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ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

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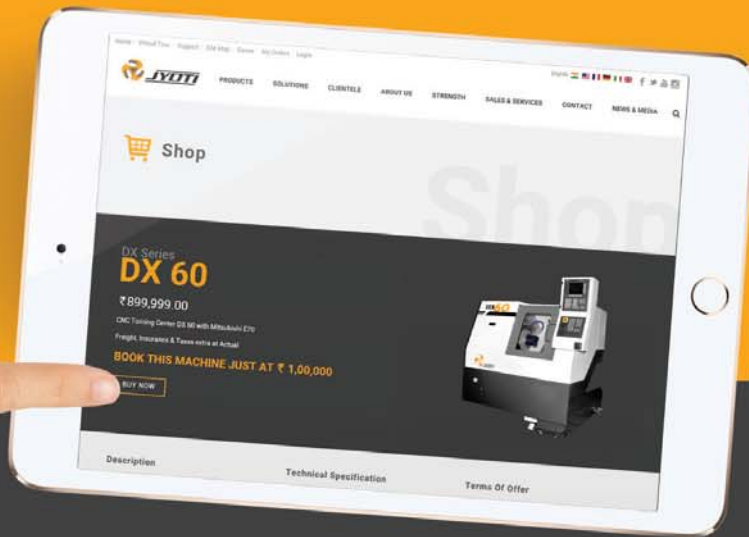


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## It's that time again!

**T**he feeling of climbing up on to the stage and receiving a well deserved award is truly wonderful. And if you are receiving the trophy in front of your industry peers then it becomes all the more memorable and special. It signifies that you and your team have really walked that extra mile towards excellence. The Machinist Super Shopfloor Awards is a platform that recognises such teams and individuals with the #Machie Trophy.

With an industry oriented programme and set up, we established the benchmark with our 2015 Edition. This year, we are all ready to create history by becoming the first manufacturing industry awards to be covered by television. Moreover, from a morning / afternoon schedule, we have transformed this event into an Awards Night. This is again a first for our

**“WE BELIEVE MANUFACTURING PROFESSIONALS ARE ‘STARS’ IN THEIR OWN RIGHT AND OUR AWARDS PLATFORM WILL BE THE FIRST ONE TO RECOGNISE AND EMPHASISE ON THIS ASPECT WITH THE FIRST EVER RED CARPET.”**

industry. We believe manufacturing professionals are ‘Stars’ in their own right and our Awards Platform will be the first one to recognise and emphasise on this aspect with the first ever Red Carpet.

In terms of delegates who will attend the show, we have already booked a full house. So if you have missed registering for the event then do catch up on the television coverage. We will share the date and timings with you. Of course, you can also check out the highlights in the June issue of The Machinist magazine. Till then, good bye and hope to meet you at the Awards Night!

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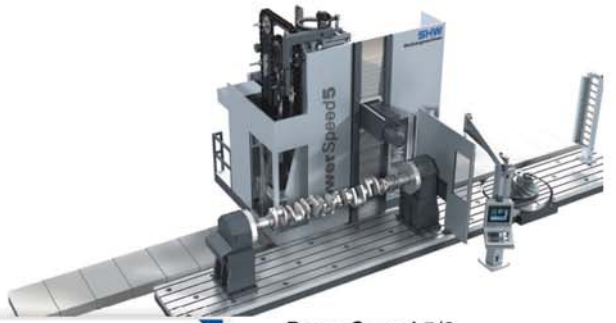


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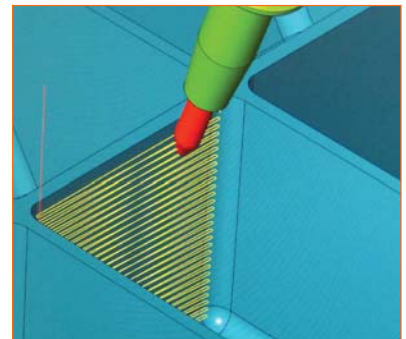
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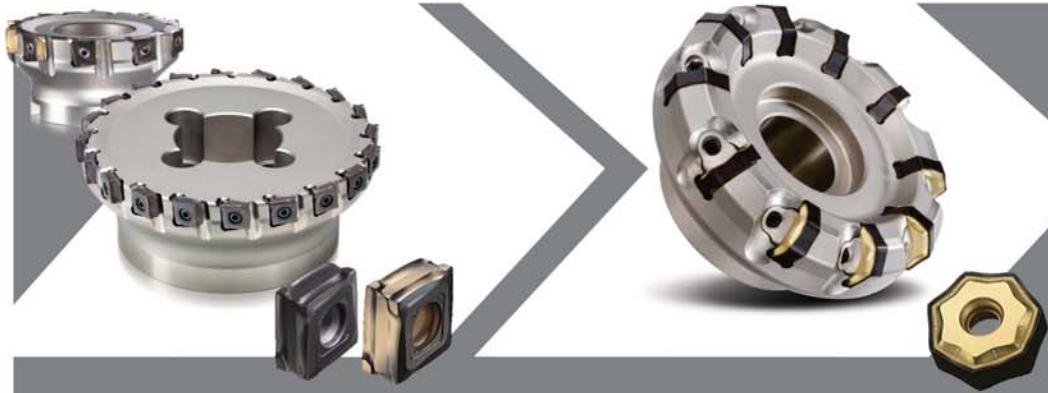
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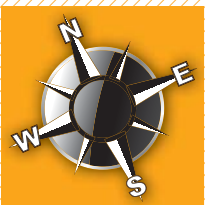
TURNING



THREADING & GROOVING







## Tata group doubles its published patents in two years; puts thrust on R&D activities

**THE TATA GROUP** has doubled its published patents in two years, from about 3,500 at the end of calendar year 2013 to about 7,000 at the end of 2015. In the calendar year 2015 itself, Tata companies have filed over 2,000 published patents in India and international jurisdictions. These patents are primarily in the area of computation and data processing; materials, coating, casting and vehicle propulsion; communications; engines; and hybrids, fuels and controls. Reflecting the thrust on research and development, 2.7 percent of the group's turnover has been invested in R&D in 2014-15, amounting to Rs. 17,896 crores or US\$2.9 billion.

Spearheaded by the Group Tech-



nology & Innovation Office (GTIO), a new consortium model of delivering technology by harnessing synergies between Tata companies has been implemented to create breakthrough innovations. Under this model, new products and services will be delivered by collaborative efforts of Tata companies working in a consortium mode

with a formal memorandum of understanding.

Speaking about it, Dr Gopichand Katragadda, Group Chief Technology Officer, Tata Sons, said, "We have to be at the forefront of innovation and technology to continually engage a talented workforce and deliver profitable sustainable growth. Tata companies continue to mature on intellectual property creation with a significant uptick of patenting activity in the past two years. At the group level, we have created new internal and external collaboration mechanisms to deliver break-through innovations at the intersection of technologies. We have the platforms to deliver innovation. It is time to execute."

## Magellan bags a contract from Airbus

**MAGELLAN AEROSPACE** (UK) Ltd and Airbus have expanded the contract for the supply of aluminium and titanium structural wing components from Magellan UK's facilities located throughout Europe and its joint ventures in India.

This contract, valued at approximately CDN \$700 million, is comprised of precision machined details and assemblies for use on the A320 family, the A330 family and the A380 program. In addition to the contract extension for the machined components, Magellan UK was awarded a contract to supply certain A380 wing ribs to Airbus valued at approximately CDN \$20 million.

Phillip Underwood, President and CEO, Magellan said, "This multi-million dollar scope of work with Airbus demonstrates our commitment to supporting our customer's strategy to boost competitiveness through operational efficiency and continuous improvement."

## India registers a growth rate of 7.6 percent in 2015-16

**ADDRESSING** the Business Session of the 49th Annual General Meeting (AGM) of Asian Development Bank (ADB) held at Frankfurt, Germany, the Union Finance Minister of India, Arun Jaitley said that though the Asia-Pacific region remains the growth engine for the world, there appears to be a softening in region's growth rate from 5.9 percent projected last year to 5.7 percent each in 2016 and 2017. Notwithstanding, the global headwinds, Jaitley said that India continues to maintain a high growth rate at 7.6 percent in 2015-16 compared to 7.2 percent in the previous year. Outlining the India's development paradigm, the Finance Minister stressed that the Government is following the approach of 'Reform to Transform' through far-reaching structural reforms. The Government has initiated several initiatives to boost investment climate and improve ease of doing business. Jaitley also further mentioned that National Infrastructure Investment Fund (NIIF) has been set-up to stimulate investments in infrastructure. Similarly, several schemes such as Make in India, Startup India and Skill India are being implemented to encourage innovations, entrepreneurship and job creation.

## MSMEs will make considerable impact on 'Make in India'

**WHILE** inaugurating Cluster Development Programme and Launch of a compendium 'Parcham' with brief collection of success stories of clusters development, Kalraj Mishra, Union Minister for MSME underlined the importance of MSME sector in generating employment. The Minister stated that there is a huge potential in MSME

sector. It can create an upsurge in the employment opportunities in the country. Poised for rapid growth and integration with major global value chains, MSMEs will make considerable impact in realising the Government's 'Make in India' vision. The sector has the potential to market its 'Made in India' brand globally.

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## Hitachi Koki to amplify its European acquisition in India

**HITACHI KOKI** (Hitachi Group), a power tools pioneer, intends to amplify its global acquisition of German Metabo in the Indian market by introducing new products with cutting-edge technology. The company will retain the brand identity of Metabo and maintain a separate business vertical in India.

Speaking about the acquisition Osami Maehara, President and Board of Director of Hitachi Koki Co Ltd, Japan, said, "We have successfully completed the acquisition of Metabo, a long-established power tool manufacturer in Germany, which has strong brand awareness, mainly in the European market. We expect the synergy

by utilising mutual supply of products, and sales and service network of each other. We believe that we will be able to improve our corporate value by creating synergy effect in an early stage."

Hitachi Koki acquired Metabo for Rs 1,900 crore in March 2016. The plan is to achieve additional five percent of Indian revenue through the acquisition with a new range of products. Metabo will continue to have R&D centre in Germany and will be supporting India with latest technological products.

"We believe in flowing back profits earned in India to our Indian subsidiary itself, which we have been following since the inception of this



Indian entity. All these investments have been used to increase our logistics and office facilities and enhance the working capital. We started exporting our products to Sri Lanka and Nepal since 2007. This year we are entering Bangladesh as well," Maehara added.

## DHI, TAGMA to build Centre of Excellence and Training

**ANANT G GEETE**, Union Minister for Heavy Industries and Public Enterprises recently performed a ground breaking ceremony for construction of TAGMA Centre of Excellence and Training at Chakan, Pune. This centre is being funded by Department of Heavy Industry (DHI) and Tool & Gauge Manufacturers Association (TAGMA) under the scheme of 'Enhancement of Competitiveness in the Indian Capital Goods Sector'. Moreover, it is being set up with the project cost of Rs 51.92 crore wherein contribution of DHI is Rs 26.27 crore.

Geete said this is an effort towards 'Make in India' initiative of the Prime Minister as it will help in reducing imports of moulds and dies. The training facilities at the centre would help in meeting the demand of skilled



manpower in the tooling industry. Also, it would enhance employment opportunities for the skilled candidates and take the country forward towards skill development goal set by Prime Minister. This centre would cater to the needs of MSME tool rooms in and around Pune for the supply of sheet metal dies, plastic moulds, die casting dies, jigs & fixtures, etc.

## Azure Power commissions four power plants

**AZURE POWER**, India's leading solar power company, has commissioned solar power plants in three states. The projects include a 50 MW plant in Andhra Pradesh, two plants of total capacity of 28 MW plant in Punjab and a 10 MW plant in Karnataka. These plants, connected to the respective state grids, are part of Azure Power's 900+ MW portfolio in 15 states. This includes the country's largest operational solar plant of 100 MW under India's National Solar Mission in Rajasthan.

Inderpreet Wadhwa, Founder and Chief Executive Officer, Azure Power said, "We are delighted to make this contribution towards realisation of our Prime Minister's commitment towards clean and green energy, through solar power generation."

## LM Wind Power opens its second plant in India

**LM WIND POWER** has recently inaugurated its second Indian plant, located in Vadodara, Gujarat. Customers, business partners and local dignitaries joined in on the event, which is a strong signal of the company's growth

in the important Indian market as well as a celebration of a highly efficient ramp up to production. The plant, announced in November 2015, began producing wind turbine blades a full month ahead of schedule. LM Wind

Power CEO, Marc de Jong said, "With this new plant, we bring employment, advanced training and development of technical skills to Gujarat, while helping to build a clean renewable energy base in a growing economy."



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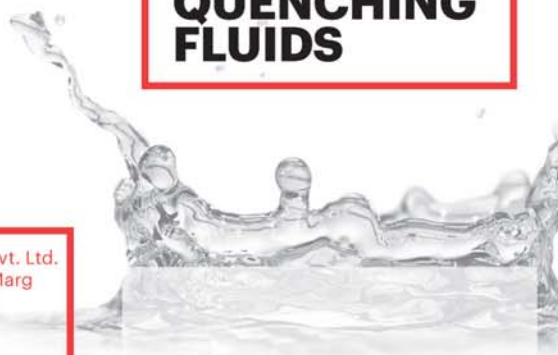
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• MARK YOUR DIARY •

A list of key events happening between May 2016 to June 2017, both nationally and internationally.

<p><b>CeMAT 2016</b>  <b>May 31-June 3, 2016,</b>  Hannover (Germany)  <a href="http://www.cemat.de/home">http://www.cemat.de/home</a></p>	<p><b>AMTEX 2016</b>  <b>July 8-11, 2016,</b>  New Delhi  <a href="http://www.amtex-expo.com/">http://www.amtex-expo.com/</a></p>	<p><b>IMTS 2016</b>  <b>September 12-17, 2016,</b>  Chicago (US)  <a href="http://www.imts.com">www.imts.com</a></p>	<p><b>InnoTrans 2016</b>  <b>September 20-23, 2016,</b>  Berlin, (Germany)  <a href="http://www.innotrans.de/en/">www.innotrans.de/en/</a></p>
<p><b>MINExpo International</b>  <b>September 26-28, 2016,</b>  Las Vegas (US)  <a href="http://www.minexpo.com/">http://www.minexpo.com/</a></p>	<p><b>Pune Machine Tool Expo 2016</b>  <b>September 29-October 2, 2016</b>  Auto Cluster Exhibition Center, Pune  <a href="http://www.mtx.co.in">www.mtx.co.in</a></p>	<p><b>India International Textile Machinery Exhibition 2016</b>  <b>December 3-8, 2016,</b>  Mumbai  <a href="http://itme2016.india-itme.com/">http://itme2016.india-itme.com/</a></p>	<p><b>BAUMA CONEXPO India 2016</b>  <b>December 12-15, 2016,</b>  New Delhi  <a href="http://www.bcindia.com/">http://www.bcindia.com/</a></p>
<p><b>IMTEX 2017</b>  <b>January 26-February 1, 2017,</b>  Bangalore  <a href="http://www.imtex.in/">www.imtex.in/</a></p>	<p><b>ACMA Automechanika New Delhi 2017</b>  <b>March 21-24, 2017</b>  New Delhi  <a href="http://acma-automechanika-newdelhi.in.messefrankfurt.com/newdelhi/en/exhibitors/welcome.html">http://acma-automechanika-newdelhi.in.messefrankfurt.com/newdelhi/en/exhibitors/welcome.html</a></p>	<p><b>ProMat 2017</b>  <b>April 3-6, 2017</b>  Chicago, (US)  <a href="http://www.promatshow.com/">http://www.promatshow.com/</a></p>	<p><b>INTEC 2017</b>  <b>June 1-5, 2017</b>  Codissia Trade Fair Complex, Coimbatore  <a href="http://www.intec.codissia.com">www.intec.codissia.com</a></p>





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## Honda revolutionises automobile assembly line

**H**onda Motor Co., Ltd. has developed the world's first mass-production automobile assembly line with a main line that incorporates a flowing cell production system. Honda has named this original assembly line the ARC Line and introduced it to Honda's new Prachinburi Plant in Thailand that became operational in March 2016. The plant is part of Honda Automobile (Thailand) Co., Ltd. (HATC), The company's automobile production and sales subsidiary in Thailand, and is located within the Rojana Industrial Park in Prachinburi Province.

The newly-developed ARC Line is a world's first innovative and unique assembly line that is different from a conventional line production system and was developed by incorporating flowing cell production-style production units in the main line. In production on a conventional line, which has been broadly adopted for automobile production to date, each production associate takes charge of a single process and installs parts to vehicle bodies flowing on a conveyor.

## GM India rolls out first Beat for Argentina exports

**G**eneral Motors India has rolled out the first vehicle meant for shipment to Argentina. The shipment will leave for Argentina next month. Argentina will be the sixth major export market for the company. GM India already exports the left hand drive Beat to countries including Mexico, Chile, Peru, Central American and Caribbean Countries (CAC), Uruguay and now Argentina. The Chevrolet Beat recorded the highest growth for any passenger vehicle exported from India and became the sixth most exported passenger vehicle out of India during financial year 2015-16, with a total of 37,082 units. "In keeping with our commitment to the Make in India program, we are proud to celebrate the roll-out of the first vehicle for Argentina," said Kaher Kazem, President and Managing Director, GM India. "The new export market is a testimony to our commitment to provide the highest quality standards to global customers from the Talegaon plant. Whether it's in India or anywhere else in the world, General Motors follows the highest quality standards in its manufacturing processes providing same high quality vehicles that customers in India and around the world expect and deserve," Kazem added.

## Mercedes-Benz expands R&D facilities in Bangalore and Pune



**M**ercedes-Benz Research and Development India (MBRDI) inaugurated a third facility at Whitefield, Bangalore. Spread across an area of 119,227 sq ft with capacity of 900 seating, it is located close to the

head office of MBRDI, also in Whitefield. The satellite office in Pune at Hinjewadi expanded its capacity by 23,318 sq ft adding another 203 seats for expansion.

Thomas Merker, Vice President Body & Safety, Mercedes-Benz Cars Development and acting Chairman MBRDI said, "The digital transformation of our company is in full swing and is affecting our entire value chain. Our India centre through its talented workforce provides the necessary gilt edge raising the digital quotient of the company. MBRDI supports multiple regional hubs of Daimler in keeping the product on computer for as long as possible."

Manu Saale, MD & CEO, MBRDI stated, "At MBRDI, we are firm on our mission to be a Center of Excellence within Daimler for Engineering & IT. Now with 19 years behind us, we are excited about our growth and what we offer here at MBRDI. We have graduated higher up the value chain and contributing significantly in some niche areas of digital product development. With the proximity of the new office to our head office at Whitefield Palms, we ensure that functional collaboration while offering our colleagues with best in class infrastructure and facilities."

