

THE MACHINIST

ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

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THE MACHINIST
Super
SHOPFLOOR 2017
Awards

**THIRD EDITION
OF THE
AWARDS CEREMONY
COMES TO CHENNAI**
MORE ON PAGE NO. 55

ROAD to GLORY

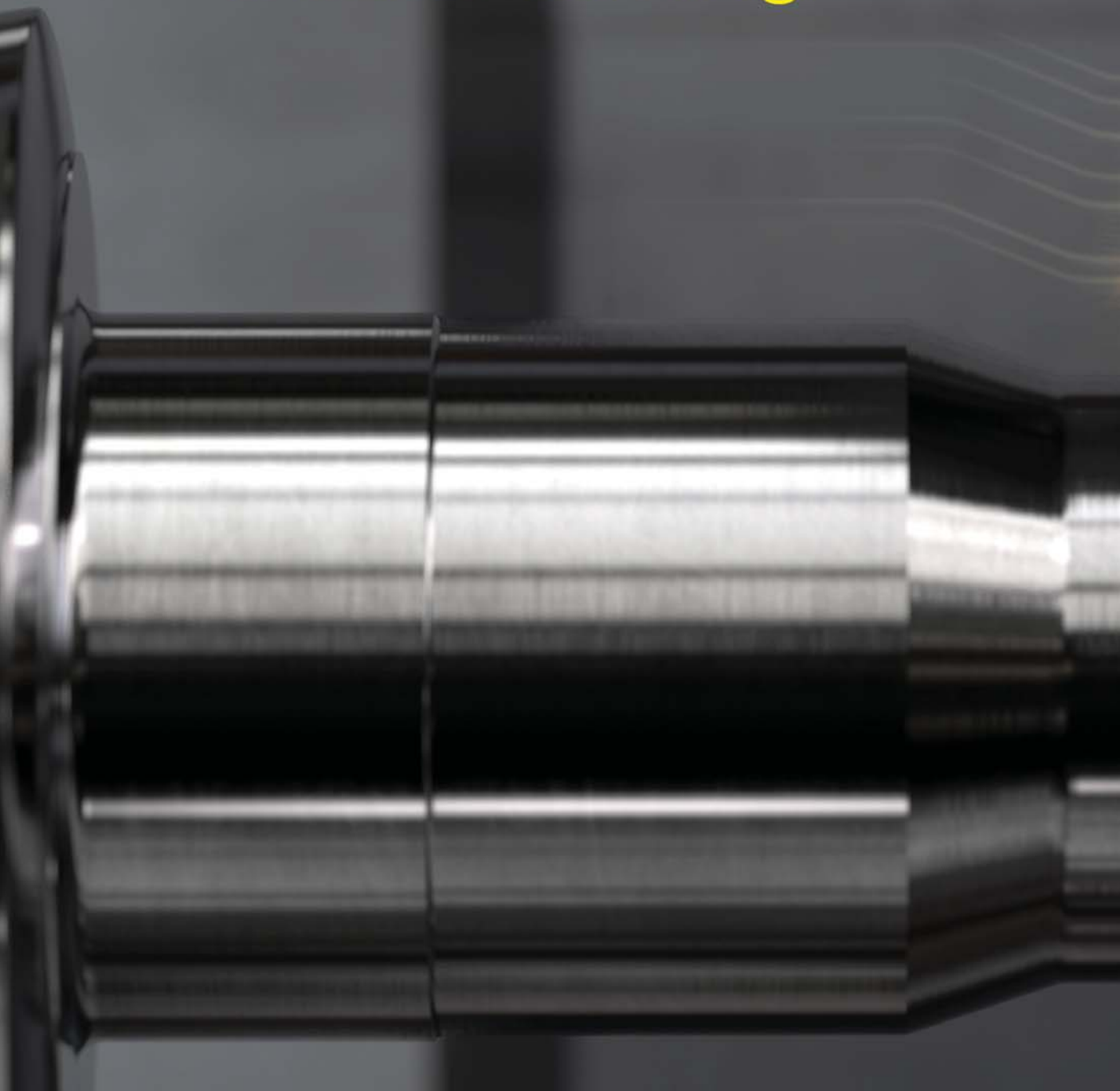
*Sandeep Singh, MD, Tata Hitachi,
explains how his organization
is playing a key role in enabling
the India growth story*

Issue Highlights

- Construction Equipment
- Make in India
- Oils & Lubricants

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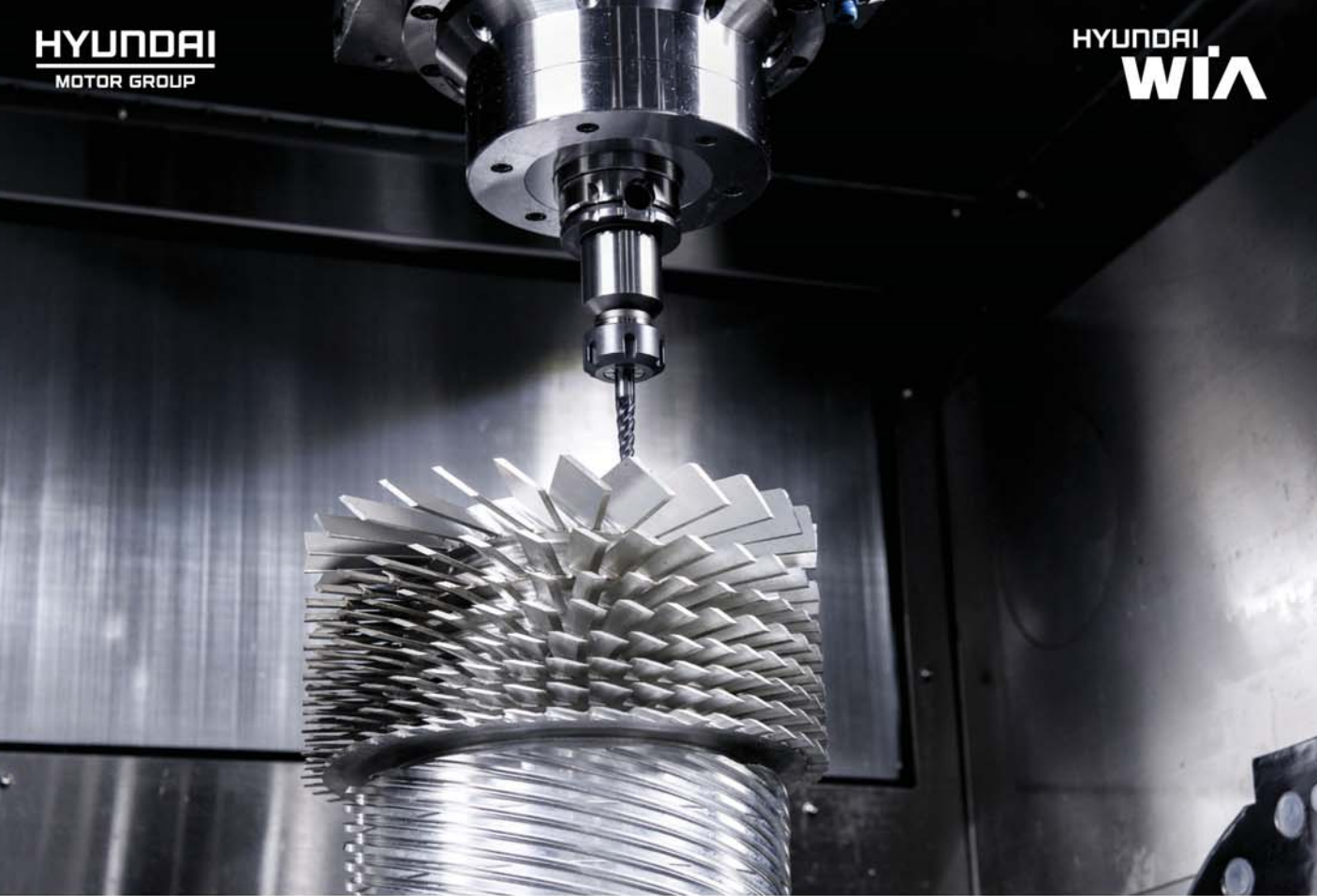


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Seriously top class!

Last year, one of our partners' representative described The Machinist Super Shopfloor Awards ceremony as a 'seriously top class event with top class companies and top class people'. He couldn't have said it better! By the way, it's a Partner who's been with us now for the third year in a row! And the gentleman who said it had flown all the way from France to attend our show.

In fact, you can still see him saying it on TV – go to our website to check out the TV coverage of last year's awards function.

It seriously feels good when your partners give you a genuine and encouraging feedback like that. And it has been truly possible only because of a top class team – 'The Machinist Team'. Of course, the good thing about this team is that

“WHEN THE WINNING SHOPFLOOR RECEIVES THE ‘MACHIE’ TROPHY ON THE STAGE, IT KNOWS THAT IT TRULY DESERVES THE HONOUR. IT KNOWS THAT IS A ‘SERIOUSLY TOP CLASS’ AWARD.”

it does not believe in resting on past laurels! It believes in consistently raising the bar. That's the reason why the number of companies and number of nominations has been growing year on year.

For the industry itself, 'The Machinist Super Shopfloor Awards' platform has become extremely competitive and the jury's job too has become tougher. But no one is complaining. It only adds to the acceptance, credibility and prestige of the platform. When the winning shopfloor receives the 'Machie' trophy on the stage, it knows that it truly deserves the honour. It knows that is a 'seriously top class' award. That's why they all come from the different corners of the country to take home the coveted 'Machie'.

Well, we are all set for the third edition scheduled in Chennai. And many of you will be reading this note at the Awards function itself. Look forward to catching up with you, guys. It's a pleasure and honour meeting the 'Champions of Indian Manufacturing'.

Editor & Chief Community Officer

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High accuracy run-out provides efficient machining

Highest level of run-out accuracy increases tool life

ARP Round insert cutter for difficult-to-cut materials

Optimised chip flow for low cutting resistance



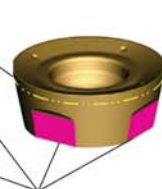
Even chip flow



Rake design of ARP insert

Strong clamping system

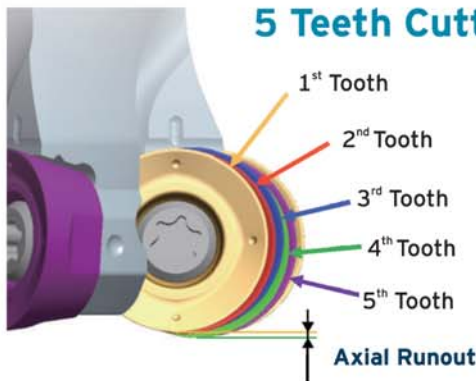
Radial location section



Seating face

Faces for preventing rotation

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NEWS

Punj Lloyd and IWI set-up private sector small arms manufacturing plant

DIVERSIFIED CONGLOMERATE PUNJ LLOYD

and its JV Partner, Israel Weapon Industries (IWI) inaugurated the country's first Private Sector Small Arms Manufacturing Plant at Malanpur in Madhya Pradesh. Presided over by the Chief Minister of Madhya Pradesh, Shivraj Singh Chouhan and Minister of Rural Development, Panchayati Raj, Drinking Water & Sanitation, Narendra Singh Tomar, the inauguration was attended by personnel from the Indian Armed Forces, State



Police, Coastguard, Paramilitary, the media and dignitaries from the Indian Administrative Service. The JV company, Punj Lloyd Raksha Systems (PLR) will be manufacturing small arms for the Indian Defence Forces and also for

export. Samy Katsav, Chairman, SK Group said, "We are fortunate to have in Punj Lloyd a reliable and knowledgeable partner. It is after a lot of due diligence in the Indian market that we identified Punj Lloyd for this partnership. Through this collaboration, we offer the combination of battle proven combat technology of IWI and the proficiency of a renowned Indian business partner. I am extremely upbeat about the opportunities in the sector and confident of contributing to the Make in India programme."

Atlas Copco India expands Hyderabad plant

ATLAS COPCO has recently inaugurated an expanded manufacturing plant in India that will further boost productivity for mining customers. Atlas Copco has invested MINR 800 (MSEK 110) in the expansion of the factory in Hyderabad, India, doubling its capacity.

The plant manufactures drilling consumables for surface mining applications. The expansion of the plant, which already employs some 200 people, will generate employment for about 35 additional people.

"The expanded factory will strengthen our delivery process, enhancing productivity for our customers globally," said Helena Hedblom, President of Atlas Copco's Mining and Rock Excavation Technique business area. "It will also ensure development of competitive products at a faster pace."

The new facility includes a world-class R&D test center for rock drilling products, enabling Atlas Copco to further increase customers' competitiveness.

Local procurement made mandatory in Metro projects

WITH RAPID EXPANSION of metro rail projects in the country, Ministry of Urban Development has taken several far reaching decisions to promote Make in India campaign. These include stipulating certain mandatory conditions to be incorporated in Tender Documents of metro companies for procurement of metro cars and related critical equipment and sub-systems, procurement of only Made in India signaling equipment besides standardising technical parameters for rolling stock (metro coaches) and signaling equipment. The new mandatory Tender Conditions and standardised norms for a wide range of equipment, approved by the Minister of Urban Development M. Venkaiah Naidu have been circulated to all the metro companies on Friday this week making them effective immediately. These initiatives will incentivise setting up manufacturing facilities in the country by increasing the volumes of procurement of rolling stock and all kinds of equipment by removing variations in the present technical norms for rolling stock and signalling equipment. This will in turn result in reduction of cost through economies of scale.

Rolls-Royce, Garden Reach to assemble MTU engines in India

ROLLS-ROYCE and Garden Reach Shipbuilders & Engineers Ltd. (GRSE) have agreed the final assembly of MTU Series 4000 engines in India. The 12V and 16V 4000 M90 type engines will

be assembled in GRSE's Diesel Engine Plant in Ranchi. An option for the local production of parts in the future was also agreed. The engines have a rated power of 2,040 and 2,720 kW, respectively, and will be installed in various naval vessels built by GRSE. The agreement includes the transfer of MTU technology related to assembly, testing and painting. GRSE is one of India's leading shipyards and part of the Indian Ministry of Defence as a Defense Public Sector Unit (PSU). MTU is a brand of Rolls-Royce Power Systems.



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BHEL and Indian Railways tie-up for SPV systems

MWP ROOF TOP SPV

Systems to be installed at Diesel loco Modernisation Works (DMW), Patiala and the contract agreement was signed between BHEL & IROAF (Indian Railways Organisation for Alternate Fuels) in the presence of Amitabh Mathur, Director (IS&P), BHEL and Ravinder Gupta CAO (IROAF).

