other multimeter on the market. It combines an 18-function industrial, True RMS digital multimeter with FLIR's infrared guided measurement technology (IGM) which quickly steers the user to the precise location of the temperature anomaly at a safe distance from the electrical panel or cabinet.

The DM284 is the latest member of the IGM family of instruments, which not only facilitate quicker troubleshooting but also make inspection more thorough. IGM puts the electrical problem into context, clearly visualising temperature differences. This is made possible by the built-in FLIR Lepton thermal 160x120 pixels micro-camera core that is now at the heart of a number of imaging instruments for the trades.

When scanning panels, connectors and wires, this micro-camera helps users pinpoint potential problems without requiring any direct contact with the test site. Once IGM has identified an issue the current, voltage and other advanced functions on the FLIR DM284 are then employed to verify and confirm findings.

A built-in work light and a laser pointer assist in poorly lit environments and pinpoint the location of the problem in the thermal image. Thermal and electrical thermocouple measurements can be viewed simultaneously and three thermal image colour palettes are selectable via the instrument's simple user interface.

The FLIR DM284 makes test and measurement quick, easy and effective and its combined capabilities also reduce the number of tools that electricians need to carry to conduct a thorough inspection. IP54 rated and drop-tested to 3m, the FLIR DM284 carries FLIR's industry leading 10-year product warranty.

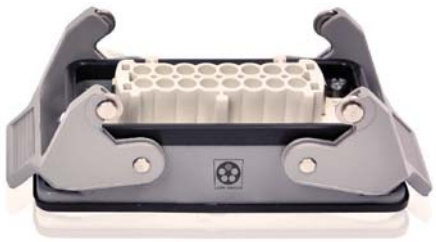
Ideal for field electronics, commercial electric, light industrial, field service and HVAC work, the FLIR DM284 can be supplied with a range of accessories including universal flex current probes, test leads, a carrying case and spare batteries.

For more info, contact: FLIR Systems India Pvt. Ltd
e-mail: flirindia@flir.com.hk
www.flir.in

Industrial Connector

LAPP India launches industrial connector that is designed especially for the Asian market

Lapp India, a subsidiary of the Lapp Group Germany and a leading supplier of integrated solutions and branded products in the field of cable and connection technology in India, launched EPIC SMART, the industrial rectangular connector at IMTEX 2017.



EPIC SMART Industrial Connector is designed and manufactured in Asia for the Asian customers with the promise of high performance at a cost-effective price. These connectors are used for power and control application in all industries ranging from machine tool, automotive and material handling to industrial automation. They are suitable for rated current up to 16A & Voltage: 500 Volts tested as per DIN IEC 60512-5 & with UL approval.

EPIC SMART is available in 6, 10, 16 and 24 contacts with screw type termination for easy assembly. These connectors can withstand temperature ranging from -40°C to +125°C making them very robust for industrial applications.

"We are excited to announce the launch of EPIC SMART Industrial Connectors under EPIC, our global and well-known brand of industrial connectors. This product has been designed keeping in mind the demands of the developing countries especially India. This is just another move in our efforts to constantly innovate and contribute to meet customer requirements. We have chosen IMTEX 2017 to launch the product as this product is most relevant to the machine tool industry," mentioned Marc Jarrault, Managing Director - Lapp India.

EPIC SMART Industrial Connector is ideal for industries such as machine tool industries, automotive and material handling systems, measurement, testing and control engineering, industrial machinery and appliances and Drive systems & industrial automation.

Manufacturing in space

A permanently installed 3D printer in the Additive Manufacturing Facility allows astronauts to fabricate tools and spare parts in space.

Thanks to a partnership between Braskem, the largest thermoplastic resin producer in the Americas, and U.S.-based Made In Space, the leading developer of zero gravity 3D printers and a supplier to NASA, green Plastic, which is made from sugarcane, is now being used to fabricate parts in space. The technology allows astronauts to fabricate tools and spare parts in space using the biobased resin, which effectively increases the autonomy of space missions.

The first part made from the raw material outside of Earth was a pipe connector for a vegetable irrigation system, which was fabricated by the Additive Manufacturing Facility (AMF), the first commercial 3D printer permanently allocated in space. The equipment, which will fabricate various types of parts using I'm greenTM plastic, is located on the International Space Station (ISS) and was developed by Made In Space with the support of the Center for the Advancement of Science in Space (CASIS).