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## HIGHLIGHTS

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## Daimler AG to build a new plant in Poland; to invest EUR500 million

**D**aimler AG plans to invest approximately €500 million in a new production facility in Poland. The first Mercedes-Benz Cars plant in Poland is to be established in Jawor, about 70 km west of Wrocław, and will produce four-cylinder gasoline and diesel engines for Mercedes-Benz passenger cars. The location decision and implementation of the project are dependent on various final commitments regarding the investment conditions, including the granting of state aid for the investment in Jawor. Speaking on the occasion, Markus Schäfer, Member of the Divisional Board, Mercedes-Benz Cars, Production and Supply Chain Management said, “The planned establishment of a new engine plant in Poland is a further step in our global growth strategy. Capacity expansion in Eastern Europe reflects the increasingly international orientation of our powertrain production compound. This will lead to more flexibility and efficiency in our worldwide production network.” The production in the new plant is expected to begin in 2019.

## Toyota to use biohydriin in engine and drive system hoses

**T**oyota will soon become the world’s first automaker to use biohydriin, a newly-developed biosynthetic rubber product, in engine and drive system hoses. Jointly developed by Toyota, Zeon Corporation, and Sumitomo Riko Co., Ltd., biohydriin rubber is manufactured using plant-derived bio-materials instead of epichlorohydrin, a commonly-used epoxy compound. Since plants absorb CO<sub>2</sub> from the atmosphere during their lifespan, such bio-materials achieve an estimated 20 percent reduction in material lifecycle carbon emissions (in comparison to conventional petroleum-based hydriin rubber). The first vehicles to use vacuum sensing hoses\* made from biohydriin rubber will be produced in May, with usage expected to be rolled out to all Toyota automobiles manufactured in Japan by the end of this year. Engine and drive system hoses require a particularly high level of oil and heat resistance. Since epichlorohydrin offers exceptional oil resistance, heat resistance, heat aging resistance, ozone resistance, and gas permeability, it is currently commonly used as a key compound in the production of rubber for components such as hoses.



## Mahindra e2o ElectricCity Car launched in the United Kingdom

**M**ahindra has entered into the UK automotive market with the launch of the e2o electric city car. Designed specifically for easy urban commuting, the Mahindra e2o will be available in two trim levels. Speaking about the e2o’s arrival on British roads, Anand Mahindra, Chairman, Mahindra Group said, “I am very proud to announce that the e2o is now available in the UK and this marks a true milestone for the Mahindra Group. I invite people to come and test drive the Mahindra

e2o ‘ElectricCity Car’ and help drive a positive change to the air quality in their cities. Sustainability is at the heart of Mahindra’s business practices and with the introduction of the e2o to the UK market, we are offering a product that perfectly encapsulates our corporate philosophy.” Pravin Shah, President & Chief Executive of Mahindra’s Automotive operations believes that the e2o is the right car at the right time for the UK market and according to him, “There has never been a better time for people to make the change to electric, and with the e2o there has never been an easier or more affordable way to make this transition.”





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# A future of further prosperity

Magneti Marelli celebrated its two decades of presence in the Chinese automotive industry with new headquarters that also includes an important research and development center for the powertrain and automotive lighting business areas.

**T**he new headquarters of Magneti Marelli for China was opened with an official ceremony in Shanghai recently. In addition to hosting the staff, administrative and commercial functions for the activities relating to the powertrain, automotive lighting, exhaust systems, suspensions and aftermarket areas, the new building also includes an important R&D centre for the powertrain and automotive lighting business areas.


“The investment for these new headquarters aims to further strengthen the organisation of Magneti Marelli in China, offering greater flexibility, efficiency and responsiveness in supporting the local development of target technological solutions with market demands and appropriately and attentively meeting the needs of its customers in this crucial area for the automotive market,” commented Pietro Gorlier, CEO, Magneti Marelli.

“Twenty years: it has been a long journey during which Magneti Marelli has grown with the Chinese automotive industry, but a future of further prosperity is still to be written,” stated Sylvain Dubois, Chairman, Magneti Marelli China. “The company is currently accelerating its growth with several new plants in ramp up phase. We are implementing in a decisive way our technology to offer our latest innovations to the Chinese and Asian markets. Our important investment in R&D testifies how much we place customers and innovation at the heart of our Chinese strategy. The activities of the powertrain R&D laboratory at the new headquar-

ters in Shanghai will focus on developing strategic solutions and components for the area of hybrid systems, electronics and electromechanical technologies.

In addition to gasoline systems and GDI direct injection systems in particular, electronic control units for engine and transmissions and to intake manifolds, the powertrain R&D activities will also focus on the development of technologies and systems for motorcycles and two wheelers. Completing the picture are also facilities and machinery for reliability testing and qualitative validation of components, aimed at guaranteeing the highest quality to customers.

The R&D laboratory of automotive lighting will instead be engaged in developing and adapting to the Chinese and Asian markets all the front and rear lighting technologies starting from technologically proven, large-scale applied and highly reliable halogen solution. The lighting R&D lab will also focus on technological peaks represented by the more advanced applications of LEDs and their distinguishing features in terms of safety, durability, fuel reduction and emissions and design. The 1,500 sq mtr of surface area will be occupied by research laboratories dedicated to the fields of optics, electronics, thermal simulation as well as to approval testing and product validation.

The new Headquarters of Magneti Marelli meet the need to expand the space available to accommodate all the functions and persons needed to manage the company’s activities in China that have been steadily expanding since 1996 and particularly in the last decade. 

“Magneti Marelli China is currently accelerating its growth with several new plants in ramp up phase. We are implementing in a decisive way our technology to offer our latest innovations to the Chinese and Asian markets.”

**Sylvain Dubois,**  
Chairman of Magneti  
Marelli China.



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### ESCORTS INDUCTS RAVI MENON AS CEO OF AGRI MACHINERY BUSINESS

Escorts Ltd. has appointed Ravi A. Menon as Chief Executive Officer of its Agri Machinery business. Menon takes over from S Sridhar who would now move to head Escorts Construction Equipment (ECE). Menon has been credited for shaping the development cultures of some of the most influential and valuable companies and brings over three decades of experience in marketing, sales, branding, international markets and production from industries as varied as tractor, cement and industrial products. Sridhar will focus on transforming and building organisational energy at ECE to leverage emerging business opportunities.

According to Rajan Nanda, Chairman, Escorts Ltd., "We have strengthened our leadership team at a time when Escorts has created a strong base for growth across its businesses. At Escorts, we have focused on creating synergies between the businesses. Menon's induction brings cross-industry experience and a strong understanding of the different aspects of enterprises and Sridhar's movement to ECE would help further strengthen the process of integration in key areas."

Nikhil Nanda, MD, Escorts Ltd. said, "Escorts today is a transformed organisation at multiple levels. The strong leadership and vast experience that both Menon and Sridhar bring to the table would be important to achieving the ambitious objectives that the group has set for itself."



### MROSIK APPOINTED CEO OF SIEMENS DIGITAL FACTORY DIVISION

Jan Mrosik, currently CEO of the Energy Management Division, has been appointed as CEO of the Digital Factory Division, effective June 1, 2016. Anton Huber, Digital Factory's current CEO, is retiring on October 1, 2016. He will continue to serve the company in a consulting capacity until that date. Ralf Christian will be the sole CEO of the Energy Management Division, effective June 1, 2016. Christian is currently the Division's co-CEO with Mrosik. "We'd like to thank Anton Huber for his extraordinarily work in over 35 years. At an early stage, he leveraged the opportunities of digitalisation and laid the basis for today's Digital Factory Division by integrating industry software into our automation business. With its combination of hardware and software for industrial production, the division is uniquely positioned worldwide for the future," said Joe Kaeser, President and CEO of Siemens AG. "Jan Mrosik's experience in automation and smart grids have provided him with the optimal prerequisites for continuing Digital Factory's success story. With his strong team, Ralf Christian will successfully master the challenges that still lie ahead of us and realize the business's enormous potential."

### PRATYUSH KUMAR ELECTED CHAIRMAN OF AMCHAM INDIA

At the 24th Annual General Meeting of the American Chamber of Commerce in India (AmCham India) held in New Delhi, Pratyush Kumar, President, Boeing India, was elected as the Chairman of AmCham India. Richard Rekhy, CEO, KPMG in India and Gulshan Kumar Sachdev, Managing Director, Quaker Chemical India Ltd, were elected as the Vice-Chairmen of the Chamber. Over the past 24 years, the chamber has been at the forefront of supporting growing trade between the US and India, which topped a record US\$08 billion during 2015. Pratyush Kumar said "My goal will be to steer the Chamber towards strengthening the US industry engagement in focus areas of the Government of India such as manufacturing, digital connectivity, smart cities, infrastructure build, skill development, entrepreneurship and innovation. Given India's strong growth outlook and compelling demographics along with converging strategic interests with the US, the Chamber is well positioned to partner with the Indian and US governments to help realise the full potential of Indo-US cooperation in the coming years."





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### ROCKWELL AUTOMATION ANNOUNCES LEADERSHIP CHANGES

Rockwell Automation announced that its board of directors has elected Blake D. Moret, a 30-year veteran of the Company, as President and CEO, effective July 1, 2016. At that time Keith D. Nosbusch, who has been holding the positions since 2004, will transition from those roles while continuing as Chairman of the board.

Moret is currently Sr Vice President of the company's Control Products & Solutions segment. Donald R. Parfet, Lead Director, said, "Blake has proven himself to be an exceptional leader, with demonstrated readiness to lead the company. We welcome him to his new role at the conclusion of a deliberate and planned succession process."

"The past 12 years have been transformational for Rockwell Automation," Parfet continued. "We've become a global technology leader and the world's largest company dedicated to industrial automation and information. Equally important, we are well positioned to accelerate our evolution with industry-leading innovation that improves our customers' global competitiveness."



Photo: Business Wire



### MAHESH TRIPATHI TO HEAD SANY INDIA'S SCM

Sany has recently announced the appointment of Mahesh Tripathi as the Vice President of Supply Chain Management & Operations in India. Tripathi will be responsible for developing and executing strategies for effective management of Sany India's supply chain and operations. He brings with him close to two decades of experience in supply chain practices, policies and regulations, designing supply chain models, setting up QA processes for vendors, material cost reduction, Sales & Marketing and so on. Commenting on the appointment Deepak Garg, CEO, Sany India said, "We welcome Mahesh to our team. Sany India is well poised for the next leap of growth and Mahesh's expertise will enable Sany meet the industry standards of demand and supply. We are confident of achieving effective procurement, benchmarking our vendor practices and implement improved supply chain processes."

"Sany is one of the leading players in the construction equipment segment in India. I am excited to be a part of this journey and look forward to contributing to building brand 'Sany' in India," said Tripathi.

### APOLLO TYRES APPOINTS SENIOR VICE PRESIDENT FOR NORTH AMERICA

Apollo Tyres has appointed Steven Smidlein as the Senior Vice President for North America. Based out of the New Jersey office and reporting to Neeraj Kanwar, Vice Chairman & Managing Director, Apollo Tyres Ltd, Steven Smidlein would be responsible for building the brand and sales in North America for both, Apollo and Vredestein.

Commenting on this appointment, Neeraj Kanwar, Vice Chairman & Managing Director, Apollo Tyres Ltd said, "With North America almost being an uncharted territory for us, Steven's 30+ years of sales management and retail experience, especially in the automotive sector, will help establish both Apollo and Vredestein brands in this continent. We would be relying on his proven ability to grow market share, with a focus on delivery of aggressive sales targets."

### YOICHIRO UENO IS HCIL'S NEW PRESIDENT & CEO

Honda Motor Co., Ltd. has appointed Yoichiro Ueno as the new President & CEO of Honda Cars India Ltd with effect from April 1, 2016 consequent to the management changes announced by the Honda Motor Company Board of Directors.

He will take over from Katsushi Inoue, who has been elevated to the position of Operating Officer of Honda Motor Co., Ltd, becoming the Chief Operating Officer for Regional Operations (Europe region). During his tenure in India, Inoue led several initiatives in the field of digitisation to enhance customer experience and bring in operational efficiencies at the company and dealership level. The 3rd Generation Honda Jazz was successfully launched in India and the company also witnessed significant expansion in its dealer network during this period. Inoue will move to Europe to take over as the Chief Operating Officer, Regional Operations (Europe Region) and President & Director, Honda Motor Europe Ltd.





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# Ushering the future!

The ground breaking for its highly connected manufacturing facility in the US signifies an important milestone for Faraday Future as the company works towards the production of its first all-electric premium vehicle.

**F**araday Future (FF) hosted a ceremonial ground breaking for its world-class, highly connected and environmentally-friendly manufacturing facility at Apex Industrial Park, North Las Vegas, Nevada. The announcement signifies an important milestone for FF as the company works towards the production of its first all-electric premium vehicle.

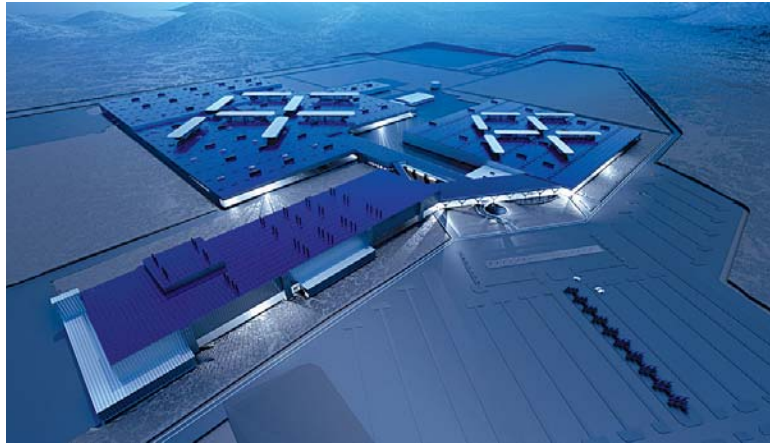
The US\$1 billion, 3 million sq ft, 900-acre development is expected to create around 4,500 direct jobs over a 10-year period for the state. “We are moving extremely quickly for a project of this size,” said Dag Reckhorn, VP of Global Manufacturing, Faraday Future. “Our aim is to complete a program that would normally take four years and do it in half the time, while still doing it right.”

“We are thrilled to have chosen Nevada as the home for our first manufacturing facility and are deeply committed to bringing our investment to the state,” said Reckhorn. “We have received tremendous support from local government officials and the community, and look forward to making a significant, positive impact on the local economy.” The facility in North Las Vegas will be used to manufacture electric, cutting-edge and technologically advanced FF vehicles. It will be expansive in size and hire in roles such as manufacturing, engineering, communications, administrative and more.

## Features of the facility

Like FF products, the production facility will be connected, futuristic looking and environmentally conscious. The FF factory will be a highly connected plant. FF is designing unique ways that will connect consumers with the vehicles and will invite them into the manufacturing experience.

The facility will use the latest materials and processes with the aim of exceeding environmental and manufacturing standards set forth by the industry. For example, the body shop will use industry leading levels of automation. FF is committed to environmentally-friendly practices. The company will harvest a combination of wind, solar and geo-thermal energies over time together with its local energy provider to help meet its clean energy goals. FF is leveraging its design experience and talents into the creation of the facility. Our user-centric ap-



Rendering of inaugural Faraday Future manufacturing factory in North Las Vegas, Nevada (US)


“The FF factory will be a highly connected plant. FF is designing unique ways that will connect consumers with the vehicles and will invite them into the manufacturing experience.”

proach is reflected in the futuristic aspects of the building with the use of glass panels that promote an open and inclusive environment. This is unprecedented for modern automobile factories which are conventionally hidden behind walls.

Materials for the facility structure will include the use of the glass, steel, LED lighting and water-based paints.

## Vehicle Production

FF will use the facility to manufacture its premium electric vehicles. The FF facility will utilise the company’s unique Variable Platform Architecture (VPA), which is an adaptable modular platform made up of battery strings that can be removed or added to alter the wheelbase. Adding or subtracting the strings modifies the vehicle’s potential weight, battery efficiency and travel distance achieving an even faster entry into nearly any new vehicle segment.


Faraday Future is a user-centric, advanced mobility company with headquarters in Silicon Valley and Southern California. Its global team leverages the talents of leading thinkers and passionate creators from the technology and automotive industries to bring premium, intuitive, and seamlessly connected electric vehicles to people worldwide. 

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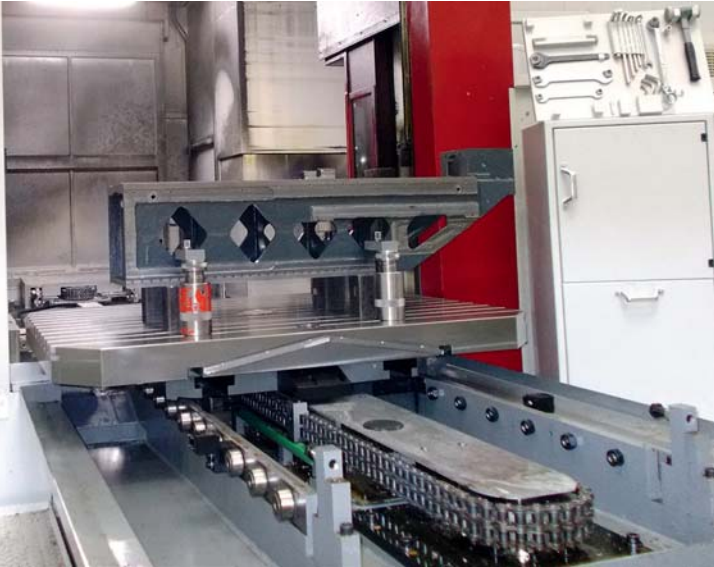
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The Z-slide that is to be machined, in front of the large Starrag Heckert HEC 1250 Athletic machining centre. Image: Licon MT



Martin Huber from Walter Deutschland GmbH (left) and Harald Dammann from Licon MT with a finishing tool in front of the machining centre. Image: Reichenbach

# Capped lead times!

Using a special round-insert milling cutter, the roughing of an internal opening on the Z-slide now takes just 10 minutes rather than a previous 56 minutes.

Thanks to two solutions from precision tool manufacturer Walter AG, the machine tool OEM, Licon MT, is saving a lot of time and money when milling a component for machining centres. Using a special round-insert milling cutter, the roughing of an internal opening on the Z-slide now takes just 10 minutes rather than a previous 56 minutes. The subsequent finishing using an innovative shoulder mill can also be completed in just a few minutes – all with improved surface quality.

“We were simply not satisfied with the previous machining times,” says Harald Dammann, Head of Production/Work Preparation for the renowned machine tool manufacturer, Licon MT. Two successive work processes on one component seemed too lengthy and too expensive to this experienced technician. The part is fitted in Liflex II 444 five-axis, two-spindle horizontal machining centres. In addition to rotary transfer and special purpose machines, the modular machining centres in the Liflex series are the main source of revenue for Licon MT. The company employs 200 members of staff at its main plant in Laupheim, near Ulm.