The 2 MWp SPV RTS is to be installed within nine months. The contract envisages Design, supply, installation, testing and commissioning of grid connected roof top solar photo



voltaic power plant with all the electrical and associated equipment including civil works and also includes five years' operation and maintenance. It has enhanced BHEL's Roof Top SPV project portfolio to 10 MW.

India's first modern waterway gets The World Bank boost

THE WORLD BANK will support India as it sustainably develops its first modern inland water transport fairway on a 1,360 km-stretch of the Ganga river between Varanasi and the seaport of Haldia. The World Bank's Board has approved a \$375 mn loan to help the Inland Waterways Authority of India (IWAI) put in place the state-of-the-art infrastructure and navigation services needed to develop the waterway—known as National Waterway 1—as an efficient logistics artery for northern India, while adopting the least intrusive methods of making the river navigable. The Capacity Augmentation of National Waterway 1 (Jal Marg Vikas) Project will help save more

than 150,000 ton CO2 equivalent in greenhouse gas emissions annually by moving cargo away from fossil fuel-consuming road and rail networks.

"Harnessing the mighty rivers of South Asia to build an effective multimodal transport strategy will give the region a competitive edge on the global scene," says Junaid Ahmad, World Bank Country Director for India. "This project will allow India to move goods seamlessly between road, rail and water, and bring down logistics' costs. This Project will help IWAI put in place environmentally-sustainable strategies for inland navigation that can be replicated on other waterways in India and other countries."

SKF India opens 1st Remote Diagnostic Center

SKF INDIA has announced the inauguration of their Remote Diagnostic Center (RDC) in India. This diagnostic center will be located in their Pune Corporate Office.

SKF's Remote Monitoring Service makes it possible for any company with Internet access to implement a world-class predictive maintenance (PdM) program for periodic or continuous monitoring of critical machinery.

This SKF solution is ideal for plants with limited staff trained in predictive maintenance techniques, operations with sites located remotely from a central facility, and original equipment manufacturers that desire to provide a value-added service to their customers.

With hosted software and the remote monitoring services, SKF will supply the expertise, tools, and training necessary to set up a complete monitoring program anywhere in the world.

Shishir Joshipura, Managing Director and Country Head, SKF India said, "SKF is committed to service their customers and the Remote Diagnostic Center is a step forward to move closer to our customers. Moving on Industry 4.0, this will make our customers future ready and will make them capable of taking informed decisions to improve operational efficiencies of plants. RDC will help in bringing plants and remote assets together and perform better as a part of Smart Manufacturing in India".

India, UK agree to extend the current Defence Equipment Cooperation MOU

AT THE INVITATION of India's Defence Minister Arun Jaitley, the UK's Secretary of State for Defence Sir Michael Fallon visited India for the India-UK Strategic Defence Dialogue. The two Ministers recognised the potential for further cooperation in defence manufacturing between the UK and Indian companies under the

'Make in India' framework.

To further encourage and facilitate cooperation between the UK and Indian companies, the two Ministers agreed to extend the current Defence Equipment Cooperation MOU and work towards early completion of an expanded MOU, which will provide a platform for the UK and Indian in-

dustries to collaborate on and support transfer of technology on projects in areas of mutual interest. The UK and India will encourage interactions between the Indian Army Design Bureau and Defence Equipment and Support (DE&S)/Army Capability Branch through their Defence Equipment Sub-Group.

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CALENDAR

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A list of key events happening between June 2017 to April 2018,
both nationally and internationally.

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Tech India September 08–10, 2017 Mumbai http://www.techindiaexpo.com/	EMO Hannover September 18–23, 2017 Hannover, Germany www.emo-hannover.de	ArabiaMold Sharjah December 11–14, 2017 Sharjah, UAE http://www.arabiamold.com/	ExCon December 12–16, 2017 BIEC, Bengaluru http://excon.in
IMTEX 2018 January 25–30, 2018 BIEC, Bengaluru http://imtex.in	ELECRAMA March 10–14, 2018 India Expo mart, Noida http://elecrama.com/	SIMTOS April 03–07, 2018 Seoul, South Korea http://www.simtos.org	CeMAT April 23–27, 2018 Hannover, Germany http://www.cemat.de/

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UPCOMING
EVENTS**

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18th May, 2017
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16th November, 2017 - Indore



18th January, 2018, Mumbai

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ElectroMech and Hyster-Yale join forces

ElectroMech has announced an agreement with Hyster-Yale Asia-Pacific Pty Ltd, for the sales and service of their Yale and UTILEV lift trucks in India. ElectroMech is India's largest overhead crane manufacturing company and serves diverse needs of critical sectors like Manufacturing, Heavy Engineering, Infrastructure, Power, Metallurgy, Pharmaceuticals and Paper.

With this announcement, ElectroMech reinforces its lead in material handling solutions in India, now with a wider range of products. This agreement, specifically for the sale and service of the Yale and UTILEV product range, will allow both companies to build on each other's strengths. ElectroMech's leadership position in the Indian market and dependable service support from its group company, Cranedge, resonates with the global technology from Hyster-Yale. The estimated annual market size for forklifts in India is about 10,000 units, with increasing demand for products that use



the latest technologies that are expected to increase productivity and lower cost of ownership.

Tushar Mehendale, MD, ElectroMech, noted, "The agreement between ElectroMech and Hyster-Yale is in line with our vision of being the preferred partner of world leaders in the material handling industry. This brings together two organizations with synergies in quality products and unmatched after sales support. While we are already present across a diverse spectrum of industries, this agreement will allow us to provide complete integrated solutions to our customers and access to newer market segments. We aim to achieve a leadership position in this market in the shortest possible time."

Caterpillar Names Deerfield, Illinois, as new global headquarters

Caterpillar Inc. announced that its new global headquarters will be located in Deerfield, Illinois, a northern Chicago suburb. The new headquarters building is minutes away from Chicago's O'Hare International Airport, is centrally located near major interstates and offers direct access to the Chicago Metra.

"Following a thorough site selection process, we chose this location because it is approximately a 20-minute drive to O'Hare airport and convenient to the city of Chicago via commuter train, achieving our goal to be more accessible to our global customers, dealers and employees," said Caterpillar CEO, Jim Umpleby. "This site gives our employees many options to live in either an urban or suburban environment. We know we have to compete for the best talent to grow our company, and this location will appeal to our diverse, global team, today and in the future."

Volvo CE sales increase by 30% in Q1 due to improving market conditions

Improving market conditions in all regions except South America helped Volvo Construction Equipment (Volvo CE) report strong growth in sales, profitability, order intake and deliveries in the first quarter of 2017. During the first three months of 2017 Volvo CE saw net sales jump by 30 percent to SEK 16,163 M (SEK 12,452 M in Q1 2016). Operating income was also positively impacted, rising to SEK 1,617 M, up significantly compared to SEK 341 M in the first quarter of 2016. Operating margin also saw good improvement, at 10 percent, compared to 2.7 percent in the same period the year before.

In the first quarter of 2017 Volvo CE also enjoyed an increase in order intake, which rose by 34 percent to 17,487 machines, with increases in orders coming from all markets, but particularly China and Europe. Deliveries were also up 34 percent during the period, to 16,369 machines.

Atlas Copco wins orders from Hindustan Zinc for efficient operations

Atlas Copco has won several recent orders from Hindustan Zinc in India for equipment that will make the mining company's operations take a leap forward in efficiency and become more digitalised.

Hindustan Zinc, a long-time customer of Atlas Copco, is significantly increasing its underground mining output. As part of this



shift, Hindustan Zinc is automating much of its operations, increasing productivity and safety. The recently placed orders include drilling rigs, loaders, haulers and exploration equipment which will be used in five of its mines in northwestern India. The orders total MEUR 24 (MSEK 230) and were received in the first and second quarters of 2017.

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The machine tool industry is the backbone of the manufacturing industry. To help the sector with comprehensive manufacturing solutions, it is critical to have compact, advanced and easy to configure machines. Therefore, the industry constantly demands for slim, light weight, highly flexible cables which not only meet the global standards but also overcome the challenges faced due to harsh environment conditions, continuous motion and high temperature.

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Building India

Various initiatives from the Government has led to increase in demand for construction equipment. Learn more about how the industry is faring in India.

By Swati Deshpande

Infrastucture development has been one of the major focal points in India. Due to the emphasis on infrastructure development, construction equipment industry has gained a momentum. Speaking on it, Dheeraj Panda, VP & Business Head, Excavator Business Unit, Sany Heavy Industry India Pvt. Ltd. said, "On the numbers front, in 2016, the sales of construction equipment grew at the rate of around 36 percent YoY, in terms of units. This is a tremendous jump and the momentum is expected to be maintained as infrastructure, including Smart Cities, remains the fulcrum of the of the present government's policy." Taking this point further, Jasmeet Singh, Head – Corporate Communications & External Relations, JCB India Ltd mentioned, "2016 had been a positive year for the entire earthmoving and construction equipment industry including JCB. From 36,798 units sold in 2015, the market increased to 52,462 units in 2016 showing an increase of about 43 percent in seven leading product categories (Backhoe Loader, Excavator, Wheeled Loader, Compactor, Loadall, Skid Steer and Mini Excavator)." Adding into it, Singh further mentioned, "From over 18,000 machines in 2015, we sold over 26,000 machines in 2016 and this was after a downturn that lasted for four years. Roads and highways has been one of the key sectors in this revival and still continues to drive the growth thus, increasing the demand for earthmoving and construction equipment."

"With increase in size of the government's investment outlay, the expectations from the infra projects is on the rise. The government has made its objective of world-class infrastructure in the shortest possible time, very clear. What this translates into is for the players, especially construction equipment makers, to constantly innovate, increase operational capacities and capabilities, while reducing the capital and operational costs," noted Panda.



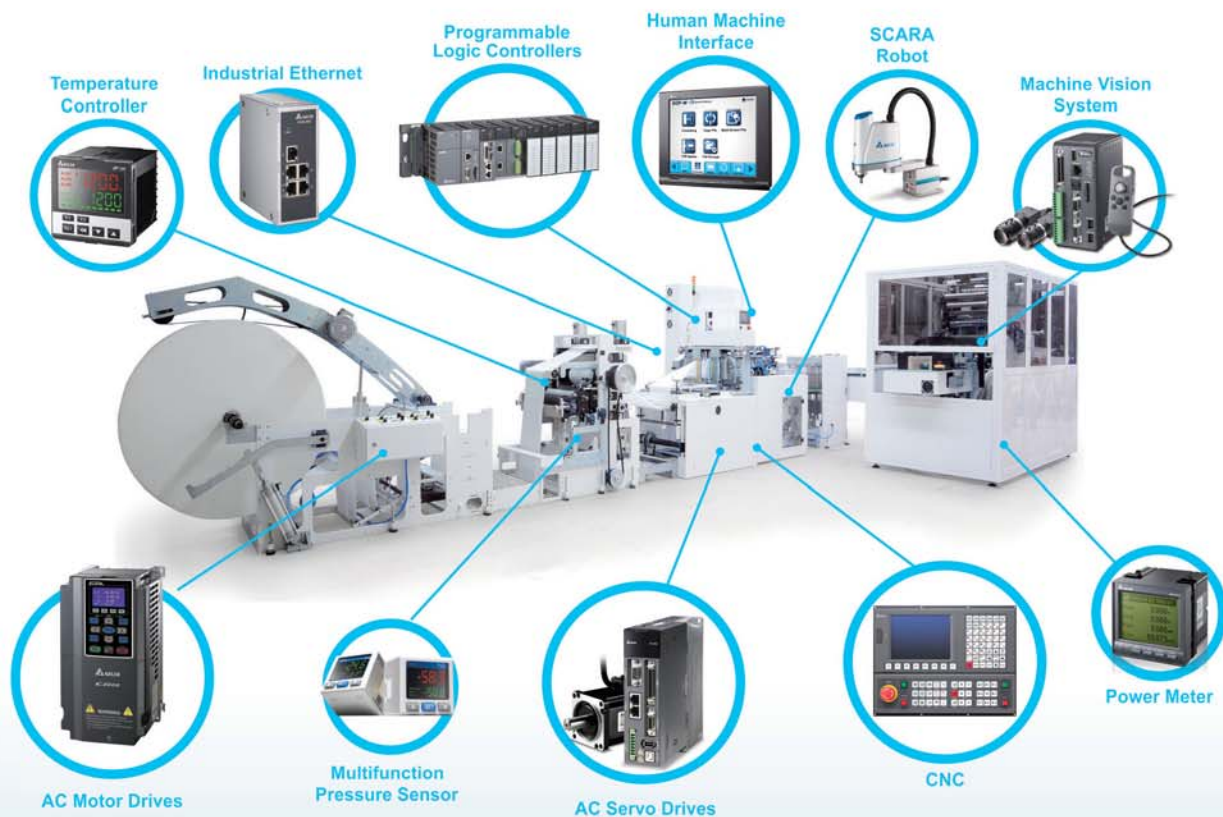
With efforts of the government to bring in more foreign investment in the infrastructure sector, we feel that the best is yet to come for the industry.

Dheeraj Panda, VP & Business Head, Excavator Business Unit, Sany Heavy Industry India Pvt. Ltd



Role of smart cities

'Smart cities' is has been helping the construction equipment industry to grow. Speaking on it, Panda stated, "The demand for construction equipment has been on an upswing because of the government push on infrastructure spending over past couple of years. Smart cities project will give a further fillip to this as it also entails modernisation of existing infrastructure and we see a huge demand coming from this segment." In this regard manufacturers constantly have to be on the path of innovating. To be upbeat with the demand, JCB has launched



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new models recently. While informing about the company's new launches, Singh stated, "JCB has made some new and innovative additions in its product portfolio in the last one year and has transformed into a full range Infrastructure Equipment partner. We launched 10 new products in 2016. In July last year, we introduced three product lines in the Material Handling segment—Telehandlers, Skid Steer Loaders and Super Loaders. With the Indian Material Handling Industry growing, these products were launched with the aim of replicating global best practices in India."

Agreeing to the sentiment, Panda added, "Smart City projects' emphasis on retrofitting, redevelopment and green-field development will require construction equipment manufacturers to develop and deliver a wide range of innovative solutions. At Sany India, we feel that the demand in this sector will not remain limited to equipment that are traditionally needed but will also extend to smart solutions of varying capacities. This is where our R&D focus plays an important role."