For over a year, Braskem's Innovation & Technology team has been working with Made In Space to develop a Green Plastic solution especially for 3D printing in zero gravity. The partnership will enable astronauts to receive by e-mail digital designs of the parts and then print them, which means dramatic savings in terms of time and costs. "Through this partnership, we combined one of the greatest innovations in polymers, Green Plastic, with advanced space technology to print 3D objects in zero gravity. Putting a renewable polymer in space for printing applications represents an important milestone in our history," said Patrick Teyssonneyre, Director of Innovation & Technology, Braskem.

Polyethylene made from sugarcane was the material chosen for the project because of its combination of properties, such as flexibility, chemical resistance and recyclability, and also because it is made from a renewable resource. There are great expectations surrounding the project's benefits, since 3D printing in space was defined by NASA as one of the advances essential for a future mission to Mars. "The ability to print parts and tools in 3D on demand increases the reliability and safety of space missions. This partnership with Braskem is fundamental for diversifying the raw materials used by the AMF and for making this technology more robust and versatile," said Andrew Rush, CEO of Made In Space.

Braskem's technology is also present in the structure of the actual printer. The equipment's printing bed is made of the company's ultra-high molecular weight polyethylene (UHMW-PE), which is marketed under the brand UTEC. The resin provides increased tack for printing with Green Polyethylene and offers mechanical properties, such as superior abrasion and impact resistance.

From space to Earth

The project should drive the development of solutions that go beyond manufacturing in space to create opportunities for innovations in polyolefin applications. Braskem's innovation team is ready to create, together with its Clients, solutions in Green Plastic and to make them specific for 3D printing. "The technology has the potential to impact the plastics chain by enabling new applications and mass personalization made with a renewable resource," said Gustavo Sergi, director of Renewable Chemicals at Braskem.

Reinforcing the relevance of its environmental aspect, a new Life Cycle Assessment (LCA) of Green Plastic indicated the removal of 2.78 tons of CO2 for each ton of biobased resin produced. The study was conducted by the consulting firm ACV Brasil and subjected to a technical review by a panel formed by the Institute for Energy and Environmental Research GmbH (IFEU) and Michigan State University.

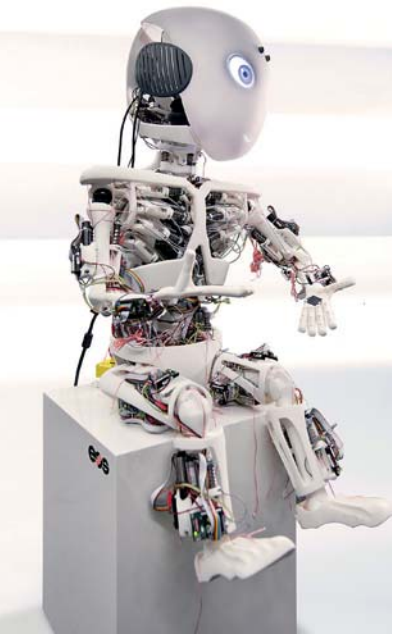
Source: Braskem

3D printing meets robotics

The Roboy project aims to advance humanoid robotics to the capability of human bodies. Additive Manufacturing is helping it achieve this goal.

Additive manufacturing technology major EOS has announced its support of the Swiss society Devanthro and the Roboy project at the Technical University of Munich. The goal of the Roboy project is to advance humanoid robotics to the capability of human bodies. The vision is to iteratively improve Roboy models until the performance is comparable to humans in dexterity, robustness and flexibility.

The first prototype – Roboy Junior – has muscles and tendons rather than motors in the joints. It has been developed under substantial usage of AM: The complete skeletal body structure of Roboy, which encases his bones and muscles, has been built with EOS systems for Plastic Additive Manufacturing. The use of Industrial 3D Printing has several key advantages; among them is the possibility of building complex functional geometries as well as sustaining a fast and iterative hardware development.



Roboy: Robotics meets Additive Manufacturing
(Source: EOS. Roboy design by Devanthro Society. Photographer: Adrian Baer).