The aforementioned work processes involve the rough and precision machining of an internal opening on a Z-slide that is 1,400 mm long and whose width and height are both 300 mm. The workpiece, which weighs almost 200 kg, is made of

spheroidal cast iron and has a tensile strength of 600 N/mm<sup>2</sup>. Circular interpolation milling is used to expand the opening from a diameter of 200 mm to 241 mm. Licon MT uses special milling cutters for the rough machining, and for the subsequent finishing.

The roughing tool has an extremely large projection length of 553 mm. “On tools of this length, ensuring sufficient toughness and stability is an important aspect in order to achieve the required machining quality,” notes Harald Dammann. However, to make this tool easier to handle, the tool shank, which weighs more than 10 kg, is made from aluminium rather than steel. This is not good for achieving a high level of stability. For this reason, milling cutters and indexable inserts are required that contribute to stable machining with a high level of operational smoothness.

## Round-insert milling cutters offer advantages when roughing

The roughing takes place on a horizontal four-axis large machining centre with horizontal/vertical milling head. Until recently, this process took a full 56 minutes and the subsequent finishing of various surfaces took another 48 minutes. To reduce these times, the Head of Production and CAM Programmer, Marcus Brey Mayer, contacted Martin Huber from Walter Deutschland GmbH at the start of September 2015.

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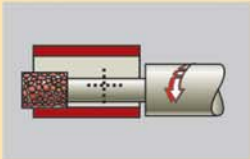


FIG-200 SPL CNC  
BIG BORE GRINDER

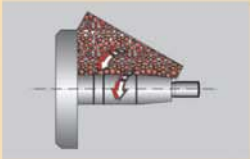


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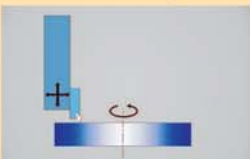


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## CASE STUDY

The experienced application engineer has had a good working relationship with Licon MT for years. Within just a few days, he had found an ideal solution for both work processes.

For the roughing, an F2334 round-insert milling cutter has been used since the end of September 2015 instead of the octagon milling cutter that was previously used. Both cutters are manufactured by Walter. “This milling cutter’s strengths include particularly smooth running and a high level of process reliability,” explains Martin Huber. “Round indexable inserts with location flats and a robust insert clamping system allow for high feeds and metal removal rates – particularly when roughing materials that are difficult to cut.”

For the subsequent finishing, the F5041 BLAXX shoulder mill from Walter is to replace the shoulder mill that was previously used and that was manufactured by a different company. “The F5041 is designed for high levels of toughness, stability, process reliability and productivity,” says Martin Huber. “The basis for these advantages is a robust BLAXX tool body that is protected against wear by a special surface treatment, a particularly robust core, four helical, positive cutting edges per indexable insert and the precise 90° on the workpiece.”

Walter’s milling cutter combines the advantages of tangential milling systems with the strengths of indexable inserts that come with the manufacturer’s own Tiger•tec Silver CVD coating. In this temperature-resistant, particularly wear-resistant coating, aluminium oxide with its optimised microstructure contributes to reduced machining times. Particularly smooth rake faces are designed to minimise tribochemical wear. A silver flank face as an indicator layer means that wear can be easily detected and therefore prevents cutting edges from being wasted.

### Feed rate significantly increased

The round-insert milling cutter that is used for the roughing and that has a diameter of 160 mm is equipped with ten, eight increment, round inserts with Tiger-tec Silver coating. By changing to this tool, the feed rate per tooth ( $f_z$ ) has increased from 0.28 to 0.8 mm, and the depth of cut ( $a_p$ ) has increased from 0.5 to 1 mm.

On the round insert, the effective cutting approach angle ( $Kappa$ ) is 20° – in contrast to 45° on the eight-edged insert on the previous octagon milling cutter. “The lower the approach angle, the thinner the swarf and the higher the potential feed,” according to Martin Huber. The feed rate ( $v_f$ ) was therefore able to increase from 850 to 2,700 mm/min, and the machining time sank from 56 minutes to just 10 minutes. “We did not expect to see this type of improvement,” says Harald Dammann. Saving 46 minutes per workpiece means that, for 100 components each year, there is a capacity increase of 76 hours and savings that run into four figures. Another positive effect of Walter’s solution: The thinner the swarf, the lower the load on the milling spindle, and the more smoothly the machine runs. Reduced vibration means reduced wear on the machine, better surface finish and longer edge life.


The Walter Blaxx shoulder mill (63 mm diameter) that has been used for the finishing application since the changeover, is equipped with seven square indexable inserts. While the competing product was equipped with six square inserts, the seven inserts on Walter’s milling cutter are tangential double sided inserts with four cutting edges and wide finishing land. This product is made from the particularly wear-resistant WAK15 cutting tool material and has a long secondary cutting edge. This means that a higher feed per tooth ( $f_z$ ) is possible and ensures that the surface quality is significantly improved ( $R_a = 0.5$  instead of  $R_a = 1$ ).

By changing the finishing tool to Walter Blaxx, it was possible to increase the feed per tooth ( $f_z$ ) from 0.08 mm to 0.35 mm. The feed rate ( $v_f$ ) increased from 300 mm/min to 3500 mm/min, and the machining time dwindled down from 48 minutes to just five minutes. “This is roughly one tenth – we



The F2334 round-insert milling cutter in front of the opening that is to be machined on the inside of the Z-slide. Image: Licon MT

would hardly have dared to dream about such figures,” says Harald Dammann as he expresses his astonishment. Reducing the machining time for each workpiece by 43 minutes means that, for 100 components each year, there is a capacity increase of 72 hours and savings that run into four figures.

“Thanks to the time that is saved, the premium Walter tools recoup their costs in no time at all,” says the Head of Production as he talks about costs, before adding: “Since the finishing has become significantly more reliable than before as a result of the changeover, work can now be carried out to a large extent without close supervision.” And while emulsion was previously used for cooling when roughing and finishing, both work processes now run dry. This means that the workpiece remains dry and the time required for cleaning is significantly reduced. 

Source: Walter AG

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# Boosting productivity through complete machining

Equipped with a C-axis and Y-axis plus powered tools the NLX 2500 from DMG MORI supports turning operations at Buchholz Hydraulik.

**F**ounded as the handcraft enterprise Buchholz in 1884, the Buchholz Hydraulik GmbH of today has concentrated on the solution-orientated development and production of valve controls for mobile hydraulics since 1959. In its production, Buchholz Hydraulik trusts in high-quality and high-performance CNC technology in order to meet the high demands placed on productivity. In October 2014, DMG MORI installed an NLX 2500|700 in the turning division, which, with its C-axis and Y-axis, enables complete machining of the sophisticated workpieces. Also, the new design and the intuitive GUI CELOS ensure work on the lathe is ergonomic and user-friendly.

Fork lifts and excavators are just two examples of the wide field of application of hydraulic solutions. Thanks to its consistent customer orientation Buchholz Hydraulik has established itself as a competent development partner that carries out a project from the concept phase right through to commissioning and optimisation in the vehicle. The core of the work is always the focus on individual product solutions that fulfil the requirements of the customers in respect of functionality and where the question of costs is concerned. For many years, Buchholz Hydraulik has stood for high product quality and customer-orientated order processing including short delivery times. This high standard is ensured by both well-trained specialists and innovative machine tool technology. Complete machining is an important keyword here, because this kind of production meets the high productivity requirements. In addition to diverse automated systems, the company also upgraded recently in the



“3D simulation warns us of potential collisions and also calculates the runtimes of the workpieces,”  
**Heiko Neßler,**  
Machining Technician,  
Buchholz Hydraulik

area of turning where it replaced an old 2-axis lathe with an NLX 2500|700 from DMG MORI.

**Improved work ergonomics and the new design**  
The NLX 2500|700 is available with customer-specific expansion options so that it can ideally accommodate the specific application required. The company uses a version equipped with a counter-spindle, C-axis and Y-axis as well as powered tools. “This enables us to turn and mill the workpieces, and we can do this on the front and the back,” explains Heiko Neßler, Machining Technician, Buchholz Hydraulik. This is an enormous gain in productivity compared to the previous solution. “For the simple reason that

we no longer need a second machine for milling,” he added.  
DMG MORI achieves a high degree of functionality with this combination of advanced software and hardware. Heiko Neßler programs the job order directly on the underlying MAPPS V control—often parallel to primary machining. One great advantage of CELOS is its 3D-simulation of the program—“This warns us of potential collisions and also calculates the runtimes of the workpieces,” notes Neßler. He further added that this option is used for calculations and other work scheduling. The new design rounds off the ergonomic operation of the NLX 2500|700 ab. “The large door provides good access to the work area,” he mentions.

Buchholz Hydraulik comes to a very positive conclusion with regard to the NLX 2500|700 and the new CELOS user interface: it has been possible to integrate machine concept perfectly into daily production.

Source: DMG Mori



# A factory within the factory

Super shopfloor is safe and green. **Jaroslaw Strzelczyk**, Senior Director, Operations, Danfoss talks to The Machinist about his views on what makes a 'Super Shopfloor'.

By Niranjana Mudholkar

## What is a 'Super Shopfloor' for you?

Super Shopfloor is—inbuilt safety, quality, 5S, visual management and lean flow of material and information in the entire value stream, which leads to world class manufacturing excellence.

## How does a 'Super Shopfloor' manage cost?

By creating value and removing waste in shop-floor, we can manage cost. Deploying lean tools will result directly in controlling the shop floor cost.

## What role do 'people' play in powering a 'Super Shopfloor'?

Employees form an integral part of the shopfloor. I feel that people should take ownership for their work place—such as 'my machine', 'my work station' and set the basics right. Working towards establishing 'continuous improvement,' culture will set a strong foundation for the shopfloor and empower workers.

## How can technology facilitate a shopfloor to become super?

Technology facilitates the shop floor to have systematic and

"When the quality is inbuilt in each process step with error proofing, it always leads to quicker completion of work."

professional way to sustain the process steps.


## How does a 'Super Shopfloor' balance between quality and productivity?

When the quality is inbuilt in each process step with error proofing, it always leads to quicker completion of work. When the shop floor is balanced with right manning, with standard work and standard operating procedure, we can say quality and productivity is balanced.

## Is a 'Super Shopfloor' Green?

Yes. Safety is inbuilt in all machine/process/work stations is said to be green. For example in Danfoss, our global expertise, supplemented by our local manufacturing capabilities at India's first LEED Platinum rated manufacturing facility in Oragadam is helping realise high energy savings and a cleaner environment.

## How innovative is a 'Super Shopfloor'?

The innovative shopfloor will operate as a factory within the factory, creating customer delight/earning their loyalty by delivering right quality product with optimum resource utilisation. 





# Being closer to farmers

With the positive predictions for monsoon and increasing global demand, Sonalika ITL is optimistic about the future of the tractor industry. **Raman Mittal**, Executive Director, Sonalika ITL speaks to The Machinist about the climate, government's initiatives for the farmers and the company's new facility.

By Swati Deshpande

**Q** The year 2015 hasn't been a great one for the industry overall. How did your organisation fare in this year?

The last two years have been quite tough for the farmers, due to insufficient rainfall. Owing to this, farmers faced cash flow crises, which ultimately had adverse effect on the farm equipment industry. In these tough market situations, we grew our market share in FY15 by 1.3 percent and maintained market share in FY16. Our innovative product range and back-to-basic strategy has been the driving force in our growth. The downfall in overall tractor industry and tough market conditions have helped us in re-looking at our systems and improving their efficiency.

**Q** The India Meteorological Department (IMD) has predicted a good monsoon for this year. This obviously augurs well for the farm equipment industry. How do you plan to leverage on this? What kind of growth projections do you have for 2016-17?

IMD's prediction of favourable monsoon will definitely have positive impact not only on the tractor industry but on the Indian economy as a whole. It will also boost the sentiments of farmers and their financiers. Therefore, we hope that Q3 of 2016 will see an improvement in the cash flow of farmers, which will result in a growth of 15-20 percent in the tractor industry.

With the increasing demand for tractors in India and globally, we are starting a state-of-the-art tractor manufacturing plant, which is strategically located in Hoshiarpur. This facility will produce approximately two lakh tractors annually with a roll out time of around two minutes.

**Q** The Union Budget 2016-17 emphasises on the rural and agricultural sectors. Can you please tell what effects this will have on the farm equipment sector in this year?

Indian government is taking various steps for protecting interests of farmers through various initiatives such as 'Pradhan Mantri Fasal Bima Yojana' that supports ailing farmers and provide them with appropriate aid. The Union Budget has also emphasised on improving irrigation. These steps at the structural level are commendable. However, it will take slightly longer time for the results to be seen on the ground.

**Q** Please tell us about the emerging technologies in this sector that are gaining popularity.

Agriculture is a composite of various activities such as land preparation, seeds, fertiliser, irrigation, harvesting, processing, storage and transportation. Developments are taking place in all these spheres and if adopted, these will lead to enhancing farm productivity. A new technology has also emerged in the area of paddy cultivation. Coming to farm mechanisation, modern machines are becoming popular in the area of planting, reaping and soil preparation. However Indian farmers are slow to adopt modern machines and so the transition would be slow but decisive. As a solution, the government and agricultural universities need to join hands with the industry in propagation and adoption of new technology and practices.



The image features a Siemens SIMATIC S7-1500F fail-safe CPU in the foreground, showing its front panel with a small display and several indicator lights. Behind it, a computer monitor displays the TIA Portal software interface, which includes a project tree on the left and a main workspace showing a ladder logic diagram. The Siemens logo is visible in the top left corner of the image area.

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“IMD’s prediction of favourable monsoon will definitely have positive impact not only on the tractor industry but on the Indian economy as a whole.”

**Q How important is R&D in the farm equipment manufacturing sector? Tell us about your R&D capabilities.**

We believe that R&D plays an important role for every farm equipment manufacturing company, as it is the deciding factor for an innovative product.

Being situated in Punjab (The leading agriculture state in India), Sonalika has deep knowledge of the farming requirements across India and have also done an extensive research on the same, which resulted in development of the most suitable tractors and equipment for the agriculture and commercial applications.

Sonalika ITL is equipped with a R&D department, which is recognised by the Government of India, Ministry of Science and Technology Department of Scientific and Industrial Research. It has more than 300 specialised engineers to provide most updated technology with customised solutions to our customers. The main thrust of the R&D function is to accelerate innovation and maximise the value of each product.

Our R&D department has highly skilled and experienced manpower, which has developed technologically superior tractor range from 20–110HP. The department is equipped with an in-house testing facility to ensure 100 percent quality. It also integrated the most updated technology to cater to the customers’ variety of needs and requirements.

**Q You have sold tractors in numerous countries all over the world. Please elaborate on your exports. What differences do you find in the demands of Indian and global farmers?**

Our tractors are sold under Solis and Sonalika brands in more than 100 countries, which include European as well as non-European countries. Sonalika ITL has come a long way internationally, from their first export order in 2010 for Cameroon, now has become a trusted brand for the customers globally.

The fundamental needs like value for money, less fuel consumption, safety and additional benefit remains the same for both domestic and global farmers. However, their usage is


different e.g. farmers globally use tractors for specific applications like road cleaning, loading, etc., while the Indian farmers mostly require tractors with multiple application option. Farming is a lively hood for the Indian farmers whereas it is a hobby or a secondary business for global farmers that are catered by Sonalika ITL. To meet the demands of global farmers we provide customised solutions to them.

On the other hand, Indian farms are small in size and thus, require tractors of lesser power. Their main requirement covers from 35–45 HP tractors while global farmers are completely technology dependent and use bigger tractors.

**Q The company recently started its production at its Punjab plant. Can you please elaborate on the same? Which markets this facility will cater to?**

Sonalika is a home grown company and produces approximately 80,000 tractors per year to cater the demands of farmers. With the increasing demand for tractors in India and globally, we are starting a state-of-the-art tractor manufacturing plant, which is strategically located in Hoshiarpur. This facility will produce approximately two lakh tractors annually with a roll out time of around two minutes. The world-class plant offers all facilities, under one roof i.e. manufacturing everything from sheet plastics, sheet metals, transmission, engine to the whole tractor. It will also house a robotic paint facility for base and top coat. We are the first tractor manufacturing company in India to adopt such an advanced system.

**Q You plan to ramp up number of dealers in the Southern India. Can you please elaborate on your expansion plan with this regard?**

Sonalika ITL aims to move up from current standing of No 3 in the tractor manufacturing industry. With the increase of our production capacity, we need to increase our penetration in Southern markets. For this we need to increase our dealer network to reach closer to farmers and provide easy service support to the farmers. 



# Scaling a new high: Haas Mumbai Demo Day 2016

Recently, Haas Automation had organised HAAS Mumbai Demo Day 2016 at Haas Factory Outlet (HFO), Mumbai. The first edition of this kind of the event, was inaugurated by Nishikant Ahire, Chairman & Managing Director, AMT Group in the midst of several industry professionals who graced the occasion with their presence. The event attracted visitors from around 500 companies. Other than Maharashtra, delegates came from various parts of the country including Gujarat and Delhi.

At the event, the company displayed its latest generation CNC machines—VF-2 and ST-35 while the new generation control from Haas was exhibited in the country for the first time. According to the company, the new generation control packs are even more innovation into what was already the industry's greatest overall CNC control.

Like all other CNC machines from Haas, the VF-2 and ST-35 are built at the company's 1-million sq ft factory in California, the US. In order to cater to the Indian market, the company has a network of local HFOs in country that sup-



port all Haas products. Each of these HFOs employs factory-trained engineers and stocks official Haas spare parts.

Apart from Haas machines, five exhibitors from the areas of tooling, work holding, accessories, CAD/CAM, measurement and probing also displayed their exhibits at the event. With the latest products and solutions from Haas as well as its partner companies, Mumbai Demo Day truly lived up to its expectation.



Showcasing best of its capabilities

PhillipsCNC concluded its Open House on May 7, 2016 at Phillips CNC Technical Center in Navi Mumbai. The multi-brand Open House was inaugurated by the Industry expert Nishikant Ahire, Chairman & Managing Director, AMT Group.

In India, Phillips Corporation through its subsidiary CNC Servicing and Solutions India Pvt Ltd represents industry leading global brands such as Hermle, SHW, Zeiss, Sunnen, Tsugami, Maple, Kent, Haas, etc. The three day event was visited by around 800 visitors during May 5–7, 2016.

There was variety of products on display at the show. Here are some of the key machines that were showcased at Phil-

lipsCNC Open House:

- Kent KGS-84AHD Precision Surface Grinder
- Tsugami M08J CNC Lathe
- Tsugami B0205 Sliding Head Turning Center with Bar Feeder
- Maple Taiwan ME- 850 Vertical Machining Center
- Sunnen USA SV-2015 Vertical Honing Machine
- Zeiss Comet L3D Optical scanning machine

This event showcased the latest technologies in milling, turning, honing, grinding and measuring with experts on hand to provide solutions helping manufacturers enhance their quality and productivity.