Effects of demonetisation


In the midst of emphasis on infrastructure development, demonetisation affected many industries for few months. "While



Roads and highways has been one of the key sectors in this revival and still continues to drive the growth thus, increasing the demand for earthmoving and construction equipment.

Jasmeet Singh, Head – Corporate Communications & External Relations, JCB India Ltd

there were some effects of demonetisation, they were temporary and we are witnessing that the growth has returned. We expect this upswing to continue throughout this year as well. We are sure to witness huge demand especially when it comes to our 21 ton long range and 24 ton excavators where we already are the market leaders. Q1 2017 has already exceeded the growth witnessed the same quarter last year," Panda noted.

Adding further on projection for the year Panda concluded with saying, "In 2017, the construction equipment industry is expected to maintain its double digit growth in unit sales. With efforts of the government to bring in more foreign investment in the infrastructure sector, we feel that the best is yet to come for the industry." 

UPDATE

Bamboo makes its way in car interiors


You've probably sat on it, built with it, and maybe even eaten it, but did you know that your car could be next to benefit from bamboo – one of the world's strongest natural materials?

While investment in research has led to breakthroughs in new materials like super strong carbon fiber and lightweight aluminium, nature's wonder material may have been growing all along and as much as three feet in a day. Soon, some surfaces inside our vehicles could be made from a combination of bamboo and plastic to create super hard material.



"Bamboo is amazing," said Janet Yin, a materials engineering supervisor at Ford's Nanjing Research & Engineering Centre. "It's strong, flexible, totally renewable, and plentiful in China and many other parts of Asia."

The benefits of bamboo have been recognised for more than a century – Thomas Edison even experimented with it when making the first light bulb. In building, its tensile strength (or how much it can resist being pulled apart) is well known, as it can rival or even better some types of metal. And, because it grows to full maturity in just two to five years – compared to up to decades for other trees – bamboo also regenerates easily.

Over the past several years, Ford worked with suppliers to evaluate the viability of using bamboo in vehicle interiors and to make extra strong parts by combining it with plastic. The team has found that bamboo performs comprehensively better than other tested synthetic and natural fibers in a range of materials tests, from tensile strength tests to impact strength tests. It's also been heated to more than 212°F to ensure it can maintain its integrity. 

Source: Ford Motor Company

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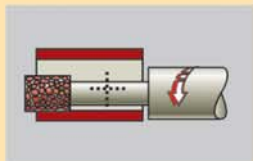


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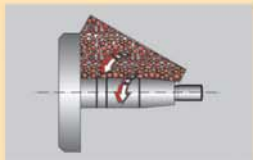


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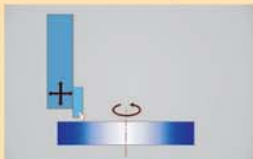


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Let the lion roar louder

Make in India has become a buzz word since few years. However, what is the ground reality? Read on to know more.

By Swati Deshpande

When launched, Make in India initiative created much needed enthusiasm in the manufacturing industry. However, its success would be registered when this enthusiasm translates into the business. Taking a stock of the situation since inception of this initiative, Farrokh N. Cooper, Chairman and Managing Director, Cooper Corporation Pvt. Ltd. mentioned, "In the last three years definitely many bold steps have been taken to encourage Make in India programme, results are visible." Adding into it, Kishore Jayaraman, President, Rolls-Royce, India & SA opined, "The 'Make in India' initiative has added a much needed momentum to the Indian manufacturing ecosystem as a whole. The initiative has positioned India on the world map as a manufacturing hub. Organisations are attracted by the vast pool of the untapped engineering talent and cost-competitive manufacturing potential that India offers."

One of the examples of how foreign companies are attracted towards India as a manufacturing destination would

While foreign investment is important, contribution of Indian manufacturers towards Make in India cannot be neglected.

be Toshiba. Stating Toshiba's contribution, Tomohiko Okada, Managing Director, Toshiba India Pvt. Ltd. said, "We have established India as a hub for our manufacturing operations and export base with an aim to 'Make in India and Export from India'. Toshiba in India is focusing on sustainable B2B fields and has made significant investments in setting up manufacturing operations for Power Generation equipment, Power Transmission & Distribution equipment and Railway components. Setting up our power generation operations in India, we

established a manufacturing facility in Chennai to manufacture and market super-critical steam turbines and generators for thermal power plants in India, under the name – Toshiba JSW Power Systems (TJPS)."

In 2016, the company established a new production facility for electrical equipment for railway systems to foster the railway transport infrastructure in India. "This facility, a part of the existing TTDI factory in Hyderabad, will manufacture power conversion systems and train control systems that provide overall operation management," Okada noted.

Like power and railways, defence is one of the major sec-

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The fact that the FDI flows into India are on record highs (surged by 60 per cent to \$4.68 billion in November 2016 and the inflation is low showcases the efficacy of these reforms and initiatives.

Kishore Jayaraman,
President, Rolls-Royce, India & SA

tors that came into limelight due to the policy reforms. Speaking on the same, Jayaraman shared, “The ‘Make in India’ initiative has opened a plethora of opportunities for Indian and foreign companies alike. Private sector and SMEs are building base to become part of the global supply chain of the world’s multi-billion defence market. In order to further boost the initiative, all three key stakeholders – the government, foreign OEMs and the private domestic Indian industry, needs to play their respective parts to perfection. It is important to not just focus on manufacturing and technology transfer but also on creating a broader ecosystem that includes co-design, co-development, co-manufacturing and support. This entails capability creation and skilling rather than just technology transfer and it is something that Rolls-Royce considers as one of its core strengths.”

While foreign investment is important, contribution of Indian manufacturers towards Make in India cannot be neglected. Highlighting this point, Cooper informed, “We are in line of manufacturing engine components such cylinder liners as well as cylinder blocks/heads etc. We also make diesel and CNG engines and have witnessed a substantial increase in demand for our products from various government organisations who previously used to buy imported engines at much higher price. This has been mutually beneficial; for government in terms of savings and for manufacturers it results in increased demand and business. Factors like these have definitely contributed towards making this initiative a great success.”

Ease of doing business

In order to enable the manufacturing industry to start and conduct operations smoothly in the country, manufacturers seek support from the policy makers. JCB India set-up an eco-friendly, green manufacturing factory in Jaipur which was inaugurated in November 2014. Narrating an experience on

setting up this factory, Jasmeet Singh, Head - Corporate Communications and External Relations, JCB India Ltd shared, “We received excellent support from the Rajasthan Government throughout the journey of setting up this plant. The State Government has created a business-friendly ecosystem with initiatives like single window clearance, and a stable political and economic environment that makes it an attractive destination for new business.”

“The Government has taken steps for Ease of Doing Business, which are showing results. Some states have embraced it better than others,” noted Abhishek Somany, Managing Director, Somany Ceramics Ltd.

There have been many policy-related reforms that the government has undertaken. “A host of policy reforms and initiatives such as sales-tax revamp, upgrading infrastructure, raising foreign-investment limits and digitising approvals and registrations, reflect some of the progress India has made recently in improving the business environment. The fact that the government will be launching an awareness campaign for better ease of doing business ranking and to attract investment in 25 sectors selected under Make in India further showcases the government’s priority to make it easier to do business in India,” added Jayaraman.

These efforts are gradually showing results. Elaborating



We have established India as a hub for our manufacturing operations and export base with an aim to ‘Make in India and Export from India’

Tomohiko Okada,
Managing Director, Toshiba India Pvt. Ltd.

the point with an example, Cooper mentioned, “Ease of doing business has been definitely improved in the last couple of years. However, there are still few issues concerning the industry, like facing challenges while obtaining electrical inspector permit in various states. Although this requirement has been withdrawn by the Government of Maharashtra, there is still a need for this policy to be applied pan India basis.”

Agreeing to this sentiment, Jayaraman added, “Going forward, cooperative federalism should be the key driver. A greater focus should be on collaborations with all stakeholders

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"In the last three years definitely many bold steps have been taken to encourage Make in India programme."

Farrokh N. Cooper,

Chairman and Managing Director, Cooper Corporation Pvt Ltd

– states, supreme courts and high courts. States that are high up on the rankings should be encouraged to come together to share their best practices and learnings. Also, infrastructure development and connectivity improvement should continue to remain the focus of the government." Adding further he continued, "Although we have not set up a plant recently, the fact that you are now able to start a business in India in six days, compared to the initial 26 days speaks for itself about government's focus on simplifying processes and increasing ease of doing business in India."

Taxation

Goods and Services Tax (GST) has been another relief for the manufacturing industry towards achieving the dream of India being a manufacturing hub. Sharing his thoughts on it, Sameer Gandhi, Managing Director, Omron Automation India said, "GST will play a significant role in reducing the production cost, which will have a direct impact on the state of the manufacturing industry – a highly competitive arena where cost of production is one of the most important performance indicators. This will translate into creating better values for the consumers." Projecting its effect on the unorganised sector, he continued, "It will be a great influence in boosting demand too which will lead to rise in production levels. Lot of unorganised sector, which is thriving because of tax arbitrage, is expected to move to organised sector. This is expected to cause a spur in demand for better manufacturing facilities fuelling the growth in factory automation sector."

"Uniform tax structure across the country will provide the much needed boost to the overall industry. Roll out of GST is definitely a positive step which will provide manufacturers

great relief from multi-level tax structures and will boost our business," added Cooper. According to Somany, GST would be the largest taxation reform in independent India. "It will have long term effect on industry and will bring down the cost of products. Single tax will help in increased tax compliance," he said.

In efforts of providing maximum aid to the industry to grow, Skill India plays an important role. "The initiatives, especially Skill India, are addressing the right concerns and will deliver fruitful results to strengthen the overall profile of the manufacturing sector. The skill-divide, prevalent in the sector, is one of the key concerns. Augmented with the unemployment concerns, the sector needs this kind of initiative not only to expand the skill base but also get upgraded in sync with the current trends and needs of the promising sectors," Gandhi mentioned.


Throwing light on the Make in India programme as a whole, Singh said, "All these initiatives undertaken by the Government are helping in creating a conducive/healthy business environment in the country. Manufacturing is one of the core sectors to drive the economy and these initiatives have addressed many key issues which will help in streamlining the process."

While summing up, Jayaraman asserted, "The government's overarching theme in terms of ease of doing business has been to minimise government and maximise governance. The fact that the FDI flows into India are on record highs (surged by 60 per cent to \$4.68 billion in November 2016 and the inflation is low showcases the efficacy of these reforms and initiatives. In fact, not just for corporates, even for ordinary people, the government is making attempts to simplify their

dealings with the government. It's evident from initiatives such as cutting down the procedures for incorporating a company from twelve to six, increasingly focussing on infrastructure development – both social infrastructures such as skill development as well

To take the industry to the next level, the vision for India should be to become Manufacturing Superpower.

as rural infrastructure such as agriculture and direct benefit transfers. Clearly, these initiatives are bound to create the right ecosystem and give the necessary boost to enable the growth of the overall manufacturing sector in India."

With the bouquet of effort from the Government, the manufacturing industry is all set to take a high leap. And we hope this translates into increased contribution of the manufacturing industry in the country's GDP in the days to come. Going beyond this, the question is – Is it where the journey of Make in India should end? The answer to this is definitely No. To take the industry to the next level, the vision for India should be to become Manufacturing Superpower. Will that be possible? To seek answer to this question, we have organised a CEO Panel Discussion during The Machinist Super Shopfloor Awards to be held on May 18, 2017 at Chennai. Stay tuned with us as our eminent speakers throw light on it. 

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Increasing performance with lubricants

Yatendra Kumar, Business Head, MotulTech India speaks to The Machinist about role of lubricants in the manufacturing.



Life of the oil is another important aspect that affects shutdown time. High quality oil & lubricants reduce friction while maintaining lower working temperature of the equipment.

By Swati Deshpande

Q Can you please tell us about MotulTech India's business in India and industries that you cater to?

MotulTech India serves to the Indian sub-continent and our customers are based on Nepal, Bangladesh, Sri Lanka, Bhutan, and few other countries in Asia. Additionally, we also export products to our group company. MotulTech India offers lubricants solutions to various industries such as automotive, steel, textile, food processing, etc. Our aim is to be at a respectable position in the industrial business segment while offering high-quality solutions at right price.

Q Lubricants play an important role in the overall equipment efficiency. Can you please elaborate on it?

Lubricants' main job is to reduce friction. In the process of manufacturing, when friction is reduced, it naturally enhances life of the equipment. Overall equipment efficiency can be achieved through extending life of the equipment. Additionally, good quality lubricant lead towards lesser shutdown or maintenance time, which further translates into saving of energy as well as man hours.

Furthermore, life of the oil is another important aspect that affects shutdown time. High quality oil and lubricants reduce friction while maintaining lower working temperature of the equipment. This further leads to enhancement of the life of oil itself. So it's complete benefit for the users, as they can reduce energy consumption, lubricants consumption and ultimately saves cost.


Q Manufacturers are concerned about increasing their machine performance and productivity without compromising on safety and environment regulations. What role is MotulTech playing in this?

Our products follow health, safety and environment (HSE) regulations and so far we have not received any feedback with regard to health or machining safety aspect. Having said so, disposal is a major concern today. To make our contribution in this area, we are working with government approved agencies, which deal with disposals, and making our customers aware about the right disposal process. Disposal is especially a bigger concern in case of water soluble lubricants.

Again, quality of oil plays an important role here. With the right processes and good quality of oil, users can save money and environment. If less amount of oil is consumed, lesser amount is disposed and also it consumes less energy for disposal. So, quality of the oil matters not only while the oil is in use but even after that.

Q Today, 'value addition' is a buzz word. How do you work with your customers to offer them a complete solution than just a product?

We have introduced range of synthetic oils, which give better results as compared to conventional oils. Depending upon its use, customers can get oil life upto 10 times and upto 10 percent energy saving from the synthetic technology.

Going beyond this, we work with the customers, understand their processes and offer an optimum solution to them. However, this method is based on the client's approach the gestation period is high. It takes 6-24 months for results to be seen. Although investment and time is high initially, this method gives sustainable result to the customer. 

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BOMBARDIER APPOINTS **JEFF HUTCHINSON** AS CHIEF INFORMATION OFFICER

Bombardier Inc. has announced the appointment of Jeff Hutchinson as Chief Information Officer, reporting to John Di Bert, Senior Vice President and Chief Financial Officer, Bombardier Inc. In this position, Hutchinson will be responsible for leading Bombardier's global IT, digital asset and cyber security functions. In this capacity, he will assume responsibility for establishing a strong portfolio of world-class IT strategies, services, and offerings, in support of Bombardier's 2020 goals and longer-term strategic plan.