> "In software development, rapid development cycles allow software improvement by testing it 'in the wild'. Additive Manufacturing allows us to apply this approach to robotics."
>
> **Rafael Hostettler,** Roboy project leader.

Values of Additive Manufacturing

Additive Manufacturing allows for highly complex structures which are also extremely light and stable. It provides a high degree of design freedom, optimization and integration of functional features, and the manufacture of small batch sizes at economical unit costs. The Roboy development benefits from all these advantages: Building complex functional geometries without classical fabrication constraints allows the Roboy team to implement functionality directly into the geometrical parts. Consequently, build complexity is reduced, and many of the otherwise necessary assembly steps can be dispensed of. For example, Roboy's hands and forearms are manufactured in one piece, including several joints and individual phalanxes for each finger.

Due to Roboy's maximal mechatronic complexity on a minimal space, it is not possible to validate some project requirements in simulation. Therefore, the development team needs to be able to test the robot itself. AM is key to this because it allows the fast manufacturing of individual components and the modularization and parameterization of the robot's construction, enabling an iterative hardware development.

Rafael Hostettler, Roboy project leader, comments: "In software development, rapid development cycles allow software improvement by testing it 'in the wild'. Additive Manufacturing allows us to apply this approach to robotics, enabling a rapid development to find optimal functional parts in a fraction of the time."

Humanoid robotics: A vision with social impact

In the future, with the increasing advances in Artificial Intelligence and robotics, robots will play a much more prominent role both in society and at work – to the point that especially dangerous and repetitive tasks can be completed by robots. In this context, building robots with similar morphology to the human body yields critical advantages over classical robotic approaches.

First and foremost, the human musculoskeletal system is a proven solution that leads to dexterous, dynamic and robust robots. In addition, a human-like robot eases interaction between human and machine significantly, making it more intuitive and natural. Over centuries humans have adapted the environment to fit their needs, humanoid robots can therefore fit into this environment more easily – thus avoiding expensive adaptions. Furthermore, building robots that are compatible with the human anatomy can help to augment and repair human mobility.

Dr. Adrian Keppler, Chief Marketing Officer at EOS, says: "While a larger number of companies focus on AI development, only a very small number of projects worldwide develop humanoid robotics. Therefore, we are all the more proud to support the renowned Roboy project and see its meaning. As the strengths of Additive Manufacturing lie in those areas where conventional manufacturing reaches its limitations, our technology is the ideal solution for a research project as ambitious as Roboy."

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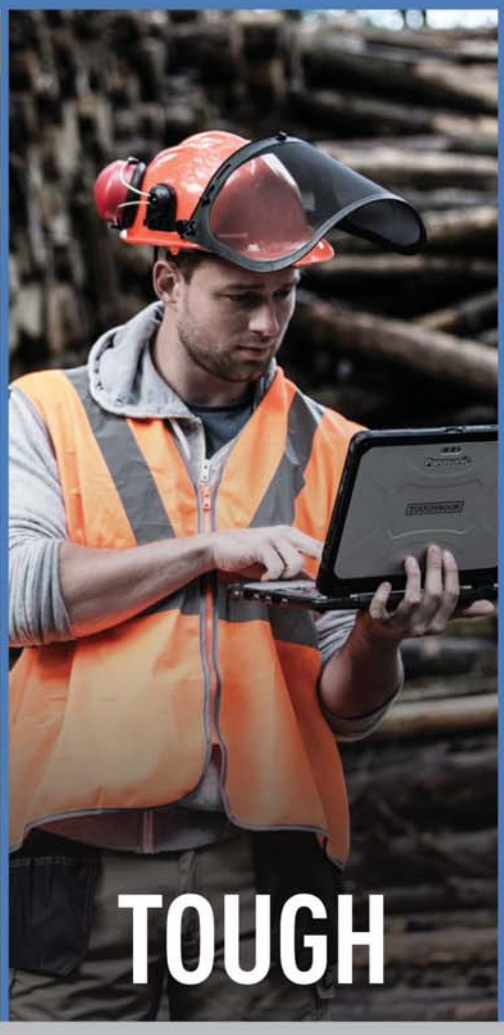

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