# Making future of manufacturing greener

In the present age of manufacturing, making processes sustainable has become a mantra. In this line, companies are making efforts to reduce its environmental impact. To achieve this, the companies have set targets and are working towards it. Here is an overview of what initiatives are being taken by the industry towards going green.

By Swati Deshpande

As Winston Churchill once said, “To improve is to change, to be perfect is to change often”, the companies need to be perfect in what they produce as well as how they produce it. In today’s era, the focus on reducing impact on the environment is immense and that has direct effect on the business efficiency. Speaking on the same, Bappa Bandyopadhyay, Director – Operations & Projects, Henkel Adhesives Technologies India Pvt Ltd said, “We are convinced

that sustainability and reduced environment footprint is becoming increasingly important for business success, supporting growth, improving cost efficiency and reducing risks.”

Additionally, maintaining and creating a strong brand image in the society is also one of the essential aspect that is directly related to ‘being green’. Even customers are being selective about suppliers not only on the basis of the quality of the product but also on suppliers’ efforts of being soft on the environment. “The drive to reduce resource consumption and improve efficiency directly translates into business profit,” noted Zurvan Marolia, Sr Vice President and Head – Product Supply, Godrej & Boyce. Hence, companies are setting goals towards being green. With this regard, Bandyopadhyay mentioned, “Achieving more while using less resources and tripling the efficiency by 2030 is the goal of Henkel Adhesives Technologies’ sustainability strategy.”

Translating its thoughts about being eco-friendly into action, HIL launched UPVC and CPVC pipes and fittings couple of years back, under the brand Aerocon. Speaking on the





“At all our manufacturing locations, energy and water consumption is monitored daily. We have set indicators for monitoring performance in key areas like energy consumption, CO2 emission, water consumption and waste generation. Monitoring, variance analysis and review of these indicators helps control consumption and identify more opportunities for improvement in these indicators,”

**Zurvan Marolia,**

Sr Vice President and Head – Product Supply, Godrej & Boyce.

same, Lokanath Mati, Operations Head, AAP Business, HIL stated, “We understand the importance and the need to employ green technology and developing green products, as that is where the future lies. As a result we take all necessary steps to ensure that our manufacturing process and products are eco-friendly. For example, as norm of the company, we do utilise 100 per cent heavy metal free raw materials and our is the first company in the country to do so in our category.”

Cement is another industry that is considered to be one of the most hazardous to the environment. However, Dalmia Bharat, an Indian cement producer, is taking steps to make its processes friendly to the nature. “With cement to clinker ratio of about 1:7, today we are one of the most efficient cement producers globally. Through in-house research and development, we have strengthened our competitiveness in terms of

operational efficiencies leading to greater returns, cost reduction and intrinsic stakeholder value,” asserted Prashant Tripathy, Group Head – Manufacturing, Dalmia Cement Bharat Ltd (DCBL).

Alternatively, Godrej & Boyce’s most of the plants have implemented green manufacturing processes and hence have earned GREENCO certifications. “Our pioneering efforts in manufacturing processes include focus on improving energy efficiency, increasing the component of renewable energy, reducing fresh water footprint, chemical management and the management of hazardous & non-hazardous waste. On the water front, at the Vikhroli establishment, all of our plants are connected to a central Effluent Treatment Plant (ETP) and Sewage Treatment Plant (STP). Most of our upcountry manufacturing locations are equipped with in-house ETP and STP







To achieve its sustainability vision, the company focuses on three areas; i.e., water, energy (power and fuel) and waste across manufacturing sites in the country. To attain desired reduction, the company works on the three identified areas under the categories of 'Reduce', 'Reuse' and 'Recycle.'"

**Bappa Bandyopadhyay,**

Director – Operations & Projects, Henkel Adhesives Technologies India Pvt Ltd.



ensuring zero liquid discharge to the environment. This provides the opportunity to treat and use recycled waste water for its processes. Most plants also have rain water harvesting facility. We are consciously working towards increasing its renewable share through use of solar roof top panels, biomass energy through gasifier, thermic fluid heater at plants, and strategic power purchase agreements," Marolia informed.

**Water & energy conservation**

Similarly, Henkel has deployed a rain-water harvesting project in its Thane facility. "This measure helps us save around 360,000 litre water per annum. Moreover, our manufacturing operations reduced its water consumption by 9 percent and waste generation by 17 percent at a pan India level in 2015 with respect to 2014 operations," affirmed Bandyopadhyay. HIL as well ensures that no drop of rains goes uncounted for through rain water harvesting systems. Furthermore, Dalmia Bharat has achieved positive results from various plans implemented for conserving water. "At our Dalmiapuram plant, daily water consumption was reduced by 36 percent within two years as a result of various water conservation initiatives and process modifications. The Kadapa plant in Andhra Pradesh obtained water positivity in FY 2014-15 itself through rain water harvesting measures whereas at Ariyalur, we used captive power plant reject water for cement mill operations to reduce water consumption in the cement mill," remarked Tripathy.

In this comparison, Racold Thermo (P) Ltd which is

taking small but important steps towards saving water. "Recycling of water through STP and ETP, timely check on plumbing fitting and fixtures to avoid any water leakages and awareness within the organisation about water crisis are some of the measure that we are taking for saving water," mentioned Mahesh Bhangale, General Manager - Manufacturing, Racold Thermo (P) Ltd. Some of the other initiatives taken by the company aligning with green manufacturing include use of LED lights and usage of solar water heater to heat water required for processing.

"Installation of solar PV for power generation is also under discussion to put in practice," added Bhangale.

Moreover, the Racold Thermo is also making efforts to reduce the electricity consumption. "In our facility, we use proper ventilation to get good sunlight and air circulation. Also, we ensure that lights are switched ON/OFF at particular time.

Use of motion sensors for lights in key areas and awareness within organisation to reduce energy usage play a vital role,"

Bhangale continued. Besides Racold Thermo, even HIL has adopted these energy saving measures.

Highlighting these initiatives, Mati commented, "We have 100 percent LED light installation all across the plant. LED lights accompanied with completely automated Yard lighting control help us achieve energy efficiency."



**Identifying key areas**

Making a plant energy efficient also includes the aspect of sustainable manufacturing processes. Automation plays an important role here. "Henkel Adhesives technologies' Turbhe



We understand the importance and the need to employ green technology and developing green products, as that is where the future lies. As a result we take all necessary steps to ensure that our manufacturing process and products are eco-friendly."

**Lokanath Mati,** Operations Head, AAP Business, HIL





We continue our commitment to promote the industrial ecology through use of various industrial wastes (alternative raw material) such as fly ash (waste from coal based thermal power plants), blast furnace slag (waste from steel industry), chemical gypsum, red mud (waste from aluminium industry), etc."

**Prashant Tripathy,**

Group Head – Manufacturing, Dalmia Cement Bharat Ltd (DCBL).

plant reduced the batch cycle time by introducing automation thereby saving 55,440 KWH of energy," observed Bandyopadhyay.

Likewise, identifying the key areas and working towards it is secret to have clean processes. Adhering to this, Godrej Interio has identified its powder coating as one of the most energy significant processes, which draws more focus for improving energy efficiency. "We have been able to reduce energy consumption in the process through successful implementation of projects like the modulation of pumps and blowers by use of variable frequency drives, use of room temperature chemicals to eliminate the need for hot water. The project of using low bake epoxy powder helped to reduce piped natural gas (PNG) consumption," asserted Marolia.

Racold Thermo also houses similar powder coating section. "Here most of the energy is consumed in pre-treatment, preheating, powder coating and curing areas. Presently, we are using CNG gas to heat the required areas instead of consuming electricity. We have installed solar water heaters to heat the water for processing of the production. Also, we have changed over to CORONA system instead of TRIBO to avoid wastage of powder," Bhangale informed. To improve it further, the company plans to use heat pump to heat required chemicals in pretreatment areas. This will also enable them to utilise cold air from the heat pump to maintain temperature of powder storage. "Heat recovery system from air compressors are also part of our future utilisation," he added.

### Reuse & recycling

Recycle and reusing are essential parts of sustainable processes. Marching its way in this direction, Racold Thermo treats waste water generated in the paint shop so that it can be utilised for gardening purpose. Similarly, Marolia clarified that at Godrej & Boyce's Vikhroli and Shirwal, 100 percent of the water requirement in the powder coating pre-treatment process is fulfilled by recycled water, which is made process ready through the use of reverse osmosis (RO) treatment. "Epoxy powders used in the process are lead free and have zero VOC emissions," he continued.

On the other hand, Henkel Adhesives Technologies' Thane plant took an initiative to recycle raw material drums for packaging of finished goods with all quality controls in

Additionally, maintaining and creating a strong brand image in the society is also one of the essential aspect that is directly related to 'being green'.

place; thereby, reducing 64,800 Kgs of waste generation per annum. "While, our Turbhe plant saves 14,60,000 litres of water each year by distillation of a water-glycol mixture and reusing it in the cooling towers as make up water," emphasised Bandyopadhyay.

HIL reuses the water discharge from the RO for toilet flush. "That's not it. Following the mantra of recycling, we also recycle our products 100 percent after they complete its lifetime," Mati revealed.

Elaborating on the efforts made by Dalmia Bharat in the area of recycling, Tripathy said, "We continue our commitment to promote the industrial ecology through use of various industrial wastes (alternative raw material) such as fly ash (waste from coal based thermal power plants), blast furnace slag (waste from steel industry), chemical gypsum, red mud (waste from aluminium industry), etc. Our alternative raw material input for the company was about 28.5 percent in FY 2014-15. Further, we have registered carbon footprint of less than 500 kg CO<sub>2</sub>/ton of cement (FY 2015-16). Our eastern operations produce 100 percent blended cements with associated carbon footprint of less than 370 kg/ton."

Reusing and recycling are the key areas where Henkel Adhesives Technologies is working on to achieve its sustainability vision. The company focuses on three areas; i.e., water, energy (power and fuel) and waste across manufacturing sites in the country. To attain reduction, the company works on the three identified areas under the categories of 'Reduce', 'Reuse' and 'Recycle'. "With this regard we have Sustainability Vision 2020, considering 2010 as the baseline year. This vision includes to reduce consumption of resources by 30 per-

### A feather in the cap

Recognising the role of senior leadership at Dalmia Cement (Bharat) Ltd in combating climate change, H.E. Ban Ki-moon, Secretary General, United Nations invited Mahendra Singhi, Gr CEO, Dalmia Cement (Bharat) Ltd to the Paris Agreement Signing Ceremony on April 22, 2016. He chaired one of the high-level roundtable discussions on Sustainable Development Goals (SDGs). Singhi was amongst the two CEOs of Indian companies representing Indian private sector during Paris Signing Ceremony.





In the powder coating section most of the energy is consumed in pre-treatment, preheating, powder coating and curing areas. Presently, we are using CNG gas to heat the required areas instead of consuming electricity. Also, we have changed over to CORONA system instead of TRIBO to avoid wastage of powder.”

**Mahesh Bhangale,**

General Manager - Manufacturing, Racold Thermo (P) Ltd

cent; to reduce carbon footprint from logistics operations by 25000MT of CO2e or 6 percent and to ensure 40 percent of Henkel’s manufacturing sites across the globe comply with zero waste to landfill strategy,” elaborated Bandyopadhyay. However, in order to achieve these targets there is a necessity of having a robust monitoring system. “To meet these targets, achievement against each set of parameters is measured, reported and monitored on a month-on-month basis,” he added.

**Constant monitoring is a key**

Seconding the same, Tripathy said, “Performance measurement is the first step to the effective management and sustainable production. Realising the need of effective performance measurement, we have developed monthly dashboard for carbon footprint estimation. On monthly basis, an internal carbon footprint based benchmarking is carried out for our manufacturing plants spread across India.”

Godrej & Boyce as well undertakes monitoring processes regularly. “At all our manufacturing locations, energy and water consumption is monitored daily. We have set indicators for monitoring performance in key areas like energy consumption, CO2 emission, water consumption and waste generation. Monitoring, variance analysis and review of these indicators helps control consumption and identify more opportunities for improvement in these indicators,” Marolia mentioned.

In addition to the performance monitoring, peer-to-peer comparison and external benchmarking is also crucial in order to improve the past performances and implement others best practices. “In this regard, we follow universally accepted reporting practices of Cement Sustainability Initiative (CSI) and disclose our sustainability performance as per pre-defined indicators of CSI for global comparisons,” asserted Tripathy.

**Looking at the greener future**

With these initiatives, Dalmia Bharat has set a target of becoming water positive with specific reference to water consumption in cement plants by year 2017. Also, the company plans to reduce its carbon intensity by 3 percent compared to FY 2014-15 and aims to expand the use of alternative fuels to

all cement kilns by 2017.

Speaking on the targets set by Godrej & Boyce, Marolia said, “In line with the Godrej ‘Good and Green’ strategy, the organisation is committed towards reducing its specific energy consumption (energy consumption per rupee of manufactured value-add) by 25 percent, positive water balance, zero waste to landfill, carbon neutral and 30 percent renewable energy share by 2020. Godrej Interio has taken a stretched target of reducing its specific energy consumption by 35 percent and specific water consumption by 40 percent. We have goals for reducing specific hazardous waste by 50 percent and 100 percent diversion of non-hazardous waste from landfill.”

To achieve its targets with regard to sustainability, Henkel India is taking steps right from the planning stage of its new plant. “We are setting up India’s largest adhesives plant at Kurkumbh. This plant would be a model for sustainability and efficiency. It will be LEED certified by the US Green Building Council and will follow the highest standards of safety, health and environment. Furthermore, the site will have facilities for rain water harvesting, harnessing solar power and a state-of-the-art waste water treatment plant with a treated water recycle scheme,” informed Bandyopadhyay.

**Concluding remarks**

Looking at the bigger picture, environmentally-friendly manufacturing processes help a company to improve its brand image and use it as a tool of marketing. “Sustainable practices in critical areas of water management ensure the continuity of business. Commitment and work towards reducing environmental impacts build a good social image of business and adds value to brand. Initiatives in reducing environmental impact help in green certifications for products and plants, which become a good marketing tool in promoting greener products and services needed by the consumers,” Marolia opined.

However, going green is not a destination but a journey. “Since, the environment impact due to our manufacturing efficiency is minimum. The manufacturing process actually adds value to our end-product and helps us make the most effective use of our raw material, water and power consumption. However, we are still looking at ways to further increase efficiency and set new industry benchmarks,” concluded Mati.

Making a plant energy efficient also includes the aspect of sustainable manufacturing processes and automation plays an important role here.



# Glass Apart!

The Haas machine is precise and reliable, achieving the highest quality surfaces possible with steel moulds which will be used for between twenty and forty years.

Barcelona-based NAT VIDRIERA S.L.U uses a vertical machining centre to make moulds for the semi-automatic production of glass products.

By Oriol Camprubi Carreras

**W**e bought our Haas VF-3 machine in mid-2015, to make the many different sizes and shapes of moulds and stamping dies we use in our manufacturing. Our main markets are lighting, both technical and classical, home and bath accessories, and packaging for food, laboratory, and cosmetic industries.

We chose Haas because it's a very complete machine—that is, it had the performance and the features we were looking for, at a very reasonable price. The service and support are also part of that package. We were new to CNC machining, and the local Haas Factory Outlet has taken very good care of us.

The Haas machine is precise and reliable. It's quick enough – we don't really need speed, but we are interested in achieving the highest quality surfaces possible. Some of the steel moulds we make will be used for between twenty and forty years.


As we make bottles in relatively low volumes, 800-1000/day, we don't need full automation at any stage in our process. The biggest challenge we face is the complexity and detail designed into some of the surfaces. Our customers are selling luxury products, so they want packaging to reflect the cost and exclusivity of the contents. Many of the moulds we machine take 2-3 months to develop, from when I first create the design in SolidWorks to when we begin production of the bottles.

We don't have a great deal of competition in Spain. Most of the industry focuses on

high volume, which, like many things, has migrated to China and the Far East. Personally, I feel that's not great, as the conditions for local workers in those countries can be pretty poor.

This company was started over forty years ago, as a cooperative. The current owner is Antonio Torrejon, who bought the business when he was general manager, ten years ago. He has a great deal of experience in glass production and he doesn't want to grow too quickly. The philosophy here is step-by-step, which as a designer, suits me very nicely.

I like to experiment and try new things. Haas is the perfect machine for me, as it facilitates my style of designing. With the help of our operator, José Molina, I can quickly and easily turn my ideas into prototype parts, even though I'm not a trained CNC machinist. The Haas control is very easy to use, and it works well with our Cimatron CAM software.

Most of our designs are made in collaboration with the client, but some of them are entirely our own creation. The primary purpose of the Haas machine is to serve our glass workshop, but as time goes, we'll produce more moulds for other customers, and perhaps make our own products to sell to third parties. As a designer, I never stop thinking or dreaming about how I can use the Haas. And not just glass moulds! I have all sorts of ideas. But as a business we've never been busier, so some of my ideas will have to wait. 

*“What kind of products does NAT VIDRIERA make? Bottles for cosmetics and perfumes, typically. Not the sort of thing used by the big brands (they're made in very large quantities, using fully automatic processes), but those destined for less well known, high-end and luxury brands.”*

*The author is Project manager and designer, NAT VIDRIERA S.L.U*

*Source: Haas Automation*



# Electric Vehicle: Novel Approach & Technological Trend

In the last decade more focus has been put into the research and development of electric vehicles, since the drive for cleaner source of energy as a means of propulsion was revived.

By Dr. Dhananjay Kumar

**A**utomotive is the third most innovative industry and the annual investment in R&D is nearly four times the combined R&D investment of defence and aerospace; this shows the dynamics and importance of this sector. Of the 40 most innovative companies, nearly half are automotive, and with more than US\$100 billion in investment every year, more patents are granted yearly than in any other industry.

The electric motor came into existence before the internal combustion engine, which means electric vehicle were around before ICE vehicles, however they started to decline during the oil boom when cheap gasoline was readily available. The first battery powered electric vehicle was built in 1834 by Thomas Davenport, in 1838 Robert Davidson built the first battery powered locomotive and in late 1800s and early 1900s electric vehicles started being manufactured in volumes.

The prevailing challenge faced by the EV has always been the battery, as the drive range of the EV is limited by its capacity. However, there has been tremendous improvement in the

motor design and electronic controllers since the start of the electric vehicle in the 1800s. As electric vehicles couldn't compete with the ICE vehicles due to limited range, they had to be employed more in low speed vehicles (LSVs) or neighbourhood electric vehicle (NEVs) for use within inner cities, battery-powered forklifts and golf carts etc.