"Jeff has the right experience and credentials to lead our IT organization's transformation, with a focus on driving performance, enhancing synergies, and building a best-in-class IT organization," said Di Bert. "Beyond his impressive track record, Jeff brings a customer-centric approach to technology to Bombardier, as well as a passion for enabling companies like ours to drive profitable growth through their digital transformation."



ROLLS-ROYCE APPOINTS **PAUL STEIN** AS CHIEF TECHNOLOGY OFFICER

Rolls-Royce has appointed Paul Stein as Chief Technology Officer, reporting to Chief Executive Warren East. In his new role, Paul will be accountable for Rolls-Royce's technology investment and for ensuring its close alignment with business strategy. He will be responsible for technology investment across the business.

Currently Research & Technology Director, Paul joined Rolls-Royce in 2010 as Chief Scientific Officer. Previously he was Director General, Science and Technology at the UK Ministry of Defence, responsible for national investment in defence science and technology. Prior to that role, Paul was Managing Director of Roke Manor Research, at that time owned by Siemens and was a member of the Siemens UK executive management board, leading on technology and contributing to business strategy.

ESCORTS LTD APPOINTS NEW GROUP HR HEAD

Escorts Ltd., leading Agriculture & Infrastructure Solutions manufacturer, has appointed Amanpreet Singh Bhatia as the new Group HR Head. Bhatia has more than 25 years of experience across commercial vehicle and engineering solutions, consumer durable and FMCG space. At Escorts, he will focus on organisational transformation and Human Resource strategic roadmap to build a strong employer brand.



LENOVO INDIA GETS DIRECTOR FOR DATA CENTER GROUP

Lenovo India has announced the appointment of Vivek Sharma as the company's new Director, Data Center Group, India, effective immediately. Vivek will be based in Bangalore and will report to Sumir Bhatia, Vice President, Data Centre Group, Asia Pacific, Lenovo. Vivek will also be part of Lenovo's India Leadership Team which is led by India MD & CEO, Rahul Agarwal.

As the new India DCG leader, Vivek will be responsible for driving profitable growth in India. He will focus on customer centric solutions as well as manage an extensive product portfolio including Server, Storage, Software, Services and Networking.

HITACHI INDIA APPOINTS ITS 1ST INDIAN MD

Hitachi India Pvt. Ltd. (Hitachi India) has announced the appointment of Bharat Kaushal as the Managing Director of Hitachi India. Bharat will be the first Indian to spearhead Hitachi India's operations. He succeeds Kojin Nakakita who has been elevated as Chairman of Hitachi India Pvt. Ltd. and Hitachi Asia Ltd. The new appointment will be effective from June 1, 2017.

Kaushal is currently serving as Chairman in India of Sumitomo Mitsui Banking Corporation (SMBC). He is the first non-Japanese to be appointed as SMBC India's CEO and served the role between 2012 and 2015.

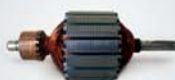


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ROAD to GLORY!

With the importance given to the infrastructure development in the country, construction equipment industry is going through an exciting time, says **Sandeep Singh**, Managing Director, Tata Hitachi Construction Machinery Company Private Limited

By Niranjan Mudholkar

"You will see that in the next two to three years time Tata Hitachi will be playing a very important role in wheeled equipment. We are continuously working and improving our products to make it happen."



Today, Sandeep Singh, Managing Director, Tata Hitachi Construction Machinery Company Private Limited, has set his eyes on the wheeled equipment segment. Of course, before doing that, he has been working hard to strengthen the Company's position in the tracked excavator segment where it has a substantial market share. And while Tata Hitachi has maintained its leadership position in that segment for a fairly long time, when Sandeep Singh joined the Company in August 2015 as the MD, it was going through a very challenging time. In fact, the overall market itself had been down for many years. But Singh and his team turned around the Company successfully and are now looking at newer frontiers. In an exclusive interview with The Machinist, Singh – a veteran of more than three decades – shares his journey with us touching upon its different aspects.

Maintaining leadership

He starts by explaining how the Company is maintaining its market leadership position. According to Singh, Tata Hitachi has somewhere around 37 percent market share in the hy-



draulic excavators segment. “In fact, we have been hovering between 36 percent to 38 percent market share for the last two to three years. We have a range of equipment from two tonnes to two hundred tonnes.” From two tonnes to twenty tonnes – mini and mid range – of excavators are managed by Tata Hitachi’s dealership. “Beyond that, the Company manages it on its own. Of course, its 80 percent of business comes from up to 20 tonnes machines.

“Our regional team, our branch office team and our dealers play a very important role. There is a very strong connect between Tata Hitachi and dealers as well as between our dealers and our customers. That is helping us build a very strong relationship. It is clearly visible in the fact that 50 percent of our sales is repeat sales. If 50 percent of your customers are coming back to you then that is a very good equation. That is on our sales part,” he shares.

The second part is the quality of the machines – the actual products! “I think we have done very well on that front. Both Tata and Hitachi complement each other in terms of quality. We have very strong manufacturing processes and very strong vendor network. We have a very strong engagement with our

vendors. It is a continuous process of improvement but I think we are doing a very good job,” he says.

The third aspect is making machines available as per the requirement of the market. “Again on that front, we have done

Bouncing back

According to Singh, the last two years have been the years of consolidation for the construction and mining equipment industry in India. “Between the year 2012 to the year 2015, the market was in a declining mode. During that time, our vendors, dealers and we all lost a lot of money. It was a very demotivating period for many. But the new government’s thrust on infrastructure gave a lot of motivation to the industry. It assured us that there is going to be a good opportunity for all of us. Actually, the market started growing somewhere around the first half of the calendar year 2016. We saw a little growth in 2015-16 but last year 2016-17 has given us good growth. In terms of percentage, we have grown by 46 percent in 2016-17 which is better than the industry growth average of around 43 percent.”



Kharagpur plant

Plants

Tata Hitachi products are manufactured at the plants at Jamshedpur – Jharkhand, Dharwad- Karnataka, and Kharagpur - West Bengal. The 250 acre state-of-the-art factory at Kharagpur is rated amongst the biggest construction machinery manufacturing facilities in South East Asia and is geared to meet both domestic and international demands. The Dharwad plant caters to the needs of customers in the southern and western region.

Jamshedpur: Batch type production consists of 2T, 65T and 120T excavators apart from Reach stacker and Cranes. Key manufacturing facilities are Cutting shop, fabrication and machining of large class excavators, Transmission aggregate manufacturing (including KGP models) and Batch type assembly.

Kharagpur: Conveyor line assembly for 20T to 45T excavators. Apart from this, Dumper and Wheeled machines are also assembled in separate batch type assembly shop. Key manufacturing process includes fabrication and machining of attachment & frames, Painting of Sheet metal (ED), attachment & frames.

Dharwad: It is also having conveyor line assembly for 7T to 20T excavators. Apart from this, Backhoe loaders are also assembled in separate conveyor line. Key manufacturing process includes fabrication and machining of attachment, Painting of Sheet metal, attachment & frames.

quite well as the market grew suddenly in the last two years. It took many people by surprise but we were very well equipped. So I think all these factors have helped us maintain our market position,” he says with a smile of satisfaction.

Addressing India's Growth story

Singh is happy to note that Tata Hitachi products have direct relevance to India's growth story. “The market is divided into different segments. It includes road construction, which is the biggest segment for us, and then we have mining, irrigation as well as housing. These are the key industry drivers. Besides these segments, we also have ports and railways that present good opportunities for us. Our approach is to understand these segments and provide the right solutions to the customers. We understand that each segment and each customer has a specific machine requirement and that's what we provide. We understand the customer's job and facilitate the customer to complete the job in a faster and more efficient manner. And that is working very well for us,” Singh adds.

The legacy and range

Singh also underlines the legacy of Hitachi when it comes to the product. He notes that today, Hitachi products are sold globally. “Most of our products in India have the same technology that we have in other parts of the world.” In India, to cater to different jobs and different segments, Tata Hitachi has

two categories of machines - EX Range and GI Range. While EX caters to the economy range of the market, GI caters to the premium side. “The GI Range is more advanced and it has more of IT features – we call it ConSite. With ConSite, the customer, seating at his home or office remains connected with his machine and is updated about predictive maintenance, predictive health check, machine performance, operator efficiency, tool efficiency and so on. However, the Tata Hitachi quality remains the same irrespective of whether it is an EX machine or a GI Machine. The differentiation is in terms of the features,” Singh notes.

Quality, not price!

It is often said that India is a price sensitive market. But Singh believes that playing on the pricing strategy is not good for the long term. It hurts the industry as well as the company. Quality is what counts, he believes. “I personally believe that quality counts. At the end of the day, our customer appreciates quality. So we have been focused on quality. What we have been doing is that we have been working on our vendors to enhance the quality. We are asking our dealers to invest to improve their infrastructure. We have also changed many manufacturing process at our plants,” he states. Obviously, doing all this costs money and there was a time when the company was making losses. “So we corrected ourselves and decided to educate the customer that if we are going to provide a very good product and good service then it will cost some money,” he adds.

There is a need for equipment in the market. When there is need of equipment, the customer wants to finish his job faster and he wants to have peace of mind. “For that, we are giving him better quality machines as well as prompt and excellent service. As a result, his machine is up and running most of the time. So the customer has realised that this is the company he has to rely on. And it is paying us good results. Today's customers understand the long term benefits of buying a good machine rather than looking at the initial cost of buying. As far as we are concerned, we are not in the business of gaining market share by reducing our pricing or by giving discounts,” he emphasises.

Skill development

Tata Hitachi has been a pioneer when it comes to skill development centres and operator training schools in its segment in India. “Today, getting skilled operators is the biggest challenge



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"We understand the customer's job and facilitate the customer to complete the job in a faster and more efficient manner. And that is working very well for us."

in our industry. We have our premium range of machines but we do not have enough trained operators who can operate these equipment. We don't have operators who can use the advanced features of these machines. So it is very important for us to train the operators. And many times we sell a machine, we also have to provide operator to the customer," he informs. In line with this strategy, Tata Hitachi has revamped all its operator training centres. "We provide on-the-machine training at these operator training centres. We also have technical centres at Dharwad and Kharagpur. At these technical centres, we provide training to our own field technicians, dealership technicians and customer technicians," he adds.

Tata Hitachi also does a lot of CSR activities through our operator training centres. Singh explains: "What we have seen is that there are many young people who have passed out their 8th standard or 10th standard but do not have any jobs. On the other hand, we also have many customers who have machines but do not have enough operators. So we are providing training to the unemployed youth and also providing them an opportunity to get a job with our customers. For this, we have also tied up with government agencies and charitable organisations who are dealing with unemployed youth." The idea is to bridge the gap. On an average, Tata Hitachi is training about 300 operators every year.

Manufacturing strength

At present, Tata Hitachi operates three manufacturing plants


one each at Jamshedpur - Jharkhand, Dharwad - Karnataka, and Kharagpur - West Bengal. "While we have three plants, mainly our production is happening at Dharwad and Kharagpur. Our Jamshedpur plant is supplying components to us. We are also producing some machines in Jamshedpur but in terms of volume it is not much. In terms of overall production, Dharwad is about 60 percent, Kharagpur is about 35 percent and Jamshedpur is five percent. The Kharagpur Plant is Tata Hitachi's latest facility started in 2010 and it is spread over 250 acres. "This state of the art facility is one of the biggest excavator plants in South East Asia. It is also a very energy efficient plant and incorporates many Green features," Singh informs.

He says that the machines manufactured in these plants are equally Green and they meet all the required government regulations in India. "In fact the quality of our machines produced in India is the same as the machines produced in Japan. We are also exporting our machines from Kharagpur to the Middle East and some African Countries. We are also exporting to neighbouring countries Nepal and Bangladesh. Soon we will also be looking at the Sri Lanka market. We export only about 250 machines; our main focus is on the domestic market. But in the coming years it will be a big thrust because we are building capacity and quality in terms of exporting the machines," he says.

Looking back

The journey from August 2015 till now has been an excellent one, says Singh. "Well, I have worked in the construction equipment industry before and have also spent substantial time in the automobile industry but this is the company where I have got the platform to use my learning and experience. This Company was not doing too well and we turned it around. It was looking to change according to the needs of the market and also to grow. And we have achieved that. Thanks to a wonderful team that I have been working with. So the journey has been very exciting and the overall experience has been fruitful and satisfactory," he shares.

Looking ahead

Singh believes that with the importance given to the infrastructure development in the country, this industry is going through an exciting time. "Our focus is to provide the right solution to the customer by which he can improve his productivity." In terms of expanding its offering, Tata Hitachi will also be looking to make an impact in the wheeled equipment segment going ahead. "Our strength has been in tracked excavators. We are not doing too well in wheeled equipment, where we used to have good presence in the past and we lost it. But we are getting back in that segment now. You will see that in the next two to three years time Tata Hitachi will be playing a very important role in wheeled equipment. We are continuously working and improving our products to make it happen," he shares. 



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Robotic friends are here!

Cobots help companies to expand multi-fold, thus creating jobs and many more opportunities at supervision roles.

By Pradeep David

We are in the midst of a revolution that is no less remarkable than in one of our history books. Never before has the operation technology been so connected with the management of information (information technology). While the departure from hand production methods to machines, the advent of chemical manufacturing and the utilisation of water and steam power were indeed a 'revolution', the Fourth Industrial Revolution is fundamentally different. It is characterised by a range of new technologies that are fusing the physical, digital and biological worlds, impacting all disciplines, economies and industries.

In the past 20 years, technology has changed the nature of manufacturing. In the old days, production and fabrication were all done manually. Now that computers and technology have penetrated the industry, automation has become the competitive advantage in today's manufacturing world. Automation has allowed companies to mass produce at an outstanding speed and with great repeatability with efficient quality. Automation has become a determining factor in whether or not a company will remain competitive within the manufacturing industry. The Indian Automation Industry is growing at an annual rate of 20 to 25 per cent as per Automa-

tion Industry Association of India (AIA).

For many years the automotive industry has been well known for its intensive use of industrial robotics. Since the implantation of the first industrial robots in the 1960s, a lot of things have changed. These days, the production lines need to be more efficient, flexible and precise. Many enhancements have been made on production lines over the last few years to help workers in their daily tasks. All the entrepreneurs are clearly optimistic about the use of Robotics in various industrial segments and its future in India.