In the last decade more focus has been put into the research and development of electric vehicles, since the drive for cleaner source of energy as a means of propulsion was revived. The challenges most researchers face since reinitiating the design and manufacture of electric vehicles have been on improving the drive range and speed of the electric vehicle. The 21st century has been a huge development in electric vehicle manufacture, as improvement in power electronics and advancement of lithium-ion batteries came to play a major role in the development of electric vehicles: some of these vehicles are already in production and distributed for consumer use, whilst others are still concept vehicles for the future. A few of the electric vehicles currently present in the vehicle sector are:



“The first battery powered electric vehicle was built in 1834 by Thomas Davenport, in 1838 Robert Davidson built the first battery powered locomotive and in late 1800s and early 1900s electric vehicles started being manufactured in volumes.”



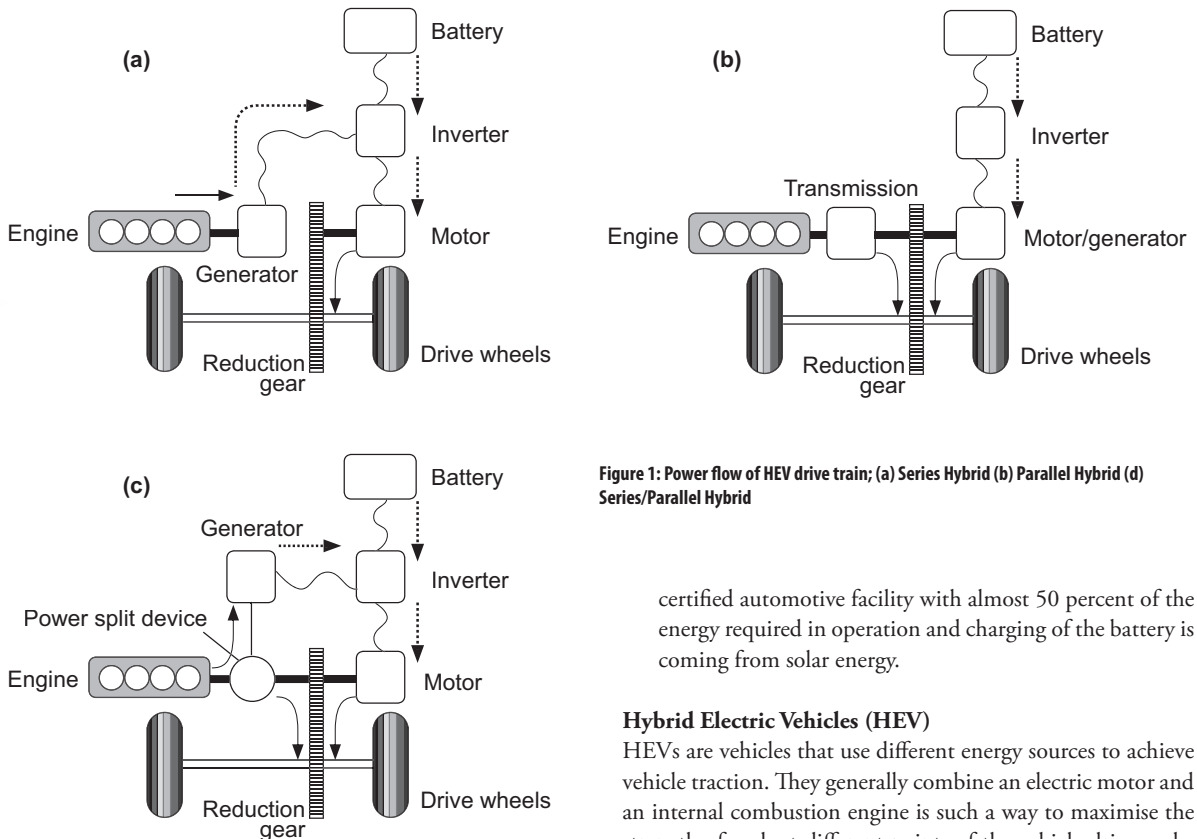


Figure 1: Power flow of HEV drive train; (a) Series Hybrid (b) Parallel Hybrid (d) Series/Parallel Hybrid

certified automotive facility with almost 50 percent of the energy required in operation and charging of the battery is coming from solar energy.

**Hybrid Electric Vehicles (HEV)**

HEVs are vehicles that use different energy sources to achieve vehicle traction. They generally combine an electric motor and an internal combustion engine in such a way to maximise the strength of each at different points of the vehicle drive cycle. The power sources can be connected in different topologies as shown in Fig 1 and the power trains work as follows:

- the Chevrolet Volt, a plug-in hybrid vehicle manufactured by General Motors, which is marketed as the Opel Ampera in Europe, Vauxhall Ampera in the UK and Holden Volt in Australia and New Zealand. The concept of the hybrid vehicle was to have a gasoline engine driving a generator as a backup to improve the drive range, while the only mechanical connections to the wheels were from the electric motor.
- the Tesla Roadster is a pure battery power electric vehicle. It is designed as 2-door sports car by an electric car firm called Tesla Motors. The roadster has a range of 220 miles per charge and is the first road battery electric vehicle to achieve such a range. However, the cost of purchasing a roadster is high, which would lead to a low consumer demand for the vehicle.
- the Toyota Prius is a hybrid electric vehicle. It first went on sale in Japan in 1997 and then worldwide in 2000. It was the first mass-produced electric vehicle and has gone through a lot of development to improve the design. The Prius V and Prius C are new and improved version that are available in the market now.
- the e2o produced by Mahindra Reva, India is another successful example of pure electric vehicle with fully charged range of 120 km and being mass produced in Platinum

- Series hybrid, where the ICE is used to charge the batteries for the electric motor or power the electric motor directly and the electric motor is connected to the wheels
- Parallel hybrid, where the ICE and electric motor are connected directly to the wheels of the vehicle in parallel and they are each sized for half of the drive power
- Series/parallel hybrid, where the series and parallel hybrid are combined to achieve the advantages of both configurations. This has been found to be the most efficient method as it smartly switches between the ICE and electric motor to give the best and most efficient traction for the vehicle

**Pure Electric Vehicles (PEVs)**

PEVs are designed with only one power source, which is electrical energy from a bank of batteries used to energise the electric motor(s) via a power electronic control system, for propulsion of the vehicle. There are different topologies for PEVs, which can be grouped into two basic categories; an onboard motor connected to the wheel of the vehicle via a shaft and differentials, or an in wheel motor connected directly to the wheel(s) of the vehicle. Fig 2 shows the simple layouts of the various topologies that can be found in the PEV.

- Fig 2(a), the early topologies where ICE vehicle to be converted to EV through replacing the combustion engine

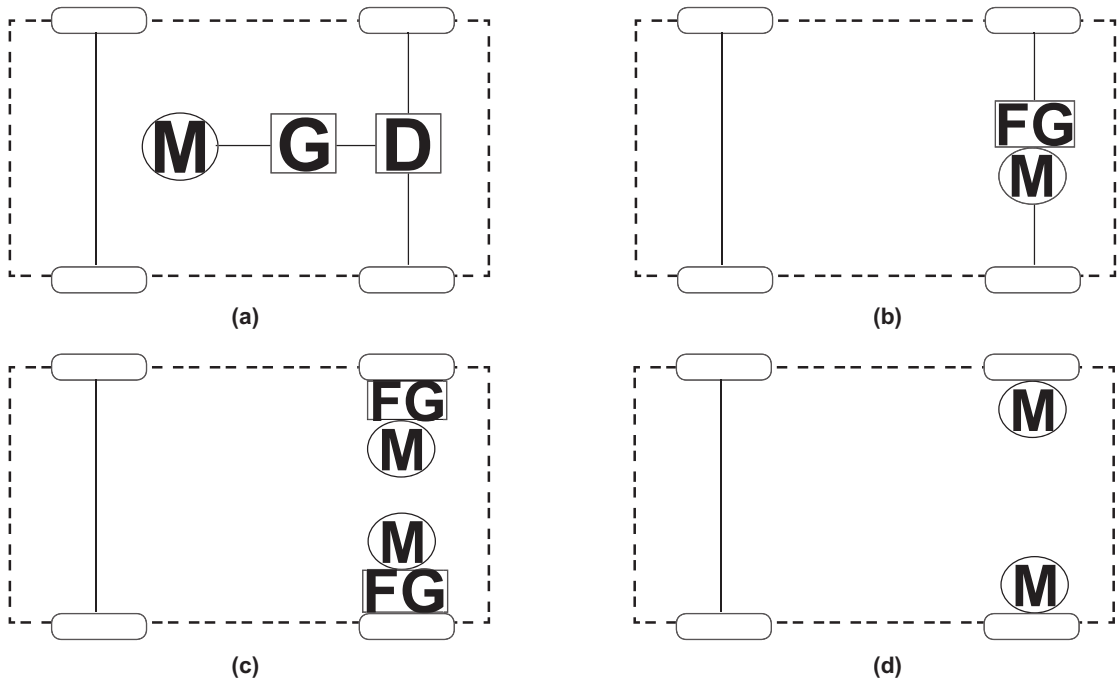


Figure 2: PEVs drive train topologies (a) Motor, Gear & Differential (b) Fixed Gear & Motor (c) In-wheel Fixed Gear & Motor (d) In-wheel Motor

with and electric motor. The gearing system can come in two types; a fixed ratio type, or designed in the conventional way where driver can shift the gear ratio using a clutch. The fixed gearing option cannot be used for ICE vehicles as it cannot achieve the required torque-speed curve of the vehicle. The advantage of fixed gearing compared to gearbox and clutch system is the number and weight of the mechanical parts are greatly reduced.

- Fig 2(b) topology is commonly adopted by modern EVs and has a similar concept to the engine design of most ICE vehicles, where the vehicle has a front-engine in a transverse direction to the front wheels, commonly called a front-wheel drive. The electric motor and fixed gearing are coupled together as an assembly. There are two types to this drive configuration; a complex motor design where the electric motor acts as a source of propulsion and speed differential to the wheels, or by adopting simple motor design and incorporating a mechanical differential to the drive assembly.
- Fig 2(c) & (d), a unique topology where the drive train of the vehicle can be mounted in the wheel which drastically reduces the mechanical transmission. The motors can either be designed as a low torque-high speed motor coupled with fixed planetary gear to step down the speed and increase the torque, or a high torque-low speed motor in which motor is designed to have an outer rotor.

### In-wheel electric vehicles

The option of mounting the drive train of the EV in the wheel of the vehicle ensuring that all of the motor's output power is

available at the wheel without any mechanical transmission losses, is foreseen to be a very good choice for vehicle traction. There are significant advantages with such a topology, such as:

- Releasing vehicle space for passengers, tractions batteries etc.
- The torque at each wheel can be independently controlled, giving a true 4 wheel drive
- True wheel-slip based control allows improved vehicle response and shorter braking distances
- Removal of drive train components gives designers greater freedom to design vibration free, comfortable vehicles
- Elimination of gears and differentials produces a simpler and more reliable overall mechanical design.

Challenges often perceived with in-wheel motors are related to ride and handling, due to an increase in the vehicle un-sprung mass and safety issue when a motor faults occurs developing a dangerous torque disturbance. The followings are the criteria for selection and design of such drive motor:

- high instantaneous torque and continuous torque density
- high torque at low speed for starting & climbing
- fast torque response for use in braking (ABS)
- low cogging torque & torque harmonics for refined drivability
- high efficiency over constant torque and power range
- high fault tolerance
- good overload capability for uphill climbing

### Autonomous Connected Vehicle

Automotive innovation can be categorised into three major areas:

### 1. Space, Test and Satisfaction (STS)

Aesthetics, safety, space optimisation, customisation and overall customer satisfaction as well as regulatory compliance leading to new materials, styles, shapes, surface finishes, ergonomics, adaptability and performance are the key drivers for STS.

### 2. Power and Performance (PP)

Ever increasing demands and expectations leading not only to innovation in existing IC engines and transmissions but also to other alternative powering systems such as electric and fuel cell, along with regenerative braking, recovering power from waste gas and active power generation through ultra-light foldable solar cells are at the cutting edge of the PP domain.

### 3. Information, Connectivity and Control (ICC)

IT revolution through cloud computing, Big data, high speed real-time computation and wireless communication will make automotive part of an inter-connected system with fellow vehicle, which are all moving in their billions on the road; for example: vehicle to vehicle (V2V); active interaction with the owner (vehicle to customer-V2C) and also interaction with elements such as the road, the environment, and powering devices (vehicle to asset - V2A). This will render an infinite opportunity for regulatory authorities and Asset Planners to manage their assets from a safety, performance and efficiency perspective, whilst allowing the market researcher to provide valuable information about its occupant's behaviour, personality and health.

All the above three segments have to coordinate to deliver the integrated target, as PP is highly dependent on ICC, and both are ultimately responsible if STS is to have an edge over other OEMs; this space is highly competitive and innovation will always have a leading role to play when it comes to excellence and growth.

Smart material-led innovation and a Multi-Material Model (M3) with optimised performance provide the key to delivering STS. Recent trends have seen increasing use of Ultra High Strength Steel (UHSS), Aluminium & its alloys, Polymer Matrix Composites (PMC) and carbon-based composites which can reduce the vehicle weight by up to 45 percent and thus improve engine efficiency by 10 percent. Light material with a better strength-to-weight ratio will be extensively used in future vehicles, in order to improve the vehicle performance and also to meet the other performance requirements such as safety, NVH and emissions. New surface finish technology will not only improve the aesthetics but also make it possible to change the colour tone/shade as per the requirements of the customer; scratch/dent resistant technology which can render long life, along with new innovations in Graphene type single molecular nano-material technology, will open


up a world of energy absorbent PV with multi sensors, smart communication and heat shield application which will make the vehicle altogether smarter and lighter. Active power generation through an inbuilt solar cell, fuel cell technology, active transmission, Gyro stability and power distribution using active sensors are some additional areas where PP will drive new innovation. City transportation will have increasing use of pure electric drive train, fuel cell and other green transmissions with zero carbon foot print. Regenerative braking, high speed charging, remote charging, auto loading battery banks coupled with charging through green energy are some of the other technologies which will have an increasing share and competitive advantage. Intercity and cross-country transportation will be using hybrid drive train along with smart shield to generate PV power while on the move. Liquid fuel will be slowly replaced with liquefied / compressed gaseous fuel with better combustion efficiency, or a complete transition to fuel cell technology.

“The option of mounting the drive train of the EV in the wheel of the vehicle ensuring that all of the motor's output power is available at the wheel without any mechanical transmission losses, is foreseen to be a very good choice for vehicle traction.”

Cloud computing, high speed wireless communication and fully loaded active sensors will make the automotive a smart, auto driven means of intelligent transportation which can communicate effectively with the surrounding environment, manage its internal assets more proactively and at the same time seamlessly follow the regulatory requirements. The ICC sector will see considerable innovation at a much faster pace than expected, and will be the biggest game changer in the automotive industry, where many of the crucial issues can be addressed at once. At the same time it can provide reliable, technology based solutions for transportation as a whole.

Driver Assist System (DAS) is the latest advancement in vehicle telematics which will have increasing application in lane departure

and blind spot warnings, adaptive cruise control, automatic braking and collision avoidance, vision aides and night vision in order to help the driver to better manage the system. Ultrasonic sensors as well as a radar and LIDAR based 3D view of the environment help in facilitating communication between the vehicle and the environment, and represent a step forward towards a driverless car.

So, the industry is prepared for both disruptive and incremental innovation where material scientists, mechanical designers and IT professionals will have an ever increasing role to play, and where many non-traditional auto companies like Google and Apple will be rubbing shoulders with major auto companies. Ultimately, who will steal the show, only time can tell; but without a doubt the industry and the consumer will be the ultimate beneficiaries. 

*The author is MD (EV program) & Director (BD), Thor Power Corporation, PA 18109, USA*





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May 26, 2016, Hyatt Regency, Pune

6.00 pm to 7.00 pm

**Registration & Entertainment**

7.00 pm to 7.05 pm

**Opening Remarks by 'The Machinist'**

7.05 pm to 7.15 pm

**Welcome Note by Presenting Partner**

7.15 pm to 8.00 pm

**CEO Panel Discussion**  
(Theme: CEOs 4.0)

8.00 pm to 8.05 pm

**Felicitation of the CEOs**

8.05 pm to 8.38 pm

**Awards Ceremony – Part 1**

8.38 pm to 8.40 pm

**Vote of Thanks by 'The Machinist'**

8.40 pm to 9.05 pm

**Awards Ceremony Part 2**

9.05 pm to 9.10 pm

**Photo Session**

9.10 pm onwards

**Cocktails & Dinner**

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# Forging component sector's prospects look promising



**Ranbir Singh, President, Association of Indian Forging Industry speaks to The Machinist about the challenges this industry faces as it prepares for growth.**

**By Swati Deshpande**

Going forward, with the revival in domestic auto market (which already show initial sign of revival) and higher export sales, the forging component sector prospects look promising. Another area of growth for forgings in near future, are in defence, aerospace and railway procurement.

Over the medium to long term, growth in the forging industry will be higher than the automotive industry growth given the increasing localisation by auto OEMs, rising export from India for both vehicle and component and make in India initiative—defence, aerospace, railway and automobile.

Forging production in India likely to grow at CAGR of 9.5 percent for the period of 2015–18 and reach to 29.7 Lakh MT in FY 2017–18 from 22.5 Lakh MT during FY 2014–15.

**Q Can you elaborate on challenge of lack skilled workforce? What steps the association is taking towards solving this problem?**

One of the major concern or challenge the industry is currently facing is dearth of skilled man power. One of the key reasons behind this stems from a lack of awareness about the forging industry and the opportunities that it offers. To tackle this issue, we decided to address the same at the grass root level i.e. through an engagement with colleges and institutes. AIFI signed an MoU with Pune's renowned engineering institute, COEP to develop a curriculum specific to the forging industry and start various courses such as graduation with forging as elective subject, certificate course in forging technology, post-graduation in forging technology, etc. The underlying objective has been to spread awareness about the sector in terms of growth, scope of career oppor-

**Q Can you give us a brief overview of the forging industry in India and is expected growth in coming five years?**

As per the survey conducted by Association of Indian Forging Industry (AIFI) in 2016, the estimated turnover of the 384 forging units operating in FY 2014-15 was Rs. 27,835 crore providing employment to approximately 100,000 people in the country. The report also suggests that investment in plant and machinery also increased from Rs. 15,500 crores in FY 2013-14 to Rs. 27,833 crores in FY 2014-15.

With an installed capacity of around 37.6 lakh MT, Indian forging industry has a capability to forge variety of raw materials like carbon steel, alloy steel, stainless steel, super alloy, titanium and aluminium.

Overall production of forgings increased from 21.1 Lakh MT to 22.5 Lakh MT registering an 8 percent growth. The overall capacity utilisation of industry is also improved in FY 2014-15 stood at around 60 percent against 55 percent in FY 2013-14. The rise in capacity utilisation is mainly supported by increase in demand from automotive and auto component industry while decline in infrastructure-related capex, sluggish IIP number throughout FY 2014-15 witnessed stagnant forging demand from industrial sector.