It is estimated that 1.3 million industrial robots will arrive

in factories by 2018, globally. The international market value for robotic systems has been estimated around \$32 billion and the automotive division itself increased their use of robots by 43 percent in one year, from 2013-2014. India ranks third in the world in im-

"The human mind and body tire after certain repetitive actions and this is where Collaborative Robots comes into play. The shortcomings of one are compensated by the qualities of the other and vice versa."

plementing robotic automation in its core business processes according to Chartered Institute of Management Accountants (CIMA). 2,100 industrial robots were sold in India in 2014, and by 2018 the numbers could rise to 6,000. Hence, there will be a rising demand for people to manage these robots or develop solutions for them.

Recently, there have been new advancements in robotic manufacturing technology, enabling robot workers to be in-

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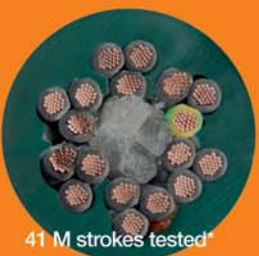
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26 M strokes tested*



41 M strokes tested*



20 M strokes tested*



22 M strokes tested*



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66 M strokes tested*



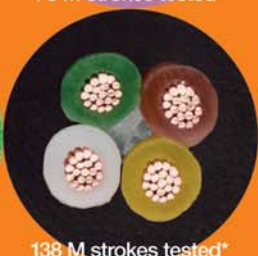
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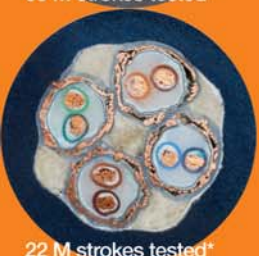
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egrated into the labour force to increase productivity and efficiency. A new term 'Cobots' (collaborative Robots) which has recently come into the picture is a remarkable combination of industrial robotics and automation. The idea is for humans and robots to be inter-dependent and achieve what each of them do best, safely. There are a few things requiring human ingenuity that are best done manually, whereas the accuracy, precision and repetitive mass production at higher efficiency is best taken care of by robots. These cobots provide an added incentive to the workforce as consistent quality production is possible with human supervision.

Industrial robots are usually preferred in large manufacturing plants for activities like assembly lines, dispensing, welding and even processing. For years manufacturers have been weary of implementing such robots simply because of safety concerns and also because they are space consuming, heavy and expensive, especially considering the fact that they require a safety cage or enclosure to avoid any contact while co-working with humans. Human and robot system interaction in industrial settings is now possible thanks to ISO/TS 15066, a new ISO technical specification for collaborative robot system safety. The certification legitimises these robot systems or cobots and ensures that they are properly safeguarded.

Our Company was the first on the market that enabled small and medium companies to automate and features of lower costs, more flexibility and higher number of applications would help increase the sales of cobots and their diversification into various industries other than automotive and packaging.

The heavy industry manufacturers have viewed automation as means of improvement in quality and increasing quantity of the production. The human mind and body tire after certain repetitive actions and this is where Collaborative Robots comes into play. The shortcomings of one are compensated by the qualities of the other and vice versa. Automation should help the labour force and not displace it. Instead of replacing human and causing unemployment, collaborative robots are helping industries in expanding operations, thereby creating job opportunities.

Cobots help companies to expand multi-fold, thus creating jobs and many more opportunities at supervision roles. In a human-machine study conducted by MIT researchers at a BMW factory, it was shown that teams made of humans and robots collaborating efficiently can be around 85 percent more



"There are a few things requiring human ingenuity that are best done manually, whereas the accuracy, precision and repetitive mass production at higher efficiency is best taken care of by robots."


productive than teams made of either humans or robots alone. Workers in an industry can collaborate with the robots in close proximity on assembly lines with no safety guarding (subject to application risk assessments) The co-bots are easy to program and the first set up takes less than one hour. They can also be moved easily around the production facility for multiple applications. Flexible $\pm 360^\circ$ degree rotation of all joints allows usage in confined spaces. Infinite rotation of the UR3 tool is possible for screwing and drilling applications. The co-bots can be floor, ceiling, and wall mounted as required.

The days of hiring expensive external consulting every time a robot has to be programmed are over. The new reality is operators with no programming experience can quickly program the cobot arms (with the help of patented, intuitive, 3D visualisation). All we have to do is move

the robot arm to the desired waypoints or touch the arrow keys on the easy-to-use touch screen tablets.

The cobot arms come with an average payback time of 195 days. That's the fastest in the industry—quite simply because they are void of all the added costs traditionally associated with automation such as external programming resources and shielded work cells. Human-robot collaboration is becoming integral part of Industry 4.0 (the 4th industrial Revolution), as per leading manufacturers like Volkswagen, and these cobots actively participate in the Industrial Internet of Things / Smart Factories.

However, there is a need for a different thought process and a move away from traditional means, in terms of the applications of co-bots, as they are being explored by several industries and will enable mankind to walk into a futuristic working environment. First, the intention should not be to waste creativity and talent by performing time-consuming, monotonous or potentially unsafe activities that are ought to be done manually.

Secondly, working procedures which require high accuracy and power, such as manufacturing, and other automotive industries which include activities like pick and place, injection moulding, palletizing, CNC, packaging, assembly, polishing, painting, machine trending, gluing and dispensing, process application, board handling, screw application and welding, will be directed with an accuracy and unwavering quality which could never be accomplished by a human. 

The author is Country Head, India and Sri Lanka, Universal Robots.

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Connecting the industry

Amit Chadha, President, Sales and Business Development, Whole-time Director and Member of the Board, L&T Technology Services Ltd speaks to The Machinist about future trends.

By Swati Deshpande

Autonomous driving is said to be the future of the transport industry. In this regard, L&T Technology Services Ltd has recently opened a new Engineering Center of Excellence (CoE) in Dublin, Ohio, marking a milestone in the company's commitment to strengthening its offerings and supporting OEMs and U.S. customers through its innovative product design and manufacturing engineering capabilities. The CoE would also serve as a key hub for supporting the Smart Cities initiative with focus on connected vehicle-to-vehicle communications, electric self-driving shuttles and autonomous vehicles.

Speaking on it, Amit Chadha, President, Sales and Business Development, Whole-time Director and Member of the Board, L&T Technology Services Ltd mentioned, "We are growing fast in the transportation segment. Along with autonomous driving, infotainment is gaining prominence. Having telecom vertical internally within L&T Technology Services helps the company in the transportation segment to come up with the infotainment solutions."

Electric vehicles is yet another area that is gaining importance gradually. Speaking on this segment, Chadha said, "In the arena of electric vehicles, the most essential part is battery management. Areas to be worked upon are making the



"Along with autonomous driving, infotainment is gaining prominence in the transportation sector. Having telecom vertical internally within L&T Technology Services helps the company in the transportation segment to come up

with the infotainment solutions."

Amit Chadha




Over the period of time, the Indian market has changed. Gradually, safety is becoming critical issue for the Indian manufacturing industry, which was not the case few years back.

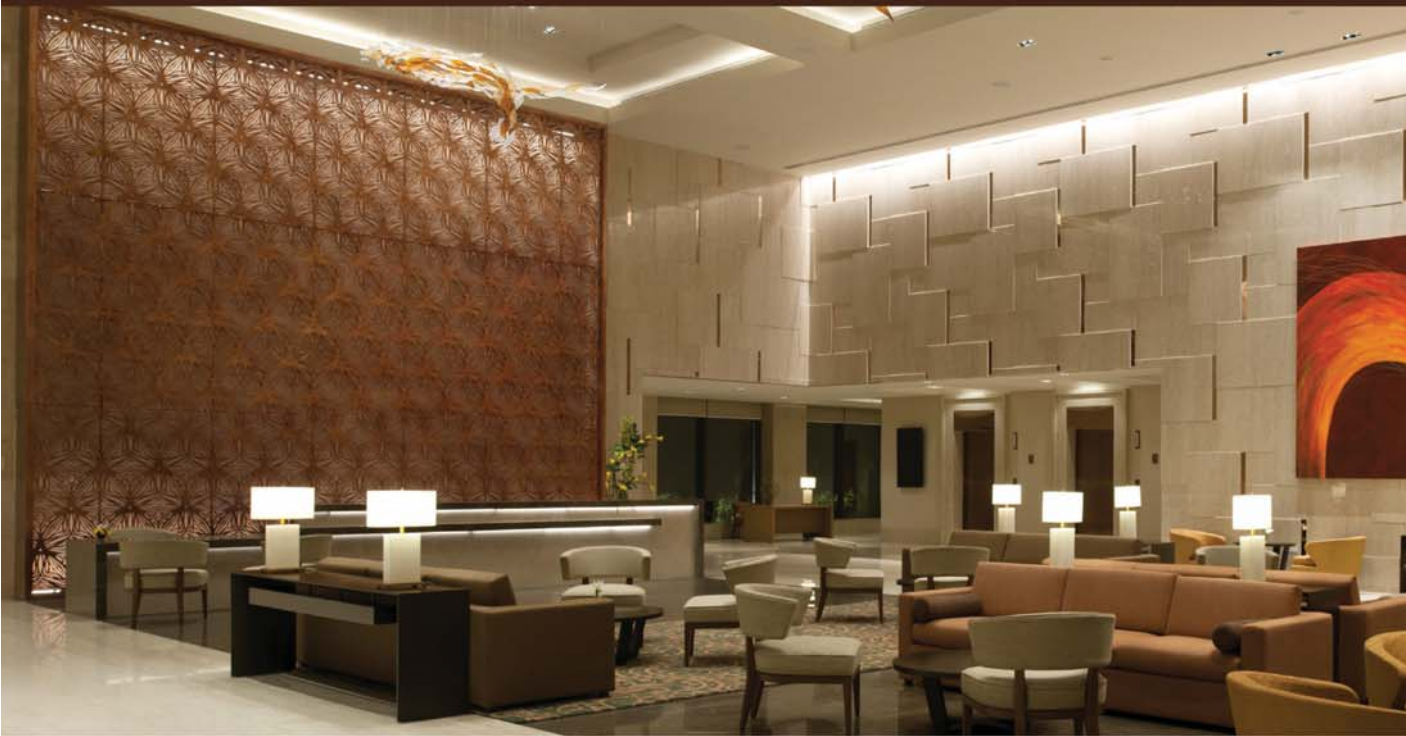
battery that is powerful, lighter, dispenses less heat, etc. It's a challenging field. Even we are working with OEMs and Tier I manufacturers on battery management software solutions."

Indian scenario

Commenting on the Indian market, Chadha added, "Over the period of time, the Indian market has changed. Gradually, safety is becoming critical issue for the Indian manufacturing industry, which was not the case few years back."

Smart Cities is yet another initiative that has given new dimension to the manufacturing industry. Speaking on it, he said, "This initiative has put India on fast track on technological adaption front. Also, it has opened the doors for new ideas. We are currently working on a solution in the healthcare industry. This solution will help the heart patient to get nearest hospital revival machine and will also be able to suggest the fastest route for to get the patient at the location. This solution can be enabled with strong connectivity. As a matter of fact, connectivity is not limited to any particular industry; it can be applied to varied industries. The only thing that changes is its application." 

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Picture for representation only. Courtesy: Motul

Keeping it **Cool** and **Running!**

The fact that the right choice of coolants and lubricants can not only ease the manufacturing process but lead to tremendous cost savings is illustrated in this demand and supply partnership between MotulTech and EagleBurgmann India.

By Huned Contractor

At a time when manufacturing operations worldwide are moving towards Industry 4.0 that includes, among various elements, a focus on maximising cost-efficiency in order to remain competitive, one of the segments that has come under review is the use of lubricants and coolants.

This has gained importance for the simple fact that the right choice of lubricants and coolants can help reduce cycle time as well as production downtime, increase the life span of the machinery and contribute towards safety. A case study that illustrates this is the collaborative exercise that took place between MotulTech, the manufacturer of industrial lubricants, and EagleBurgmann India, which is renowned for making mechanical seals.

"In 2015, we were contacted by EagleBurgmann to provide a solution for bio-stability issues arising out of the use

of cutting oil in its machining unit. A bio-stability problem is when the cutting oil, after use, begins to smell. Also, we were approached to offer solutions to improve the status of the machines through the proper use of lubricants so that downtime would be reduced and the process could be made more economical. We first solved the problem of bio-stability. Then we turned our attention to certain other problems like rusting of the spindle for which we suggested a certain lubricant that took care of the matter. We conducted trials for over six months and this also led to improving the cost factor. When oil is mixed with water and topping is carried out, our study revealed that the cost of oil used then was working out to be three times higher as compared to the MotulTech. EagleBurgmann therefore decided that we would henceforth supply all the lubricants and coolants, especially for the new machines that they sourced from LMW and Mazak," informs Picasso Sikdar, Assistant Manager, MotulTech - Industrial Division of



"We design and manufacture mechanical seals and sealing systems for a wide array of equipments that include pumps, compressors, mixers, kneaders, agitators, turbines, etc. The designs are proven over the years with a vast reference of successfully running applications in the field."

Inder Mohan Singh, VP-Manufacturing, EagleBurgmann India.

Motul Group.

EagleBurgmann India is a market leader in the mechanical seal industry in India, with over 40 years of rich experience. With its headquarters and main manufacturing location situated in Pune, it also has two other manufacturing locations in Mumbai and Vapi. The company offers engineered, rugged and reliable sealing solutions in virtually all segments of the process industry. In India, the key industrial sectors served are the oil and gas industry, refineries and petrochemical plants, power plants, the fertiliser industry, aerospace, pharmaceuticals, and many more. "At EagleBurgmann, we have always catered to challenging applications in the industry and hence are known more popularly as a 'sealing solutions provider' rather than merely a seal manufacturer. We design and manufacture mechanical seals and sealing systems for a wide array of equipments that include pumps, compressors, mixers, kneaders, agitators, turbines, etc. The designs are proven over the years with a vast reference of successfully running applications in the field," says Inder Mohan Singh, VP-Manufacturing, EagleBurgmann India.

Explaining the process of making mechanical seals and the critical operations engaged therein, Singh admits that a lot depends on the coolant and the lubricant used in the process. As such, MotulTech supplies a wide portfolio of oils that are customised to take care of various specific requirements.

"The prime material used by EagleBurgmann is stainless steel. Therefore, first of all, we have to take into account the metallurgy of the raw material. Also, in the case of water soluble cutting oil's emulsions, where approximate 95 percent of

the composition is water, we have to also take into account the source of water, the quality of water, acidity, alkalinity, etc. In this case we also considered related factors like the maintenance schedule of the machines. As such, we have been very successful in providing a well-matched portfolio of oils to the company. Now, we are working on another challenge, which is to develop a special oil for their grinding applications," Sikdar states.

The biggest feat that Motul feels proud of in this case is that it has managed to bring down the consumption of oils and that has led to major savings. "Now, EagleBurgmann requires just one barrel of oil every three months i.e. 210 litres while earlier they were using one barrel per month," Sikdar reveals.

Motul has been around for more than 150 years. It originally was started as Swan & Finch (New York) until 1957 and when it became its own entity, the company was moved to France. In 1989 Motul USA was born and is now one of the most recognised oil companies across the globe, more so because of its high-performance engine oils used for cars, especially in motorsports. The company implements a permanent modernisation policy to remain at the cutting-edge of technology and to preserve its leading position in its sector, recognised for the quality of its products and its ability to innovate.

The brand's development is based on the company's ex-



"In 2015, we were contacted by EagleBurgmann to provide a solution for bio-stability issues arising out of the use of cutting oil in its machining unit. A bio-stability problem is when the cutting oil, after use, begins to smell. Also, we were approached to offer solutions to improve the status of the machines through the proper use of lubricants so that downtime would be reduced and the process could be made more economical."

Picasso Sikdar, Assistant Manager, MotulTech - Industrial Division of Motul Group.



“Utilisation of the machines has to be at its peak and when it comes to machining, longevity of tool life is a critical element. Given this scenario, coolants and lubricants become integral contributors to the overall manufacturing process.”

Inder Mohan Singh

expertise in research and development and its ongoing effort to improve the performance of its products and services. Motul's flagship is 'Ester'. The Ester technology was initially designed for the aeronautical industries. It was the first lubricant manufacturer to recognise and use this technology in the formulation of 100 percent synthetic oils. In fact, the brand's reputation in product quality and performance is based on the know-how and experience of Motul engineers in the formulation of Ester-based 100 percent synthetic lubricants.

Reviewing the current status of the EagleBurgmann India and the way forward, Singh says that the company's biggest achievement is that it has provided customised sealing solutions for all kinds of process industries, whether it be just a single seal or a package of various seals, and the expertise gained is now their most treasured wealth. From just 10 CNC machines a few years ago, its Pune production floor houses 250 machines with more on the way and as Singh informs, its market share of about 54 percent is on the rise with an increas-

ing number of sectors seeking sealing solutions from them. “This includes pulp and paper, mining, water, food processing, ship building, etc.,” he adds.


In this progressive journey, Singh says that coolants and lubricants will continue to play a major role. “There is a reason: it is not just about keeping the machines in running condition and maintaining downtime to the minimum. Our basic raw material is steel which is very costly and in addition, we use very exotic materials such as sintered alloys, nickel alloys, titanium, etc. When you machine these parts, you have to ensure that the rejection rate is kept very low. This can be possible only when the quality of the machines and the processes is high. Thus, utilisation of the machines has to be at its peak and when it comes to machining, longevity of tool life is a critical element. Given this scenario, coolants and lubricants become integral contributors to the overall manufacturing process,” he adds.

Yet another characteristic that comes into play here is the disposal of coolants. As a ‘green’ company, EagleBurgmann has gone to extra lengths to see that the highest standards of

“Now, EagleBurgmann requires just one barrel of oil every three months i.e. 210 litres while earlier they were using one barrel per month.”

Picasso Sikdar



environmental sustainability are put into practice. “You cannot simply throw away the used oils or coolants. Therefore, the longer the life you get out of the coolant, the lesser the waste you produce. We have set up a special treatment plant for the sludge, oil and water that the used coolant consists of. However, there is a big challenge that we need to overcome when it comes to our grinding operations. Particles of silicon carbide during the grinding process mix with the coolant and form slurry. That is because these particles are neither magnetic nor are they are heavy enough to settle down. Since they are abrasive in nature, they can cause wear and tear of the machines and also damage the machines. We are therefore looking for an effective coolant to take care of this problem,” Singh informs. It's something MotulTech's research team is now working on at a feverish speed. 

The author is a Pune based senior freelance journalist.



'Autodesk is moving from product-based selling to relationship-based engagement'

Autodesk, a prominent leader in 3D engineering, design and entertainment software, is in the midst of a change. While the company fully moved to the subscription-based model for its CAD software last year, it made the shift for its CAM segment from February 1, 2017. In an exclusive chat, **Pankaj Gauba**, Head Digital Manufacturing Group – India & Middle East, Autodesk opens up about the driving forces for the shift in business model. He tells us how subscription model will benefit the customers and why it means more work for Autodesk.

By Swati Deshpande



A key advantage that tilts the scale in favour of subscription-based model is that it provides customers immediate access to the latest software and product enhancements.

Q Autodesk recently changed its licencing method for Delcam software. How have your customers received this change?

Subscription-based model is the order of the day. Everything around us from telecom to cable connection is moving towards a subscription-based model. Driving forces are quite similar in each case—the model offers flexibility, lowers up-front investment and gives the option to pay-as-you go.

A key advantage that tilts the scale in favour of subscription-based model is that it provides customers immediate ac-

cess to the latest software and product enhancements. Today, technology is changing at a fast pace, with the subscription-based model customers have instant access to updates as and when they happen.


Q Which industries are driving the growth of the CAM software for Autodesk?

Tool & Die industry is one of the main industries that is driving the growth of CAM software. However, this industry is further driven by sectors such as automotive and aerospace. Currently, these are the industries on the growth path, which are directly or indirectly responsible for growth of our CAM software.

Q How do you think this year will be for CAM software of Autodesk?

With policy related changes that are taking place in the country such as implementation of GST will make the environment conducive to do business easily. Also, initiatives such as Single Window Clearance are further boosting business sentiment. As the industry takes advantage of favourable market conditions, it also opens its doors for investment. In this case, IT becomes their first choice for upgradation as it helps in increasing productivity. Also, investment in IT helps save time and cost. On this backdrop, we expect this year to be good for our business. Additionally, the new licencing model being cost effective for customers, we expect to see encouraging response towards our software.

Q What impact do you think GST will have on the market?

As I mentioned, it will have very positive impact on the market. It will reduce complexities in the taxes. Additionally, One Country, One tax condition is favourable for the businesses and it will definitely lift the business sentiment. 



Innovations in aerospace

Mitutoyo South Asia Pvt. jointly organised a seminar on 'The recent advances in Aerospace Metrology' with National Centre for Aerospace Innovation & Research.



Mitutoyo South Asia Pvt. Ltd. organised a seminar on the 'The recent advances in Aerospace Metrology', bringing together the aerospace giants and dimensional metrology experts on one forum, in association with the National Centre for Aerospace Innovation & Research (NCAIR) in Bangalore at The Lalit. NCAIR, modelled after the University of Sheffield Advanced Manufacturing Research Centre (AMRC) in collaboration with Boeing UK is a collaborative association of the Indian manufacturing industries providing technological support to its members with a vision to create a world-class aerospace ecosystem in India. NCAIR continues to offer technological assistance and R&D to numerous companies in the Indian aerospace sector.

Mitutoyo, with its quality products and innovative solutions has been connected with the aerospace players globally and consistent in providing solutions for measurement of complex components and applications, thereby fulfilling the industry's necessity to manufacture parts with precision measurement & high quality inspection at a faster pace. Its association with NCAIR has successfully brought together academics with quality based industry requirements.


This conference was one such initiative serving as a great opportunity for players in the aerospace industry to network and to discuss achieving of 100 percent quality and safety in the industry through Measurement. Various experts from across the globe including Ashwani Bhargava, Director Supplier Management, Boeing India, who was the chief guest for the event participated in this conference. The prominent speakers included Nick Orchard, retired Quality Head and aerospace metrology expert with Rolls-Royce, UK, Prof. Asim Tewari, Professor in-charge at NCAIR & faculty, Prof. Ramesh Kumar Singh, Associate Professor in Mechanical Engineering Department at IIT Bombay, Aaron Johnson from

IAMPL (International Aerospace Manufacturing Pvt. Ltd., a JV between Rolls Royce & Hindustan Aeronautics Ltd), and technology experts from Mitutoyo Corporation Japan & Mitutoyo South Asia Pvt. Ltd. The audience included specialists from aerospace OEMs, component manufacturers and vendors.

In his address to the audience, Bhargava spoke about the OEM-supplier relationship. While stressing on the importance of quality of manufacturing, he acknowledged that though 'safety' was a key issue in the aviation

industry; safety & cost sit on either ends of a see-saw. He also discussed the several distinctive traits of the aerospace industry, which have caused western OEMs to increase their involvement in India. Aerospace veteran Nick Orchard shared his thoughts on how to implement 'Good Measurement Systems and Practices', highlighting the role of measurement and importance of its accuracy and precision in the aerospace industry. Adding on to the significance of measurement and its accuracy, Mitutoyo Japan's engineering expert Daisuke Sakata with his rich experience in UK as well focused on aerospace part measurement requirements and solutions and the latest trends in precision manufacturing.

Taking it forward, Harrish Bajaj, Director, Mitutoyo South Asia assured that the company innovates its systems and technology to meet its partners' requirements with its highly skilled engineers and by leveraging expertise in the aerospace sector globally. He further confirmed that Mitutoyo will remain committed towards advancing technologies in the aerospace measurement industry. For better future, it is inevitable that international manufacturers wish to collaborate with companies like Mitutoyo where quality is not compromised.

A panel discussion with the aerospace experts concluded the seminar. The interaction between these industry experts was stimulating as each one with their experience in different fields, acknowledged the significance of 'safety' which could only be achieved with top quality manufacturing methods and measurement systems. The discussion also focused on how the aerospace OEMs have been aiming for Indian firms as suppliers of high value components, and finally as assemblers of aircrafts. It was a proud moment for the Mitutoyo and the NCAIR family for having hosted an enriching experience for its partners to discuss the present and the future of aerospace metrology. Narinder Bajaj, MD, Mitutoyo South Asia, gave a special Vote of Thanks to the chief guest and the attendees confirming the success of the seminar. 



Scope of Solar Energy in the Forging Industry

Learn more on how forging industry can use the solar power

Forging industry has always been perceived as an energy-intensive industry. It requires temperatures up to 1200°C for various heating processes. A forging unit, on an average, spends 6 percent of its overall sales on power. A shift to induction heating has several benefits for a forging company, in general. In India, most of the small and medium forging companies use furnace oil and gas for heating purpose. A switch to induction heating would not only be a huge saving on per kg heating but would also lead to lesser scaling, better surface quality and no possibility of overheating.

Solar energy technologies currently available in India are not eligible to generate such large amount of heat. In such a context the scope of solar energy would be limited to grid connected generation where in the solar energy generating system located at one's premises would be tied to the local utility company's system. In this case the technology used is the solar photovoltaic system (PV) in the form of solar rooftop panels and finds its use for basic low tension (LT) requirement for running office building and premises. In case of solar energy radiant light and heat of the sun is captured using a range of technologies like photovoltaic (PV) system and solar thermal energy. Solar cells, also known photovoltaic cells, convert sunlight (photons) directly into electricity (voltage) and hence the phenomenon was coined PV effect.

Solar thermal energy works in a similar mechanism to that of a conventional power plant generating electricity using fossil fuels. It uses sun's rays to heat a fluid at high temperatures. The fluid is then circulated through pipes so that it can transfer its heat to water and produce steam. This steam is converted to mechanical energy in a turbine, which powers a generator to produce electricity. Therefore, in case of solar

thermals steam is produced by heat collected from sunlight instead of consuming fossil fuels. Solar thermal technologies use concentrator systems to achieve the high temperatures needed to produce steam. Solar thermal collectors are classified into three types depending on the temperature at which heat is to be generated. Low-temperature collectors are flat plates generally used to heat swimming pools. Medium-temperature collectors are also usually flat plates but are used for residential or commercial use. High-temperature collectors concentrate sunlight using mirrors or lenses and are used in industries to meet heating requirements or for electric power generation. This form of technology appears attractive in case of large scale energy production where in heat can be stored during the day and converted to electricity whenever required. Two categories include – Concentrated Solar Thermal (CST) for fulfilling heating requirements in industries and Concentrated Solar Power (CSP) when the heat collected is used for power generation.

Use of solar roof-top

With the Government of India actively promoting solar rooftops under the Jawaharlal Nehru National Solar Mission, the idea of installation of solar PV system is gradually becoming popular in homes, apartment complexes and offices.

One thing to be kept in mind is only sunlight of a certain wavelength can effectively generate electricity. Although a solar PV can generate electricity on a cloudy day, it is not effective as much as it is on a sunny day. A basic PV cell produces very small amount of electricity and multiple of them are connected together to form a Solar PV module that can generate 100–300 W of output. For a larger requirement, multiple of such modules are installed in an array. The efficiency of a solar



cell depends on its capability to convert a certain amount of sunlight to electricity. Solar cells available in the market are of various efficiencies: 4, 8, 12, 14 and 16 percent. The size of the solar module required will depend on the output and efficiency.

For example the table 1 shows that to generate 2000 watts from a 12% efficient system, one would need a 200 sq ft of roof area. Solar home lighting system approved under National Solar Mission is required to have a certain level of efficiency. The CFL based systems are required to have module efficiency of 14 percent and above whereas a LED based solar system will require to have 12 percent efficiency or above. While buying a solar module the size has to be kept in mind which in turn depends on the load requirement. A solar PV module works well for low wattage appliances like fans, TV, etc. Solar- air conditioners or solar water heaters are separately available though.

It is very important to assess the amount of sunlight at the location where solar PV system is being installed. To collect maximum sunlight the ideal orientation of a solar panel is

It is very important to assess the amount of sunlight at the location where solar PV system is being installed. To collect maximum sunlight the ideal orientation of a solar panel is towards south.

towards south. However a 45° east or west of south would also work. A solar panel structure typically weights 15 kg per square meter and accordingly should be the roof capacity. The output (kWh) of a solar panel will depend on the panel efficiency and availability of sunlight in a location. The factor that defines this output is known as the Capacity Utilization Factor (CUF). For India the CUF for solar power is usually 19 percent. Units generated annually (in kWh) = Size in Kw* CUF*365*24. So typically a 1Kw capacity solar PV will generate 1600-1700 Kwh of electricity per year.