Make in India initiative is a good move in the right direction to give the necessary boost to the overall manufacturing sector. It has created an all-round positive business environment and sentiment.





**“Over the medium to long term, growth in the forging industry will be higher than the automotive industry growth given the increasing localisation by auto OEMs, rising export from India for both vehicle and component and make in India initiative—defence, aerospace, railway and automobile.”**

tunities and the diversity of the kind of roles and learnings it has to offer. Apart from this, we continuously associate with colleges through their educational and technology fests and engage with students through fun interactive activities.

In addition, we also encourage the high educational institutes to associate with us to explore other initiatives like hands-on knowledge building through plant visits, internships with various forging companies, undertaking research projects, organizing seminars/conferences and other initiatives where people from the industry can interact with the students.

We firmly believe that collaborations like these between academia and industry will help develop new communication streams and address various issues relevant to the industry.

**Q Can you please elaborate on exports of the forged products? (scope, challenges) Which industries and geographies are the main contributors towards the exports of forged products?**

Indian forging industry is one of the key players in the auto component manufacturing sector. Currently, the industry apart from catering to the automotive sector, solar, aerospace, railways and wind sector also plays a key role in contributing to the forex by way of huge exports.

The industry is increasingly tapping opportunities arising out of the growing trend among global automotive OEMs to outsource components from manufacturers in low-cost countries. As a result, the Indian forging industry has been making

significant contributions to the country's growing exports.

The Indian forging industry, as a part of the manufacturing sector, has played a significant role in the Indian economy, with an estimated size of around Rs. 27,835 cr in FY14–15. Of this, approximately Rs. 6,100 cr was attributed to exports in the same period. India exported forgings valued at around Rs. 6,100 crore in FY 2014–15, which constitutes to around 22 percent of total turnover. Continued economic growth in the US and a recovery in the European auto market resulted in higher growth in forging export.

With overall business sentiments improving in India, in the years to come, we expect to see improved business activity which will consequently push the demand for forging products as well as exports.


**Q What positive impact of the 'Make in India' initiative can be seen on the forging industry? How far do you think it will boost the growth and exports?**

Make in India initiative is a good move in the right direction to give the necessary boost to the overall manufacturing sector. It has created an all-round positive business environment and sentiment. With the revival in domestic auto market and higher export sales, the forging component sector prospects look promising. The campaign has definitely been fruitful for certain segment of the forging industry and we are anticipating an increase in demand from the non-auto sector in the medium and long term.

In the non-auto space, the sunrise sectors for forgings in near future are defence, aerospace and railway procurement. Indian government emphasis on defence and aerospace equipment as part of the 'Make in India' campaign to encourage manufacturing and attract foreign investment has led many companies to seek licences to make defence & aerospace equipment locally. This will open up more business opportunity for the domestic forging industry.

Having said this there are certain issues that are eyeing for immediate attention. The need of the hour is to address issues like faster clearance of mega infrastructure projects which have been pending for a long time. Investments in the development of overall infrastructure being executed on priority, both in the public and private sectors, will result in pickup of demand, among other things, in commercial vehicles, construction industry and capital goods sector. All these will have a multiplier effect on the Indian forging industry.

**Q How does the association help its members to gain necessary confidence in the uncertain market conditions?**

The Association of the Indian Forging Industry's (AIFI), key role is to promote and develop the Indian forging industry so as to meet the demands and expectations of the stakeholders, this it seeks to achieve by improving and providing a conducive business environment for its members. AIFI also keeps its members abreast of the latest technology in forging and market intelligence. 



**H**EGGEMANN AG owner Robert Heggemann manages his company with the motto of '360° from Engineering to Production'. He explains what lies behind this approach, "We are a service provider in the metal-working sector, and we are in a position to cover the entire process chain from development right through to series production. As most of our customers are in the aerospace and automotive industry, they also value our expertise, reliability, flexibility and quality."

To ensure it is possible to meet the high requirements of a customer industry known for being challenging, HEGGEMANN employs highly qualified staff, both in its engineering and manufacturing operations. Employees define the most efficient manufacturing concept at an early stage during component development and construction. The engineering specialists have broad expertise covering a wide range of materials and production methods, and this is where their skills come into play. Moreover, the company is well equipped with machinery for working with sheet metal and solids. There are total 18 milling, turning and hybrid machines available for machining, with most coming from DMG Mori and Hermle. This puts HEGGEMANN in a position to be able to respond to all requirements in terms of complexity and volumes.

#### Modern software in all areas

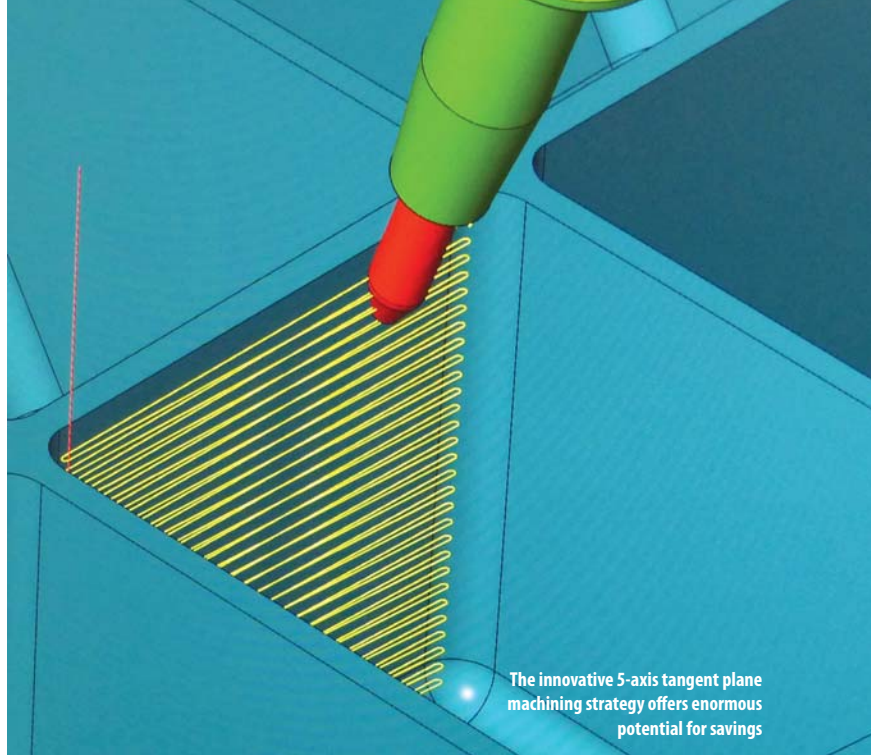
The company is also state-of-the-art in terms of the software the company uses. The manufacturing management depart-

"We mostly use it for 2D components, as we can often machine these components with the entire shank length of the tool. In cases like this, we are two to three times faster and we also benefit from less tool wear."

ment makes use of a manufacturing execution system (MES) that complies with the latest Industry 4.0 standards. A product data management (PDM) system manages customer data as well as proprietary 2D and 3D CAD data. Once final approval is given by the customer, programmers can access the final data record and generate the required NC programs via CAM.

The company is using the hyperMILL CAM system from OPEN MIND since 2009. "The software stands out because of the innovative hyperMILL MAXX Machining performance package. The '5-axis tangent plane machining' strategy in particular has left a lasting impression on the company, as it offers enormous potential for savings," confirms René Reiffer, Head of Production, HEGGEMANN AG.

It was Dirk Lehmann, Technical Sales Consultant, OPEN MIND that originally sparked the interest for the new finishing strategy among Reiffer's milling team in early 2015 and asked the team to test the 5-axis tangent plane machining strategy. The metal removal team got the chance to do that at the Hermle AG technology centre in Kassel. "The result immediately impressed us," explains Reiffer. "We now use the 5-axis tangent plane machining strategy as often as possible, as we can achieve a significant reduction in machining times."



The innovative 5-axis tangent plane machining strategy offers enormous potential for savings

## Time-saving strategies

The performance package hyperMILL MAXX Machining offers three modules for finishing, roughing and drilling that make it possible to achieve impressive boosts in productivity. Read on to know more about how HEGGEMANN AG uses hyperMILL to reduce machining times by up to one third on a range of workpieces.



Using the new method and a barrel cutter with a lateral radius of 500 mm and a tool radius of 4 mm at the tip, the finishing process only takes 15 minutes. The surface quality was  $Rz = 3.2 \mu\text{m}$  in both cases.”

**René Reiffer,**

Head of Production, HEGGEMANN AG.

A major component of the innovative finishing strategy is the tool it employs—a conical barrel cutter specially developed by OPEN MIND for this purpose. Its geometry has a large radius of 1,000 mm or more, allowing enormous line increments during finishing. “We regularly achieve time reductions of 70–90 percent in test workpieces compared with the use of traditional ball mills,” adds Lehmann.

### Finishing time cut from 90 to 15 minutes

Speaking on the time saving factor, Reiffer says, “We just manufactured a component with deep pockets measuring 155 mm and vertical walls. Until recently, we would have milled it with a 12 mm ball mill, which would have taken about 90 minutes of machining time. Using the new method and a barrel cutter with a lateral radius of 500 mm and a tool radius of 4 mm at the tip, the finishing process only takes 15 minutes. The surface quality was  $Rz = 3.2 \mu\text{m}$  in both cases.”

The time saving is primarily due to the barrel cutter’s enormous line increments measuring 4 mm during the final finishing pass. With a ball mill, it would be more than ten times the number of lines at a distance of 0.35 mm.

Reiffer’s team saves additional time when it comes to programming. It takes about 20 minutes to create a finishing programme for a pocket like this with a ball mill. It is possible to program machining jobs for the 5-axis tangent plane machining in five minutes.




A typical aerospace structural component made from high-strength steel.

A major component of the innovative finishing strategy is the tool it employs—a conical barrel cutter specially developed by OPEN MIND for this purpose. Its geometry has a large radius of 1,000 mm or more, allowing enormous line increments during finishing.

### Optimised roughing for 2D, 3D or 5axis operations

The new OPEN MIND performance package also offers other interesting high-performance cutting (HPC) strategies for roughing. For example, the hyperMILL MAXX Machining roughing module allows the user to achieve a maximum stock removal rate by intelligently separating spiral and trochoidal-like tool paths and dynamically adjusting the feed rate to suit the prevailing cutting conditions.

What makes this special is that it can be used for any type of machining operation, be it 2D, 3D or 5-axis. “We mostly use it for 2D components, as we can often machine these components with the entire shank length of the tool,” reports Reiffer, delighted with the time savings. “In cases like this, we are two to three times faster and we also benefit from less tool wear.”

HEGGEMANN also places great value on its excellent cooperation with OPEN MIND. “We receive a top quality service. When we have a question, we get a prompt response by e-mail or by phone. And if it is really urgent, they will send over an application engineer to solve problems directly on site,” concludes Reiffer. 

Source: OPEN MIND





Onshape on PC and phone

# Democratising CAD!

Imagine a CAD system that lets you work remotely; in fact, you can even call up your model on your laptop or tablet. And you can also make a quick edit on your phone while waiting at the airport. **John McEleney**, Co-Founder & CEO, Onshape, says it is already happening!

By **Niranjan Mudholkar**

**Q Onshape is claimed to be the first and only full-cloud 3D CAD system that lets everyone on a design team work together using any web browser, phone, or tablet. Tell us more about this and also about its collaborative orientation.**

Onshape was designed from scratch to meet the demands of how today's engineers and designers truly work. With traditional CAD, you are tied down to one licensed workstation – and it needs to be an expensive, powerful computer able to handle the compute-intensive and graphics-heavy requirements of installed CAD software. With Onshape, your CAD system is always with you. If you work remotely, you can call up your model on your laptop or tablet. You can make a quick edit on your phone while waiting at the airport. Our mobile apps for iPhone and Android give you full CAD functionality – it's not just a viewer.

Onshape is the first professional 3D CAD system specifically created for teams. Multiple people can work on the same model at the same time, seeing each other's changes as they

happen – and they can go back to any stage in the design's history anytime. Teams no longer need to deal with the headaches of checking in and checking out files (and working only one person at a time) or worse, overwriting each other's work.

**Q The Onshape 3D design service was in beta testing for a fairly long period. How many people used it during that time and how was the response?**

Onshape's beta version launched last March and our commercial release was last December. In those nine months, we logged 400,000 design hours by users in more than 150 countries. In that same period, more than 4,000,000 modelling features were created. We don't release our customer numbers to the public, but the point of the beta phase was to prove that full-cloud CAD works. This was unventured territory and many industry experts were sceptical it was possible to run CAD smoothly over the Internet. The real proof came from our customers. Several of the products featured on our Customer Stories page were designed while Onshape was still in



beta. That's the ultimate vote of confidence.

**Q Were there any users from India and how did the beta testing help you to improve the service?**

We have thousands of Onshape users in India – as well as a development office in Pune. The beauty of full-cloud CAD is that it enables us to quickly respond to the needs and suggestions of our customers. During the beta phase alone, we released 14 major product updates, adding over 125 features and improvements. Compare this to the once-a-year upgrades from traditional desktop-installed CAD. Those customers can sometimes wait years to get their requests answered, but are most often ignored. Onshape users enjoy automatic upgrades every few weeks, just by refreshing their browsers.

**Q In one of your recent interviews, you have mentioned that your objective is to bring a 'shift in how things are made'. Can you elaborate on this?**

The design and manufacturing world has dramatically changed. More often than not, teams are distributed across the country or even the world. Teams are also in constant change. Vendors and suppliers change. New team members are added and dropped based on the demands of a project. Because Onshape runs in a browser and requires no IT support – no installs, no downloads and automatic upgrades in the cloud – new team members and partners can be up and running in minutes. Everyone is always on the latest version of Onshape, so there are never any software compatibility issues. Our customers don't waste time managing files or dealing with computer crashes, leaving more time for what they're paid to do in the first place: designing products. And they tell us they are designing them faster and better by taking more creative risks.

**Q Honestly, this seems to be a very liberating idea in the sense that you have actually made 3D design accessible and available to everybody who wants to use it in a way never done before. Small & medium enterprises (SMEs) will obviously be your key target now that you have levelled the playing field for them. Isn't it?**

We are proud that Onshape is democratising CAD, making it available to entrepreneurs who otherwise could not afford to spend \$5,000 or more per seat of CAD, plus annual upgrade fees, IT services and the cost of expensive hardware. On a tight budget, Onshape's \$100 monthly Professional Plan allows startups and early-stage companies to devote their resources to other areas needed for growth. However, the competitive advantages of full-cloud CAD extend far beyond the obvious upfront costs. The time-saving and security benefits of Onshape are appealing to companies of all sizes: from startups to multinational enterprises.


**Q But does it mean that large enterprises will not touch your product? How do you perceive this aspect?**



**"Onshape is the first professional 3D CAD system specifically created for teams. Multiple people can work on the same model at the same time, seeing each other's changes as they happen – and they can go back to any stage in the design's history anytime."**

Successful enterprises stay successful by keeping ahead of the curve with new technologies. Onshape has an Enterprise Plan for large-scale deployments and is working with a number of companies right now on pilot programs. With design and manufacturing teams spread across the world, enterprises have the most to gain from Onshape's simultaneous collaboration. Our built-in data management has also made costly and cumbersome PDM systems obsolete. And lastly, because Onshape does not use files – your data and CAD system live in one central place in the cloud – there are no loose uncontrolled copies of your IP floating around. You can grant and withdraw access to your CAD models at anytime.

**Q What more can we expect from Onshape in the time to come?**

Every few weeks, Onshape users enjoy new features and enhancements – automatically upgraded in the cloud. You can keep track of all the latest improvements by subscribing to our "What's New?" blog posts. This is also an especially exciting time for Onshape. We're about to release FeatureScript, a new programming language that enables you to create new built-in Onshape features or modify existing ones (we'll be sharing our source code). This is the same language our developers use to build Onshape and we're looking forward to seeing you help shape the future of full-cloud CAD. Stay tuned! 

**Ace Micromatic**  
Group Presents

THE ULTIMATE GUIDE TO PROFITABLE MANUFACTURING  
**MACHINIST**

Super   
**SHOPFLOOR 2016**  
*Awards*

[www.themachinist.in](http://www.themachinist.in)



The 2016 Grand Jury Team came together for this memorable group photograph on April 27<sup>th</sup>. The winners will be unveiled on May 26<sup>th</sup> at Hyatt Regency Pune.

Industrial Lubricant Partner



Metrology Partner



Cutting Tools Partner



Technology Partner



Jury Meet Partner



Associate Partner



Knowledge Partner



Media Partner



Magazine Partner







“India is slowly growing to be a manufacturing and innovation power house and an event like ‘The Machinist Super Shopfloor Awards’ keeps the adrenalin flowing in our veins to excel and perform. Those who get awarded and recognised have to protect their turf next year and all those who narrowly missed will always put extra effort to dethrone the leader and occupy it.”

**Dr Dhananjay Kumar**

PhD, Managing Director (Electric Vehicle) & Director-BD,  
Thor Power Corporation, USA.



“The Machinist Super Shopfloor Awards is a good initiative that brings innovations done on the shopfloor in the light. This also helps others to think differently for creating best practices or adopting best practices.”

**Rajeev Mittal,**

CIO (Chief Information Officer),  
Endurance Technologies Pvt Ltd.

## The Grand Jury Team *decides!*

The Jury Meet for The Machinist Super Shopfloor Awards 2016 concluded on April 27, 2016 in Pune. The grand red carpet award ceremony is scheduled on May 26, 2016.

**I**t's the awards time again! We organised the Jury Meet for the same on April 27, 2016. It is indeed a rare occasion that fourteen (yes, you read it right!) industry stalwarts come together on a single platform to evaluate industry nominations making it a Grand Jury Team!

The Jury Meet started at around 9:30 in the morning and concluded with lunch. These animated gestures of some of the jury members captured in the photos will give you a fair idea about the level of involvement of our jury members. Well, they also thoroughly enjoyed the experience and easily became part of a single team working towards ‘recognising & reward-

ing the best ones in the industry’.

The meet concluded with a felicitation ceremony, which was conducted in appreciation of invaluable time and efforts that juries spared for the success of ‘The Machinist Super Shopfloor Awards 2016’.

### **The first red carpet awards ceremony!**

Now that the nominations have been scanned through and judged, it's time to confer the winners, which will be done on May 26, 2016 at Hyatt Regency Pune.

See you there!



“The success of Make in India depends upon making our manufacturing sector globally competitive in cost, quality, efficiency, safety and environmentally friendly. One of the key resources required to achieve the above is the skill-set of the 'People' and innovation. A successful management imparts the desired skill set to its employees and encourages innovations. The Machinist Super Shopfloor Awards provide a perfect platform to identify and facilitate extra ordinary efforts by the manufacturers, which is a great motivator for those who are awarded to further enhance their performance and for others to compete with the best.”