Solar roof-tops could be with or without grid interaction. In grid-interactive system the DC power generated from solar PV panels are converted to AC power using power conditioning unit and is fed to the grid either of 11 KV three-phase line or 220 single-phase line depending on the system installed (institution/ commercial establishment/ residential complex). Power generated during the daytime is utilised by the captive load and the excess is fed to the grid. In cases where solar power is not sufficient due to cloud cover etc the captive loads are served by drawing power from the grid. The grid-interactive rooftop solar PV systems thus work on 'net-metering' basis wherein the beneficiary pays to the utility on net meter reading basis only.

Ideally, grid interactive systems do not require battery backup as the grid acts as the back-up for feeding excess solar power and vice-versa. However, to enhance the performance

PV Module Efficiency (%)	Roof Area Needed in Sq. Ft						
	PV Capacity (Watts)						
	100	250	500	1,000	2,000	4,000	10,000
4	30	75	150	300	600	1200	3000
8	15	38	75	150	300	600	1500
12	10	25	50	100	200	400	1000
16	8	20	40	80	160	320	800

Table 1

reliability of the overall systems, a minimum battery-back of one hour of load capacity is strongly recommended. Non-grid interactive systems ideally require a full load capacity battery power back-up system.

Cost involved

A solar roof-top system costs approx. Rs. One Lakh per kW including installation charges. If we consider battery backup then the cost would go up to Rs. 1.25 Lakh considering the initial cost, recurring maintenance and replacement expenditure, etc. In order to have roof top solar, basic construction and design of the roof should be different as compared to the old asbestos. If these small and small-medium forgers have to use the solar, then there has to be a big incentive/subsidy from the government, since it may involve major modifications in the factory roofing structure. Another model will be to put up a PV plant at a place where solar irradiance is high within the respective states and wheeling the power to respective factories. But this involves some minimum outlay and lot of close working with the government agencies and EPC concerns. The state government and EPC can bring out a model wherein a cluster of such industries put up the facility so that they can share lot of common expenses and maintenance.

Here again, different states have different policies for the wheeling charges and maintenance charges for such solar installations. There need to be a discussion among the stakeholders and a common tariff structure with regard to the above parameters have to be agreed. Government should also extend 100% depreciation benefits for solar installation for some more time. With the cost of solar plant falling drastically and recent updates in solar trackers, solar energy offers a big potential for forging companies.

Capital subsidies are not available for commercial or industrial entities as per the revised MNRE scheme. However, accelerated depreciation tax benefit of 40% is applicable under the revised scheme of Ministry of New and Renewable Energy 2015-16. So the net cost of rooftop solar plant of capacity 1 kW would be around Rs. 95,000 (including corporate tax). In addition, the PV modules have output warranty of 90 percent of the rated capacity for first 10 years and 80 percent rated capacity for the next 15 years. The ownership arrangement may be of two ways: Self owned arrangement wherein rooftop owner owns the PV system or third party ownership in which

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developer owns the PV system and enters into a lease/commercial agreement with the rooftop owner.

Net Metering

The option of net metering is available with the different state electricity regulatory boards. The net metering based solar roof top projects facilitate the self-consumption of electricity generated by the rooftop and allows for feeding the surplus into the network of distribution licensee. The process of installing solar roof-tops need to abide by the regulations of the individual state electricity regulatory boards. Consumers have to install a bidirectional meter or Net Meter which is an energy meter capable of recording both import and export of electricity. After submission of Detailed Project Report (DPR) and monitoring of the premises by State Electricity Regulatory Commission, Net Meter is installed in the consumer premises.

In order to get an idea of the mechanism Maharashtra has been considered as a case study. According to the Maharashtra Electricity Regulatory Commission, 2015 following are the guidelines for installing a Roof-Top Solar PV System:

Conditions of Net Metering Arrangement: Net Metering arrangement will be permitted by Distribution Licensee on 'first come, first serve' basis to Eligible Consumer who have installed

In order to have roof top solar, basic construction and design of the roof should be different as compared to the old asbestos.

or intend to install a Roof-Top Solar System connected to the network of such Distribution Licensee. Priority for such connectivity to the Network of the Distribution Licensee shall be accorded to consumers who have installed Roof-top Solar PV System before the commencement of these regulations, subject to their compliance.

Capacity Limits at Distribution Transformer Level: Cumulative capacity of all Roof-Top Solar PV Systems under Net Metering Arrangements connected to a particular Distribution Transformer of the Licensee should not exceed 40% of its rated capacity. The Distribution Licensee shall provide information on its website regarding the capacity available on each Distribution Transformer for connecting Roof-top Solar PV Systems under Net Metering arrangements quarterly.

Eligible Consumer & Individual Project Capacity: The capacity of the Roof-top Solar PV System to be connected at the Eligible Consumer's premises shall not exceed his Contract Demand (in kVA) or Sanctioned Load (in kW). The limitations are shown in the Table 2.

Metering arrangements

1. The arrangement should include a single phase or three-phase Net Meter, located at a point of inter-connection as

Sr. No.	AC Voltage Level at which the Roof-top Solar PV System is to be connected to the Distribution Network	Maximum Limit for Roof-top Solar PV System
1	230/240 V (Single Phase)	Less than 8 kW/ 40A
2	400/415 V (Three Phase)	Less than 150 kW/ 187 kVA (in Municipal Corporation Areas)
		Less than 80 kW/ 100 kVA (in other areas)
3	11 KV and above	Above 150 KW /187 KVA and less than 1000 KVA (in Mumbai region)
		Above 80 KW/100 KVA and less than 1000 KVA (in other area)


Table 2

per the instructions of the Distribution Licensee.

2. The Net Meter in the premises of consumer shall be procured and installed by the Distribution Licensee at its own cost and in accordance with the provision of Electricity Supply Code.
3. The Distribution Licensee shall be responsible for the supply, installation, testing and maintenance of the metering equipment and its adherence to the application standards and specifications.
4. Solar Generation Meter needs to be installed at the consumer's premises by the Distribution Licensee at its own cost to measure the energy generated from the roof-top Solar PV system.

Conclusion

Currently we see a clear dominance of solar photovoltaic technology in India which suffices for basic lighting and fans. The tariff rates of solar energy in recent years have drastically gone down. For a system of 200kW or more rooftop solar costs Rs. 6.5 per kWh. Industrial users pay on an average Rs. 6.25 or more per unit to the state power utilities. Therefore shifting to solar energy definitely seems commercially a better option. Using net metering after installing solar roof-tops would ensure uninterrupted supply of power. Dependence on battery backup is also eliminated in this case which otherwise doubles the cost. Thus net metering is an appropriate option as of now for the forging industry to satisfy the power demand of its administrative section.

By choosing solar power over thermal power, we choose to reduce the social cost imposed by the harmful emissions generated by thermal power. With every one Megawatt of solar power being generated, a few tonnes of carbon equivalents are reduced. Therefore it is in our own interest to shift to a clean and environment friendly form of power generation and to leave a healthier planet for the future generation. 

Source: Association of Indian Forging Industry

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Cut, Clean, Protect & Pack

Learn more about chemical process optimisation

By Balwant Bains - General Manager-Product Management & Marketing, Zavenir Daubert India Pvt Ltd

Typically in manufacturing, a component journeys through various stages of operations right from raw material to finished goods. The first and foremost common step is actual component manufacturing by metal cutting/removal or forming. Additionally there can be processes, like hardening, quenching, buffing, plating, painting etc. Before dispatch to the customer, these components are rust protected and packed. To ensure efficient protection, the components surfaces need to be as clean as possible. All these operations involve usage of chemicals of diverse chemistries and at times several suppliers. Harmony between all these chemicals is crucial but often neglected till the time failures and rejections occur. Below are the main stages and how to optimise and harmonise in bit more detail.

Cutting

Neat cutting: In an era of ever-increasing speeds and loads and problem of mist and evaporation control, conventional mineral base oils are being replaced by superior refined base oils with higher saturated hydrocarbons and reduced sulphur contents. Neat oil cutting technology embodies usage of Hydro Cracked Group II base oils, which provides the basis of its superior anti-oxidation properties combined with chlorine free extreme pressure and anti-wear additives in one single extraordinary process. Group II base oils are refined using a hydro-processing method known as 'Hydrotreating' that reduces its sulphur content to less than 0.03% and increase its hydrocarbon saturation to levels of 90% and above.

Water soluble cutting: HSE has been a prime focus in the



In an era of ever-increasing speeds and loads and problem of mist and evaporation control, conventional mineral base oils are being replaced by superior refined base oils with higher saturated hydrocarbons and reduced sulphur contents.



metalworking industry. Over the years, metalworking fluids have been one of constant changing chemistries. As new worker-safety rules that limit particulates, chlorinated paraffins and exposure levels have taken effect, lubricant providers had to significantly modify formulations. 'Microemulsions' formed by water soluble cutting fluids form smaller oil particle sizes compared to conventional mineral-soluble oil or semi synthetic macro emulsions. These 'micro-emulsions', visually appear to be translucent, or even transparent and have inherent advantages of providing clean appearance, corrosion protection, long life of cutting fluid, outstanding cooling capabilities, good wetting properties and emulsion stability.

The usage of these technologies usually results in cutting-tool life improvements by 1.2–4 times, cutting parameters intensifying by 20–60% and productivity increase by 10–50%.

Clean

Intermediate Cleaning or Parts cleaning is becoming more and more essential to many industrial processes, as a prelude to painting, plating, phosphating, assembly, welding, rust protection and packaging. Water soluble cleaners need to strike a fine balance of ingredients, structure and polar character of a cleaner to meet specific requirements of the industrial applications. Modern cleaners harness the abilities of multi-functional Power Surfactants (combinations of non-ionic and cationic surfactants) to deterge versatile organic & inorganic soils. These cleaners reduce the surface tension by adsorption at the liquid-gas interface. This dynamism induces superb cleaning effect without compromising on the critical factors for industrial applications such as foaming where bubbles are rapidly generated and need to be stabilised.

New age neutral cleaners also outperform conventional acidic and alkaline cleaners which have a tendency to cause surface defects and leave residues which may be delirious to further downstream operations. Corrosion prevention, demul-



sification, buffer stability properties are introduced through addition of various specialised additives.

Protect

Several studies over the past 30 years have shown that cost of corrosion to industrial economy is quite high and it is approx. 3.1% to the country's Gross Domestic Product. Effective and efficient protection products are based on the Contact Corrosion Inhibition Technology (CCI) giving protection in areas of high humidity and temperature. In conventional oils and greases, molecules lack polarity allowing oxidising elements to permeate results in corrosion and rejection. Protection products with polar molecules create a barrier and don't allow any oxidising elements to permeate which will increase the lifespan of a part, as well as reduce maintenance and replacement costs.

In India, vehicle bodies are constantly threatened by rust due to weather conditions like high temperature, humidity, salt damage due to seawater & tidal winds at coastal areas, etc. Corrosion failure can occur despite other paints and coatings applied by the OEM's. CCI waxes and coatings with polarity can provide long term protection to vehicle bodies.


Pack

Export packaging, OEM and JIT packaging, packaging for the replacement market, in process protection, long term preservation require the usage of VCI products. When metals are

in the vicinity of VCI products, the chemicals volatilise in the 'enclosed' environment and form a protective molecular layer, which prevents moisture, salt, dirt, oxygen, etc. from depositing on the metals and inhibits corrosion. There are two main product categories VCI Papers and VCI Film. The technology is based on the concept of volatility and polarity, where volatile 'V' components are added to Corrosion Inhibiting 'CI' Components. The VCI molecules align on the surface of the metal to a depth of 3-5 molecules and form a layer.

In addition to the VCI Technology, DAUBERT VCI Films are manufactured using a special MULTI-LAYER TECHNOLOGY, which exceeds in performance in comparison with other available VCI Films in the market. The three layers are A. Moisture Barrier Layer, B. High Strength Layer and C. VCI Protection layer.

Factors Affecting the Effectiveness of VCI Products

- Quality of Corrosion inhibiting chemicals and their effectiveness on the metals.
- Water solubility / effectiveness of the corrosion inhibitor in the presence of moisture and/or high humidity.
- Ratio of chemicals in the formulation or Amount of VCI on the carrier (paper, poly, etc).
- Carrier (natural neutral kraft paper or polyethylene film) used.
- The overall packaging design and the conditions expected during packing, shipping and storing. 

UPDATE

Jeep puts 'Compass' on the Make in India map

Production of the 'global product' to start at FCA India's Ranjangaon by June 2017

Fiat Chrysler Automobiles (FCA) India unveiled the Jeep Compass, its Global SUV to select journalist at its Ranjangaon facility near Pune yesterday (April 12, 2017).

The car and SUV manufacturer is gearing up its facility to roll out the first Jeep Compass from its Ranjangaon manufacturing facility by June 2017. FCA has invested US\$ 280 mn in the Jeep Compass project. Contrary to the trend followed by some OEMs of developing and launching 'Made for India' products in India, FCA will launch its 'Global Product' in the Indian market. Importantly, the Jeep Compass will be made in India.

"We want to give our Indian customers a truly global product with unmatched features that will definitely appeal to their aspirational tastes," Kevin Flynn, President and MD,



FCA India, told The Machinist.

"While the product itself will have many industry-first features in the Indian SUV segment, we have also used many new and advanced manufacturing technologies at our Ranjangaon facility to produce this vehicle," he added.

The Jeep Compass will be launched in the third quarter of calendar year 2017 in India. Besides

India, FCA is also manufacturing the Jeep Compass at three other global locations – Brazil, Mexico and China. The Indian facility will also export the Jeep Compass to right hand drive (RHD) markets across the world.

"There will be absolutely no difference in the products sold in the Indian market and the products exported to the other RHD markets globally. Jeep Compass is a truly global car and we are proud to bring it to India," Flynn said.



Exciting times at Hannover Messe 2017

Germany's Chancellor visits SCHUNK, the winner of the Hermes Award 2017

SCHUNK started off the Hannover Messe with a brilliant success: At the opening of the world's leading trade show by Germany's Chancellor Dr. Angela Merkel, Prof. Dr. Johanna Wanka presented the innovative family-owned company with the Hermes Award 2017, one of the world's most prestigious technology prizes. On her tour of the exhibition on Monday, Chancellor Merkel visited the SCHUNK booth, and looked on while the Managing Partner/CEO of the family-owned company, Henrik A. Schunk, presented smart gripping modules that enable direct human/robot collaboration (HRC). With its HRC grippers of the SCHUNK Co-act series the Swabian technology forge has made an important contribution to production systems of the future.