**Dr Madhu Ranjan,**

Managing Director, ElringKlinger Automotive Components India Pvt Ltd.



“With Make in India initiative gathering momentum, the manufacturing sector of India foresees a promising future. Moreover global tariff boundaries are thinning down and metal prices are becoming more or less transparent; the conversion costs will play a vital role in defining sustainability of the manufacturing industry across the globe. The value addition in terms of innovative methods used to improve productivity of men and machine is proving to be the decisive element. The Machinist Super Shopfloor Awards thereby provide an influential platform for companies to exhibit unceasing sustainable improvement.”

**Hemant Watve**

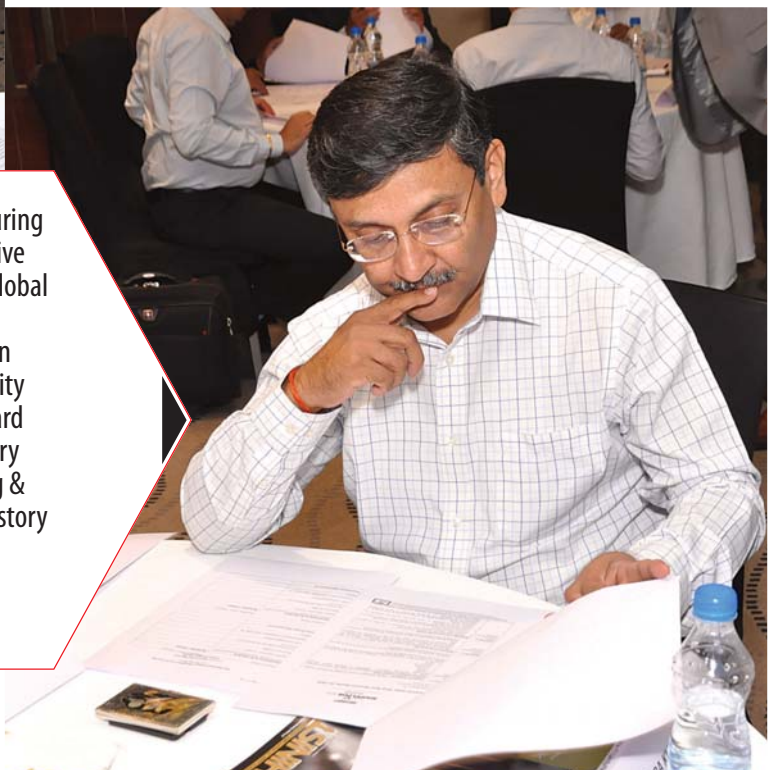
MS, Managing Director & CEO, Wilo Mather and Platt Pumps Pvt Ltd.

“While the world looks at India as the next ‘manufacturing hub’, there still seems to be credibility gaps in ‘Effective Process Controls’ deployment, from the view point of global customers.

‘The Machinist Super Shopfloor Awards’ will offer an endorsement of excellence in process design capability of the Indian industry on a global platform. This award will also serve as cornerstone in encouraging industry to innovate and achieve excellence in manufacturing & business processes on daily basis; if the ‘Make in India’ story has to become a reality.”

**Ramendra Kumar (RK) Sharma,**

Co-Founder & Managing Director, Daejung India.







All our jury members were felicitated at the end of Jury Meet. In this pic, Shrikant Bairagi, Chief Executive Officer, Prothom Industries India Pvt. Ltd. is being felicitated by Niranjn Mudholkar, Editor, The Machinist magazine.



In this pic, Amit Pendse, Managing Director, Electronica Plastic Machines Ltd. is being felicitated by Rishi Sutrave, Brand Publisher, The Machinist magazine.



In this pic, Ramendra Kumar Sharma, Co-Founder & Managing Director, Daejung India is being felicitated by Swati Dehpande, Associate Editor, The Machinist magazine.



## First Red Carpet Ceremony for Indian Manufacturing

The Jury has spoken. The Winners have been selected. And the Red Carpet is now ready! All of this will converge at the Grand Awards Night on May 26, 2016 at Hyatt Regency Pune. And indeed, it will be a night to remember for a long time to come – well definitely till our next awards ceremony!

With the 2015 edition, we truly set the benchmarks for this industry in terms of awards. And as promised, we are all set to create history with the 2016 edition. And how we do that is something that you have to experience in person.

And if you have missed registering for the event so far then it is very likely that you will miss the show because all seats have been booked by now!

And for those who are joining us, this is what your experience will include: An opportunity to cheer and meet the winners, fun-filled entertainment, a truly high-profile CEO Panel Discussion, a spirited atmosphere, a gala dinner and exciting surprises for all participants irrespective of whether you are a winner or not. And yes, don't forget that the highlights of this ceremony will be telecast on National Television through a leading business channel. So see you on May 26.





## Low-cost production of small batches

With the new VM 9 modular turning machine, EMAG has introduced a platform that covers a broad spectrum of applications thanks to the combined turning, milling and drilling technologies and intelligent machine design. The highly accessible machining area and workpiece spindle fitted at the bottom ensure short tooling times and maximum flexibility in the production of workpieces in small series.

The VM 9 vertical turning center is designed for the manufacture of individual parts and small production runs with a wide variety of parts. The heavy-duty foundation of the machine is made of a MINERALIT® polymer concrete column. The particularly good damping properties of Mineralit®, combined with the compound slide with the X- and Z-axes ensure excellent machining quality, high speed processes and short idle times. The main spindle provides the necessary power with a 83 kW rating and a torque of 990 Nm.

### Flexibility for turning

Part of the large family of EMAG modular machines, the VM 9 is designed as a vertical turning center, combining a reliable design with an extensive range of equipment. Designed to machine chucked components with a maximum diameter up to 450 mm, it features a tool turret which can be fitted with up to twelve tool positions, depending on the tool interface (BMT or VDI). The turret can, of course, be equipped with driven tools to carry out drilling or milling operations, for ex-



The bottom spindle can hold workpieces with a diameter of up to 450 mm. These are machined by the 12-station disk-type turret which can be fitted with both turning and driven tools.

ample. The integrated probe delivers absolute process reliability by ensuring continuous quality control of the workpieces. Thus, the VM 9 is thus extremely well equipped for a wide variety of production tasks, enabling it to produce a wide range of workpiece formats.

### Ergonomic maintenance and loading

But the VM 9 does not just deliver excellent machining quality. The ergonomic design of the machines is perfect evidence of the decades of experience EMAG has with vertical turning machines. Both the machining area and all maintenance components are easy to access. “This is the really positive aspect of the VM 9 for our customers,” explains Georg Händel, Manager Technical Sales at EMAG Leipzig Maschinenfabrik GmbH. “It is a major advantage for customers who have to machine many different workpieces or various part families.”

With the VM 9, EMAG offers a new machine system for chucked parts suited to the production of a wide variety of workpieces in many different manufacturing scenarios thanks to its flexibility. Whether components for trucks, construction and agricultural machines or for mechanical and plant engineering, the VM 9 is ideal for practically every sector. The excellent accessibility to the machining area makes the machines an all-round solution for turned parts.

### Benefits of the VM 9 at a glance:

- Dynamic axes for short idle times and fast machining processes
- All the service units are easy to reach
- Axis monitoring by rotary, indirect absolute encoders. All axes with fully encapsulated linear glass scale (optional).
- Generously dimensioned main spindle, maintenance-free spindle motors and rigid guideways
- Machine body made of MINERALIT®, 6 to 8 times better damping properties than gray cast iron

Technical features		VM 9
Chuck diameter	mm	450
Weight , max.	kg	300
Swing diameter over base	mm	650
Turning diameter, max.	mm	400
X-axis/Z-axis travel	mm	330 / 500
Main spindle	Size	8
» Spindle flange to ISO 702-1	mm	140 / 160
» Spindle bearing		
Main drive unit	kW	49 / 83
» Synchronous motor (40% duty cycle)	kW	32 / 54
» Synchronous motor (100% duty cycle)	rpm	800
» Full performance from spindle speed of	Nm	585 / 990
» Torque (40% duty cycle)	Nm	380 / 650
» Torque (100% duty cycle)	rpm	3,000 / 2,400
» Speed		
Feed drive	m/	30 / 30
» Rapid-traverse rate X / Z	min	4 / 8
» Feed pressure X/Z	kN	
Disk-type turret	Nm	VDI 40 /
» Turret interfaces	rpm	BMT 65
» Turret tool positions		12 / 12
» Torque of driven tools, 40% / 100%		
» Speed of driven tools		24 / 15
		6,000

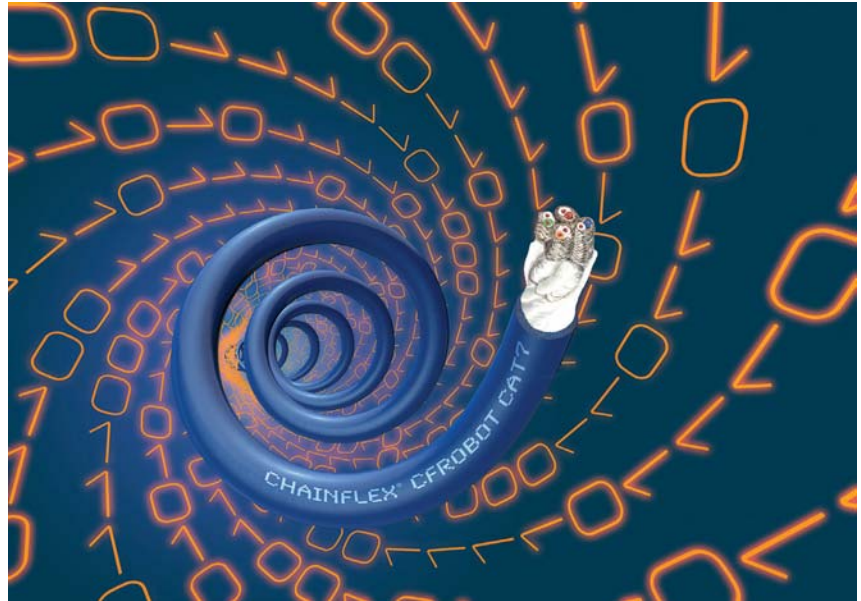


## New generation of twistable cables for fast and secure data transfer

igus extends its range of Ethernet cables for motion with new robot cables in accordance with the CAT6A and CAT7 standards

At Eleccra 2016, igus, the motion plastics specialist, presented the world's first Ethernet bus cables specially made for three-dimensional movement. The cables comply with the CAT6A or CAT7 standard. In this way igus guarantees fast and secure data transfer during operation, even under extreme conditions of mechanical stress, for example where industrial robots are supplied with data. The new cables from igus are a further addition to the already extensive range of Ethernet cables for continuous movement in energy chains.

Today, there are approximately three million industrial robots which work with increasingly high quantities of data and are an integral part of modern



The CFROBOT8.052 chainflex robot cable from igus is the first cable that has been tested and complies with the CAT7 standard. (Source: igus GmbH)

**“Durable cables made of special materials and featuring advanced technical characteristics ensure fail-safe data transfer and are essential in manufacturing if cost-intensive production outages are to be avoided.”**

production facilities. Durable cables made of special materials and featuring advanced technical characteristics ensure fail-safe data transfer and are essential in manufacturing if cost-intensive production outages are to be avoided. igus, the motion plastics specialist, has been developing special cables for motion for 25 years and has now expanded its portfolio with the world's first cables for three-dimensional motion in very complex applications. Complying with the CAT6A or CAT7 standard, the new chainflex CFROBOT8.050 (CAT6A) and chainflex CFROBOT8.052 (CAT7) cables ensure fast data transfer according to the latest industrial standards.

“In contrast to cables for linear motion in energy chains, the mechanical stress for robot cables consists of a combination of bending, torsional and compressing forces”, explains Rainer Rössel, Head of Business Unit chainflex cables at igus. “It is therefore all the more difficult to determine the requirements for the cables’ structural design in advance. This is why we test all cables not only in isolated torsion tests but also

application-specific sequences of movement with the cables connected to industrial robots.” The result of continuous work done in research and development in recent years is that the range of chainflex Ethernet cables that are supplied by igus and which have been specially designed, manufactured and tested for continuous motion, has now increased to 27 different types of different quality categories and price classes.

### Special technical designs enable a long service life

All the components of the robot cables such as stranded core structures, shields and sheath materials are subjected to varying levels of stress when torsional movements occur. In order to make sure that the chainflex cables remain stable and that data security is ensured, igus employs a combination of films that slide very easily yet are extremely stable, together with especially ‘soft’ fillings that systematically absorb the forces that occur. The specifications such as dampening, cable capacitance and signal quality must constantly remain the same within narrow tolerances over the entire service life of the cable. Torsionally optimised insulating materials and mechanical damping elements with matching capacitance values guarantee this durability.

*For more details, contact: Sreejith Menon,  
Product Manager - Chainflex®, igus (India) Private Limited;  
Email : sreejith@igus.in; Website: www.igus.in*



## PVD milling grade takes machining security to new levels

A new method of production that results in benefits such as longer tool life and enhanced security.

Milling steel in the ISO P materials classification is not without its challenges. Tricky tool paths and thermal fluctuations, in combination with tough or 'sticky' materials, means that production engineers have faced a long battle to optimise steel milling operations. In recent years, PVD (physical vapour deposition) grades have proven a popular choice, but even these can be compromised (depending on application) in terms of crack formation and / or edge line chipping. As a result, Sandvik Coromant has set about re-inventing PVD grade technology from the ground up, creating GC1130, a purpose-designed steel milling grade that is the first to take advantage of Zertivo™, a new method of production that results in benefits such as longer tool life and enhanced security.

The challenges of milling ISO P materials are well documented. In the first instance, complex tool paths or difficult-to-machine materials can cause edge line chipping that leads to poor surface finish and tool failure. Indeed, milling some of the more 'tacky' materials in the ISO P classification can cause flaking of the insert coating, which in turn leads to breakage of the edge line. Furthermore, thermal fluctuations during machining, especially under wet conditions, can cause crack formation, an undesirable effect that tends to induce unpredictable tool life and even sudden breakage. For these reasons, correct insert grade selection is paramount to process security, productivity and profitability.

Thanks to intrinsic properties such as compressive residual stresses, and high hot hardness, PVD grades are a good choice when it comes to milling operations that demand toughness or sharp cutting edges to help overcome sticky materials.

### Enhanced ISO P milling

GC1130, the first milling PVD grade produced with Zertivo technology, is optimised for steel milling in all conditions. When developing this advanced new grade, the focus was on solving the issues of chipping, insert flaking and thermal cracks, working with



GC1130 insert size 07

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*"Thanks to intrinsic properties such as compressive residual stresses, and high hot hardness, PVD grades are a good choice when it comes to milling operations that demand toughness or sharp cutting edges to help overcome sticky materials."*

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both substrate and coating, to reach longer tool life and secure machining, even in unstable or demanding conditions.

One of the secrets behind the premium performance of GC1130 is its high chromium (Cr) content fine-grained substrate. The inherent characteristics of chromium additions in the cemented carbide help withstand edge-line chipping and cracks arising from difficult machining environments, such as temperature and/or load variations, as well as vibrations.

To amplify the important potential advantages of using PVD grades, Sandvik Coromant has devised a new production technology called Zertivo, which takes the whole insert into consideration, not just the coating.

Creating a high quality PVD coating includes many complex process steps, the main ones being pumping, heating, etching, coating and cooling. Besides coating composition, process parameters such as temperature, gas flow and pressure are crucial for final tool performance. After all, variations in the production processes have direct impact on the grade and, ultimately, how the tool performs on the machine. The innovative and unique Zertivo production technology is designed to take PVD process control to a new level, resulting in improved adhesion between the substrate and the coating, along with optimised cutting edge integrity. Ultimately, the concept behind Zertivo is to ensure that each grade is produced under the right conditions, resulting in a





higher quality product for secure machining.

When developing Zertivo, Sandvik Coromant focused on creating a platform that would make it possible to offer the perfect balance between various properties to match the requirements of the market. Here, the team deduced that developing a new grade is about optimising the interplay of several properties, and this is where the company has attained new levels of success with Zertivo.

In effect, the R&D team at Sandvik Coromant has discovered the art of creating the ideal PVD grades, where carefully combined ingredients for both the coating and substrate are merged with precisely controlled process conditions to produce inserts with unbeatable edge line security.

With GC1130, the resistance against chipping has been greatly improved thanks to the introduction of extra predictability and security into the production process. The clean, intact edge of GC1130 promotes high metal removal rates and elevated performance in both wet and dry machining. Furthermore, it is suitable for both roughing and finishing applications. Ideal for square shoulder end-milling cutters, GC1130 is first introduced on the CoroMill 390 with inserts in sizes 07 and 11, although further extensions are planned to follow shortly. In fact, GC1130 will also soon be available in most CoroMill concepts. CoroMill 390 is a versatile concept for machining varied component features and materials. The assortment includes many different types of tools and a wide selection of corner radii.

Several customer test sites are already demonstrating the potential gains on offer to discerning production engineers responsible for machine shops where investment and continuous improvement are priorities in a fiercely competitive marketplace.

In a customer example involving slot milling, a subcontractor's productivity was limited by its standard grade end mill cutter. However, when switching to a CoroMill 390 with size 07 inserts and the GC1130 grade, the increased productivity afforded by a 33 percent increase in cutting speed from 150 to 200 m/min, and a 50 percent gain in table feed from 600 to 900 mm/min, ensured time in cut was reduced from 5.5 to 3.8 minutes and tool life was considerably improved. Moreover, the result was achieved at a 3 mm



CoroMill® 390 with insert size 11



CoroMill® 390 with insert size 07

*“The inherent characteristics of chromium additions in the cemented carbide help withstand edge-line chipping and cracks arising from difficult machining environments, such as temperature and/or load variations, as well as vibrations.”*

depth of cut, compared with 2 mm for the competitor tool.

**The future of PVD, today**

Production engineers are tasked with continually searching for solutions that help deliver improved performance from milling insert grades. The arrival of GC1130, the first Sandvik Coromant milling grade manufactured using Zertivo technology, signals an opportunity for machine shops to take large strides towards greater process control, productivity and profitability. The result is the ability to compete more effectively for new contracts and build a more robust and successful business.

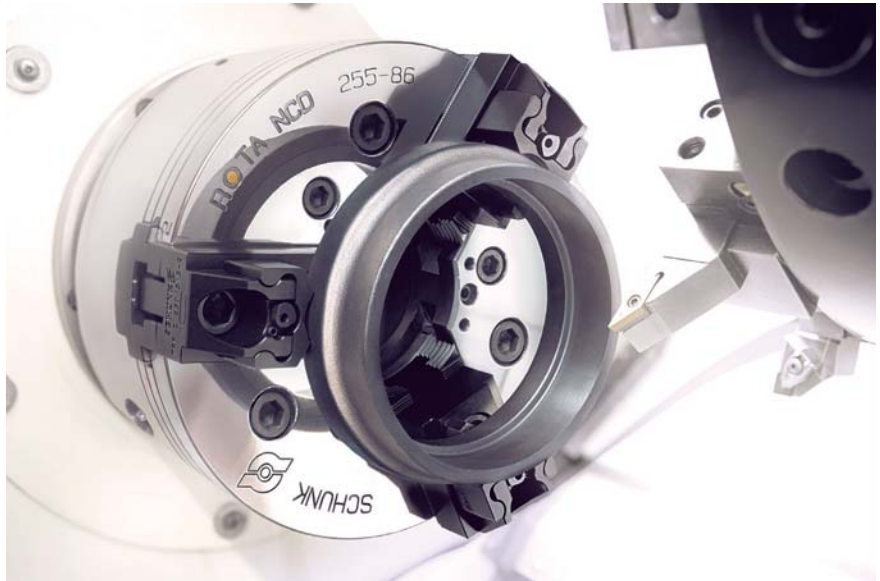
*For more information, visit: [www.sandvik.coromant.com](http://www.sandvik.coromant.com)*



## Retrofittable set-up time optimiser for lathe chucks

Changing jaws in less than five seconds while maintaining process reliability is possible with the retrofittable Schunk PRONTO quick-change system. As a result of the outstanding feedback from pilot users, Schunk, the competence leader for clamping technology and gripping systems will present a complete line of products at EMO 2015 for optimising the set-up process, from magazing of the quick-change sets to jaw changing in the machine. The highlight: fully automated jaw change for low-manpower production.

Whether you use a conventional lathe chuck with bolt-on jaws or a modern quick-change chuck: Schunk PRONTO



When used with conventional lathe chucks with bolt-on jaws the Schunk PRONTO quick-change system reduces the set-up time by up to 95 percent. If required, the clamping inserts can be changed by a robot in a fully automated process.

**“The modular design allows an individual and therefore very economical combination of the single components.”**

minimises the set-up times or allows fully automated jaw change by a robot, if required. The clamping system consists of special supporting jaws that can be combined with different quick-change inserts. These inserts allow expansion of the clamping diameter by up to 55 mm for soft jaws, and by up to 45 mm for claw jaws, without having to move the base jaw. All that is necessary for fast jaw change is to loosen the interchangeable insert with an Allen key, remove the insert and replace it with another one. Another outstanding feature is the jaw change repeatability of 0.02 mm. The risk of incorrect positioning via the serration is eliminated. In locked state, six-sided form-fit clamping ensures maximum process stability and enables high force and torque transmission.

**For use with systems from different manufacturers:** PRONTO supporting jaws are available in two versions: one with fine serration (1/16" x 90° or 1.5 mm x 60°) for set-up time optimization of conventional lathe chucks; the other with straight or helical serration for fully automated jaw change in combination with modern quick-change chucks. The system is suitable for clamping both unfinished and finished parts.

Different supporting jaw variants are available for small, medium, and large clamping areas, depending on the par-

ticular application. As top jaws the innovative family-owned company offers hard claw inserts for different diameters and clamping ranges as well as three soft interchangeable inserts for finished part machining. Once they have been turned out, the latter can be used again and again on the system. The clamping depth is variable with the workpiece stop. In the version with helical serrated base jaws, bar clamping is also possible. With the Excel-based PRONTO configurator, which is available at no cost, selecting and positioning the supporting jaw and interchangeable inserts is child's play. After entering the chuck type and the workpiece diameter, the tool automatically determines the necessary interchangeable inserts and the correct position of the supporting jaws.

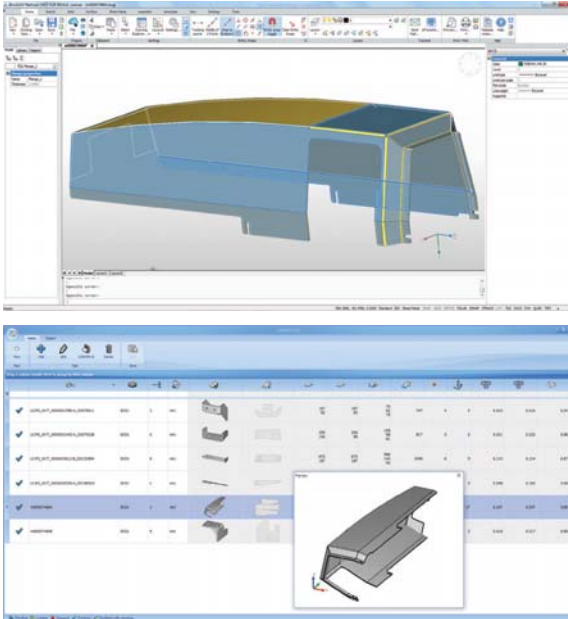
Schunk PRONTO can be retrofitted on all fine serrated lathe chucks and quick-change chucks in the sizes 200, 250, and 315, regardless of the manufacturer. The modular design allows an individual and therefore very economical combination of the single components.

All interchangeable inserts are compatible with all supporting jaws. An optionally available set-up cart provides for orderly storage and fast accessibility of all claw inserts, soft interchangeable inserts, supporting jaws with mounted bolts and T-nuts, as well as the adjusting aids. Provisions were even made for storage in the machine: all parts can be transported on a tray and positioned for mounting directly within the machine by means of a quick-acting connector.

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## LVD adds new smart drawing importer module to software suite



LVD Company nv has added a new module to its CADMAN Suite of programming and shop management software. CADMAN-SDI (Smart Drawing Importer) simplifies 2D and 3D CAD file import and calculation of cost drivers so users can more quickly and accurately create job estimates. It features an integrated 3D CAD package used to check or correct imported files. CADMAN-SDI adds yet more functionality to the integrated suite of database-driven CADMAN products designed to help users optimise programming and maximise throughput in the workshop.

**Smart import:** A CAD drawing file is imported into the

module with simple drag and drop action. A file can be imported part by part or in a batch of parts using STEP, SAT, IGIS, DXF, DWG, SLDPRJT, IPT, STL, WMF or a number of other file formats. Once imported, the file is converted to OSM (Open Sheet Metal) format and stored in the central CADMAN database. CADMAN-SDI displays key cost driver information obtained from the 2D/3D file import and automatically saves the converted OSM file directly into the CADMAN database. The stored OSM files are also immediately accessible for all other modules of the CADMAN Suite for fast and efficient generation of laser, punching, bending programs and jobs scheduling.

**All the cost details needed:** CADMAN-SDI provides all the details needed to create an accurate cost estimate, including all relevant part information, such as part name, 3D and unfolded 2D drawing, material type and thickness, as well as all cost drivers such as contour length, netto and bruto part area, bounding box 2D, 3D outside dimension, the mass of the part, cutting length, number of contours, number of bends, and more. All the data is visible at a glance on the control screen. Data can also be exported to an Excel, PDF, XML or CSV file.

**Integrated sheet metal cad package:** CADMAN-SDI includes BrisCAD, a robust 3D direct modeling CAD package. BrisCAD allows the 3D drawing to be reviewed in detail, modified or corrected as required. BrisCAD provides recognition of features, allows the user to modify a junction into a bend, change overlaps, create notches and lofted bends, program parametric parts and even import entire assemblies.

*For more info, contact: Kurt Debbaut, CADMAN Product Manager; LVD Company nv; Email: [kdbt@lvd.be](mailto:kdbt@lvd.be); Url: [www.lvdgroup.com](http://www.lvdgroup.com)*

## Low cutting resistance, double sided insert face mill

The positive geometry of the Double Z inserts for the new WSX series takes face milling to a new level of usability. The geometry produces low cutting resistance, making it ideal for all types of machines, from low power through to heavy duty types. This level of cutting resistance is only usually associated with conventional single sided positive inserts and allows end users to increase machine utilisation. The WSX series comes complete with a comprehensive range of insert grades to cover a huge range of material applications, from carbon and alloy steels through to heat resistant materials and hardened steels. WSX also have the advantage of being double sided with a cost saving, 8 cutting edges.

The main features are – Double sided Z geometry inserts, Anti Fly mechanism (A.F.I.), designed to control abnormal



Double Geometry



insert breakage and body damage, through coolant holes under Dia 160 providing efficient chip removal and @40 percent low cutting resistance compared to conventional double sided cutters.

*For more information, write to [mmcindia@mmc.co.jp](mailto:mmcindia@mmc.co.jp)*





## High speed milling aluminium parts for aerospace

These highly efficient tools deliver the required levels of accuracy and surface finish characteristics, and result in the highly-efficient milling of aerospace industry aluminium parts.

The milling of aluminium parts for the aerospace industry is a machining process that requires the removal of large volumes of material by rough milling. As a result, semi and finishing operations of these parts are characterised by the creation of narrow walls and thin bases that lead to limited workpiece rigidity.

In spite of aluminium being a soft material with relatively good machinability, due to the large size of many aerospace parts and their multiple pockets, milling operations normally involve the removal of over 90 percent of the original workpieces' material, a long process that involves extended semi and finish milling times.

Throughout the world many parts are still produced on gantry machines that feature large horizontal tables and vertical spindles; this machine tool arrangement often causes chip evacuation difficulties. Also, as these machines have limited spindle power and speed capabilities, limited control results in low feeds, which leads to long production times.

The aluminium removal rate ability for the common gantry machine reaches up to 2,000 cc/min., while semi and finishing operations is also very time consuming due to control and spindle speeds limits.

In order to reduce Cost Per Unit (CPU), manufacturers need to increase Metal Removal Rates (MRRs) for roughing and to achieve faster table feeds for semi and finishing operations. To help manufacturers realise these aims, Machine Tool Builders (MTB) developed the now common 5-axis machines that have much higher spindle speeds - up to 30,000 / 33,000 rpm, combined with increased power. The first generation of these powerful machines was typically rated at 60 KW, later machine power was increased to 70KW, now 80-120 KW figures are common. Today's advanced 5-axis machine also often features coolant through spindle capability, resulting in much improved coolant and chip evacuation, a vitally important attribute when milling deep pockets.

When roughing with spindle speeds of 30,000 rpm at 60 KW power in reliable production conditions, an MRR of 4,000 cc/min aluminium is achieved, similarly an MMR of 5,000 cc/min is



achieved with 80 KW of power. Machines featuring an updated reinforced spindle with 120 KW are able to remove 8,000 cc/min aluminium.

The emergence and continuing development of modern 5-axis machines with enhanced capabilities have challenged tool manufacturers to develop a range of advanced tools with the ability to function effectively in much higher, extreme cutting conditions.



**“The emergence and continuing development of modern 5-axis machines with enhanced capabilities have challenged tool manufacturers to develop a range of advanced tools with the ability to function effectively in much higher, extreme cutting conditions.”**

Rough milling tools have an indexable insert diameter of 50 mm (2.0”), whereby the number of inserts is dictated according to the machine’s spindle power; Z=2 for 60 KW, Z=3 for 80 KW and Z=4 for the reinforced spindle 120 KW.

After rough milling operations are complete, the use of a machine capable of 30,000 rpm with fast CNC axis controls of up to 60,000 mm/min enables solid carbide endmills to be employed to significantly reduce milling times for both semi and finishing operations.

Solid carbide endmills with a 25 mm (1.0”) diameter are commonly used to complete roughing operations within contours where a tool diameter of 50 mm (2.0”) is too large.

The result of the above milling figures under extreme conditions considerably increases the productivity and performance of high-speed, modern machines when compared to the previously used machines. Today, a standard, modern machine with a powerful high-spindle speed and fast controls is much more productive than any top of the range, previous generation machine.

For extreme conditions, the modern 5-axis machine operates and contributes to higher MRR results. Although, to realise the full productive potential of these machines, suitable advanced cutting tools need to be used. To ensure the development and launch of a range of highly efficient cutting tools that are ideally suited to use on modern 5-axis machines, ISCAR has taken a two pronged approach. Not only has the company’s prolific R&D department undertaken in-depth laboratory work and thorough in-house machining trials to help further refine a series of advanced cutting tool prototypes, ISCAR has also worked in close cooperation with several multinational aerospace companies to help ensure new products’ advanced capabilities in the harshest of ‘real-world’ aluminium

milling situations.

ISCAR’s R&D department’s challenging brief was to design a class-leading range of cutting tools that were able to resist intense cutting and centrifugal forces, to guarantee the delivery of an ultra-reliable process and to ensure perfect chip evacuation while moving large volumes of chips when milling deep pockets. Also, in order to prevent Build-Up Edge (BUE) and to enable milling in these extreme conditions, inserts with ground sharp super positive edge geometry, combined with polished rake, must be designed.

As the first cutting tool manufacturer to develop carbide inserts with helical and super positive polished cutting edges for milling aluminium, ISCAR has continued to be a leading innovator in this area.

An innovative range of ISCAR cutting tools are now available that are perfect for use on powerful fast milling modern machines with high spindle speeds. ISCAR’s cutting tools deliver unmatched results when milling aluminium parts for the global aerospace industry.

ISCAR HSM90S style tools with indexable inserts were developed specifically for the efficient rough milling of aluminium, at for instance 33,000 rpm’s and 120 KW, enabling excellent performance, perfect chip evacuation, lower cutting forces and the generation of less vibrations. These advanced cutting tools provide massive time savings when used on modern, powerful machines with high spindle speeds and fast feeds by reaching the highest levels of performance for efficient aluminium milling. The use of ISCAR HSM90S style tools leads to increased productivity and reduce production costs.

For semi and finishing milling, ISCAR has developed high-performance solid-carbide endmills that are suitable for extreme speed and fast feed conditions. These highly efficient tools deliver the required levels of accuracy and surface finish characteristics, and result in the highly-efficient milling of aerospace industry aluminium parts. Reduced machining times and lower costs are achieved by the use of ISCAR’s has high-performance, solid-carbide endmills.

Having successfully launched several advanced products related to efficient aluminium milling, aerospace manufacturers throughout the world are now reaping the multiple benefits of ISCAR’s intensive research and the company’s cooperation with leading aerospace manufacturers.

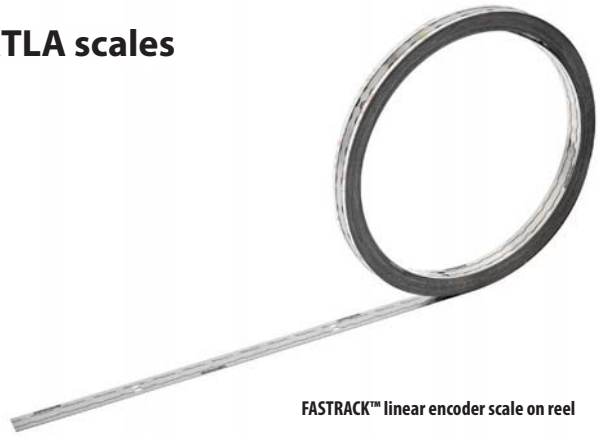
*Source: ISCAR*



## Longer RTLA scales

Renishaw has more than doubled the maximum length of its RTLA linear stainless steel ribbon scale. It is now available in lengths up to 21 metres and can be used with or without the FASTRACK scale carrier system. The longer RTLA scales, used with Renishaw's RESOLUTE absolute optical encoders, are now suitable for applications with very long axes. These include large aerospace trimming and drilling systems, wing structure drilling systems, milling machines for power turbine manufacturing and the manufacturing of outsized components.

Renishaw's RESOLUTE is an advanced single-track true-absolute optical encoder system delivering up to 1 nanometre resolution, superior long-term reliability, instant operation after power-up without reference return, high speed performance to 100 m/s, smooth velocity control with interpolation errors (SDE) of  $\pm 40$  nm and excellent positional stability with jitter (noise) of 10 nm RMS. RESOLUTE is also compatible with a range of 'open' and 'proprietary' serial protocols including Siemens DRIVE CLiQ, BiSS (registered trademark of iC-Haus), FANUC, Mitsubishi and Panasonic for connection to a wide range of industry-standard motor drives and controllers. Furthermore, combining RESOLUTE's easy installation, thanks to its generous set-up tolerances and integral set-up



FASTRACK™ linear encoder scale on reel

LED, with its excellent dirt immunity gives outstanding performance even on the very long axes typical of heavy industrial applications.

RTLA scales are mounted to the substrate using either their own self-adhesive backing or the FASTRACK scale carrier system. Comprising two miniature guide rails, FASTRACK securely retains Renishaw's low-profile stainless steel scales and allows them to expand at their own coefficient of thermal expansion. RTLA with FASTRACK is ideal for environments requiring frequent removal and replacement of damaged scales even when access is limited, thus reducing machine downtime.

## SUPPLY CHAIN

### Customs warehousing solutions in UK to Non EU import challenges

TVS SCS has received HMRC authorisation for Type "A" Customs Warehousing in UK. This has significantly strengthened its Vendor Managed Inventory value proposition to OEMs and their international suppliers by addressing the challenges associated with Non EU imports providing significant cash flow benefits and mitigating any risks associated with inventory liability.

TVS SCS has offered bespoke Vendor Managed Inventory Solutions for over a decade to UK OEMs in the Automotive & Industrial Sectors, through their International supply base in countries like India, China, Mexico, US and rest of the world.

#### The challenges faced

Across all sectors, UK OEMs are facing challenges with Non EU imports from their suppliers who are not established as an entity or VAT registered in the UK. Although the imported stock is maintained and called off as required from a 3rd Party UK warehouse, the following challenges remain;

- OEMs taking the title of stock at the time of customs clearance at the UK port.
- Taking on inventory liability for a 4-6 week safety stock on their books in accordance with legislation.
- Incurring payment of 20 % VAT on the total value of the

goods in addition to the duty as well as providing associated bank guarantees.

Hence the OEMs have started stipulating to their international suppliers to utilise a customs bonded warehousing solution in UK.

#### The solutions TVS SCS will provide

TVS SCS can now provide solutions to these challenges through their Type A Customs Warehousing Service by helping the OEMs to defer the VAT, the applicable duties, the title of goods and therefore the declaration of inventory liability in the books, until the stock is called off from TVS SCS warehouse. This provides significant cash flow benefits and mitigates any risks associated with inventory liability.

In addition, TVS SCS has been authorised for Customs Freight Simplified Procedure (CFSP) which enables them to deal electronically with HMRC, allowing faster processing of international trade transactions.

As a next step, TVS SCS has also planned for adoption of Union Customs Code (UCC) and to achieve the Authorised Economic Operator (AEO) status, which is an internationally recognised quality mark indicating that TVS SCS' role in the international supply chain is secure.



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# Performance and economy in one

CoroMill® 745 is a brand new multi-edge face milling concept for steel and cast iron. Double-sided, but with uniquely tilted inserts for a positive cutting action, it leaves you with 14 true cutting edges for superior cost-efficiency. The innovative design offers benefits such as excellent chip formation, low power consumption and a smooth sound, at a reduced cost per component.

CoroMill® 745. Made for Milling.

To know more about  
**Introduction offer**, please  
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