The company received the Hermes Award for the SCHUNK JL1 Co-act Gripper, the world's first intelligent gripping module for human/robot collaboration that directly interacts and communicates with humans. Henrik A. Schunk sees the award as a milestone in the history of the group of companies, "My team and I are proud of the success of the SCHUNK JL1 Co-act Gripper, which is a decisive step on the way to highly flexible handling scenarios for Industry 4.0 and therefore for smart production." For the first time in the history of the Hermes Award, the prestigious trophy was awarded for a gripping module. The award was given at the recommendation of an independent jury headed by Prof. Dr. Dr. h. c. mult. Wolfgang Wahlster, Chairman of the Man-

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Germany's Chancellor Dr. Angela Merkel learned about the potentials of human/robot collaboration at the SCHUNK booth.

My team and I are proud of the success of the SCHUNK JL1 Co-act Gripper, which is a decisive step on the way to highly flexible handling scenarios for Industry 4.0 and therefore for smart production."

Henrik A. Schunk

agement Board of the German Research Center for Artificial Intelligence (DFKI). In 2015, SCHUNK had made it among the top five for the Hermes Award, and therefore was at the leading edge of technological innovation, back then with SCHUNK eGRIP, a web-based 3D design tool for additively manufactured gripper fingers.

Intelligent robot gripper

In recent years, the leading supplier of technology for robots and production machines has been driving the digitalisation of industrial production with its smart components. Within the world's most comprehensive spectrum of gripping systems and clamping technology with more than 11,000 standard components, the SCHUNK JL1 Co-act Gripper defines the peak of what is technologically possible. The HRC gripper, developed with the guiding principle of Industry 4.0 in mind, features a decentralised control architecture, which was de-



As a self-learning gripping system, the HRC gripper is designed with optimum functions for the complex requirements of Industry 4.0.

signed according to the RAMI 4.0 guidelines. Like no other gripping module it uses its exposed position “closest to the part” and “closest to the human” to achieve maximum efficiency and functionality in human/robot collaboration. Complex sensor systems and artificial decentralised intelligence, which are fully integrated in the gripper, allow it to constantly gather information about the component being gripped and about the environment, to process this information and to execute appropriate responses based on the specific situation.

For this purpose, the gripper is equipped with innovative kinematics, which enable both parallel and angular gripping. This allows maximum flexibility in the handling of alternating component variants. Tactile sensors in the fingers monitor the gripping process to ensure reliability and adapt the gripping parameters independently to prevent damage to sensitive components. Specially developed gripping strategies allow the sensitive gripper to adapt its behaviour in real time, depending on whether a workpiece or possibly a human hand is gripped.


Safety aura for collaboration with humans

The intelligent gripping module paves the way for highly flexible HRC scenarios in modern production processes. Compared to existing solutions the SCHUNK Co-act Gripper is designed for much higher diversity and flexibility. The integrated safety aura

Within the world's most comprehensive spectrum of gripping systems and clamping technology with more than 11,000 standard components, the SCHUNK JL1 Co-act Gripper defines the peak of what is technologically possible.



At the opening of Hannover Messe the SCHUNK JL1 Co-act Gripper received the Hermes Award 2017

allows unlimited use and handling capabilities of the robot in the direct vicinity of humans. Separating safety devices are unnecessary. All situational, environmental and operating conditions are monitored by means of several “senses”. An integrated miniature PC immediately analyses process data in order to respond virtually in real time and also as a basis for self-learning. The gripper enables automation of tasks that previously were performed manually, therefore boosting efficiency. At the same time, the inline data acquired from the production cycle and derived information can be sent continuously to higher level systems for constant improvement or control of the processes. 

Source: SCHUNK INTEC India Pvt Ltd



Right mindset is key to success

Know more about how a change in thought process could help Godrej Tooling achieve new heights.

By Swati Deshpande

A key secret behind any success story is approach towards work. Elaborating on the success of Godrej Tooling, D K Sharma, Vice President & Business Head, Godrej Tooling said, “We are a 87 years old tool room. This tool room started with an intention to support varied Godrej divisions internally. However, in 1995, strategic changes happened in the company. All the divisions were independent and thus, we had a choice to look for opportunities outside. Then, we at Godrej Tooling decided to pursue automotive industry and make tools for them. As we embarked on this journey, around eight years back, we met Masuo Ebisawa, production technological adviser of aluminium casting.”

Interestingly, having a Japanese advisor did not mean technological transformations for Godrej Tooling. In fact, the transformation was more on the front of mindset and approach towards die casting than technology. Elaborating on this, Sharma stated, “Discipline is something that we have learnt from the Japanese culture. As a tool maker, it is very critical to meet the timeline. If you don’t produce the tool on time, you are jeopardizing launch of the product. World over toolmakers are notorious for not meeting the timeline. Thus, making the right tool in stipulated time period is significantly important.”

Ebisawa succeeded in inculcating a major shift in the mindset of Godrej Tooling’s Designers – from merely concentrating in design principles, to enabling them to think from the foundry user’s point of view. It was under his guidance, Godrej Tooling Team developed the first set of large Die castings dies for transmission parts. The first trial results – pronounced as 95 percent correct – earned appreciation from the likes of Piaggio in Italy.

“Making dies is an art. The process of designing begins with designer’s mind and his thought process. Computer is just an enabler. To make the correct die, approach towards



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“Making dies is an art. The process of designing begins with designer’s mind and his thought process. Computer is just an enabler.”

Masuo Ebisawa

it is important. So my mission has been to improve thinking and ideating process in the team. Whenever I come down to Godrej Tooling’s plant, we do not discuss any high-tech technologies but talk about basic points. Sticking to basics is important,” mentioned Ebisawa.

Elaborating further on the approach, Sharma said, “Eight years back Godrej Tooling was just a tool maker. However, Ebisawa has brought in new dimension in the thinking of our designers. As per him, it is toolmaker’s duty to work with the customer till the die gives perfect casting. Just delivering the tool is not the end of the business,” noted Sharma.

With this approach, the Godrej Tools successfully established itself as a value-added Die casting Die maker for PV–CV components and could clinch prestigious orders from Tremec Transmission, Ashley Alteams, Sundaram Clayton & Endurance Technologies, for global Auto-giants & OEMs such as Ford, Hyundai, GM, Nissan and Volvo.

As the automotive industry moves ahead into the future, industry players have to innovate themselves. Speaking on this Sharma said, “Marching ahead in its ever-increasing quest for knowledge, Godrej Tooling is looking forward to master the technology for structural part components, which is widely acknowledged as being the next change-wave in the domestic auto industry.” 



Lubricants and greases to unleash wind turbine power

Mobil SHC lubricants help the wind energy sector in India through advancing productivity

Supporting the growth of the wind industry Mobil Industrial Lubricants are used in over 40,000 wind turbine gear boxes across the world. The products are designed to meet the challenges of the wind industry, minimise maintenance and reduce human to equipment interface. This significant achievement demonstrates how Mobil products are enabling the worldwide wind industry to perform efficiently, even under the most extreme climatic conditions as well as is cost competitive. ExxonMobil Lubricants Pvt Ltd participated in Windergy India 2017, an annual conference and exhibition on Wind Energy in India, which was held recently at New Delhi.


ExxonMobil showcased its Mobil SHC Gear 320 WT at Windergy 2017. Mobil SHC Gear 320 WT is the most preferred advanced wind turbine gear lubricant which is used for protecting wind turbine gearboxes operating under extreme conditions, such as extremely low or high temperatures and corrosive environments. This synthetic wind turbine gearbox oil is formulated to provide excellent protection against conventional wear modes such as scuffing, while providing a high level of resistance against micropitting fatigue. Mobil SHC Gear 320 WT wind turbine lubrication maximises equipment productivity by minimising unscheduled downtime and maintenance, extends gear and bearing life under high-stress operating conditions. Moreover, the wax-free nature of synthetic fluids and the low co-efficient of traction provide excellent low temperature pumpability and very low starting and running torque. Backed by the seven years warranty promise, it offers extended oil life. Mobil's field demonstration with equipment builders has also helped to confirm the results from laboratory tests demonstrating the exceptional performance of Mobil SHC Gear 320 WT advanced wind turbine gear lubricant, and gaining the approval of leading gearbox builders globally.

At Windergy, ExxonMobil further showcased Mobil SHC Grease 102 WT and Mobil SHC Grease 460 WT. Mobil SHC Grease 102 WT is a new synthetic grease which protects wind turbine bearings from extreme temperature conditions as high as 120°C to as low as -50°C. Mobil SHC Grease 460 WT is a superior performance lubricant especially suited to exceed the demanding requirements of wind turbine applications at extreme temperatures. It is widely used by all leading builders in India and across the globe for their main bearings. Mobil SHC Grease 460 WT has become the first fill product of choice for



many wind turbine builders and component suppliers. Compared to conventional greases, the benefits of this synthetic grease include longer grease life, enhanced false brinelling protection and bearing life, wide temperature range of application and the potential for improved mechanical efficiency. For both the greases, the unique features of synthetic base fluids are combined with those of a high quality lithium complex thickener. The lithium complex thickener contributes excellent adhesion, structural stability and resistance to water.

"Wind industry is a growing market with a large number of new entrants tapping this segment. Today, to successfully run operations requires not only efficiency and productivity but also ensure safety by reducing risks in human to machine interface as well as control and reduce environmental impact. Mobil's synthetic lubricants are designed to help in Advancing Productivity, which means Mobil lubrication solutions help mitigate potential employee risks arising from direct contact with equipment, helps in reducing carbon footprint, achieve the operational goals and enhance competitiveness by increasing efficiency, reliability and productivity. Our specially designed synthetic oils and greases provide excellent protection against wear, rust and corrosion adding to improved performance, longevity of equipment as well as wind turbine productivity," said Glen Sharkowicz, Industrial Marketing Manager Asia Pacific at ExxonMobil Asia Pacific Pte. Ltd.

"India is the 4th largest wind energy producer in the world. The government has taken various initiatives to grow the sector and we are able to support it through our extensive product portfolio. Our gear oils and greases are designed to ensure adequate and optimised performance of wind turbines, while preserving the life of the gear box and other critical components, extend oil drain intervals and reduce overall maintenance costs," said Shankar Karnik, GM Industrial, ExxonMobil Lubricants Pvt. Ltd. 

Source: ExxonMobil Lubricants Pvt. Ltd



Products and solutions for the digital transformation

DMG MORI is promoting CELOS and intelligent Software Solutions as an elementary basis of the transition to full digitization of production process chains.

“Industry 4.0” is dominating discussions of the future like nothing else, particularly in the machine tool design sector. As the world’s leading manufacturer of machine tools, DMG MORI is supporting its customers on their path to complete digitization with the help of the CELOS® app-supported system and with other intelligent Software Solutions.

The change to digitization is becoming ever clearer – particularly in the field of machine tool design. In turn, this means that software in the production environment is becoming increasingly important. For this reason, companies in the industry are following developments particularly attentively. They know precisely that the foundations for Industry 4.0 must be laid today and in the immediate future in day-to-day production. DMG MORI is supporting its customers in the digital transformation with the help of integrated solutions, which can be connected seamlessly to one another.

A central component of DMG MORI’s customer-oriented innovation strategy is the app-supported CELOS® operating and control system, which the machine tool manufacturer introduced approximately 3 years ago.

Since then, it has been continuously and very specifically developed. Using a common interface for machine and office PC, both manufacturing and production planning staff can manage, document and visualize the sequence of jobs and processes as well as the machine data.

Along with its tasks on the factory floor, CELOS® also enables data to be exchanged with high-level structures thanks to its open architecture. CELOS® therefore enables the customer to fully integrate his machines into the company organization while, at the same time, creating an interface between the machining process and cyber-physical production systems of the future. The advantages for day-to-day operation are impressive: a time-saving of 30% for set-up, and half the effort and time required for calculating technical values or for searching for important data are just one example of savings, which can be achieved with CELOS®. Thanks to the continuous development of further future-oriented applications, CELOS® ensures a trouble-free introduction of Software Solutions for Industry 4.0.

An excellent example is the CELOS® CONDITION ANALYZER. In

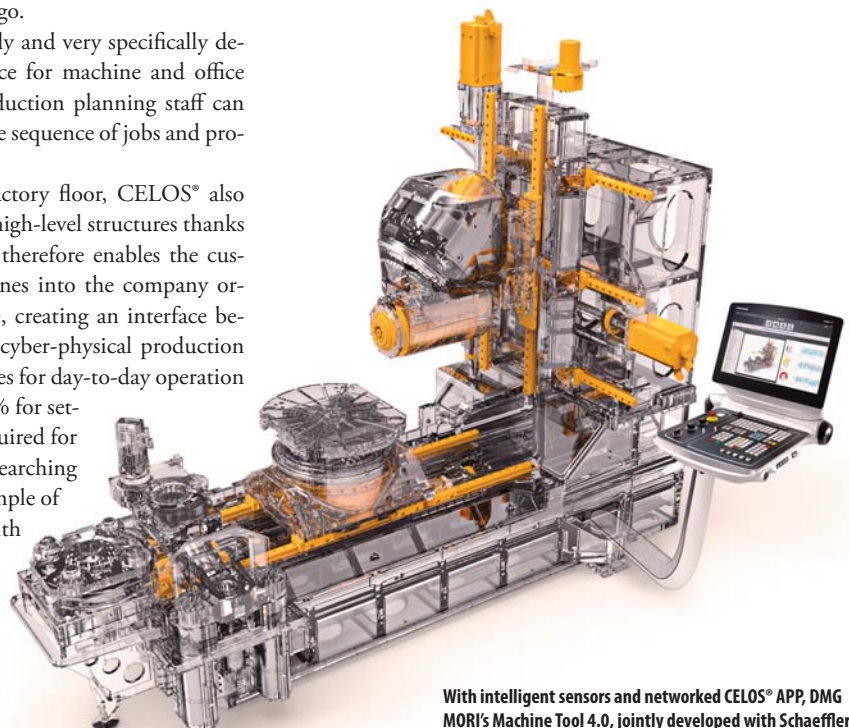
conjunction with the I4.0 sensor pack, on the one hand, this provides the user with a perfect software tool for monitoring machine condition and machining process, enabling him to carry out timely performance and condition analyses directly at the machine or externally via our CELOS® PC.

On the other hand, in the second step, the data gathered by the sensors and locally conditioned can be forwarded to a cloud platform. Here decisive knowledge for a reliable “predictive maintenance” solution can be derived using an algorithm-based long-term evaluation. Customers therefore save maintenance costs and have an effective tool for substantially avoiding unplanned downtimes.

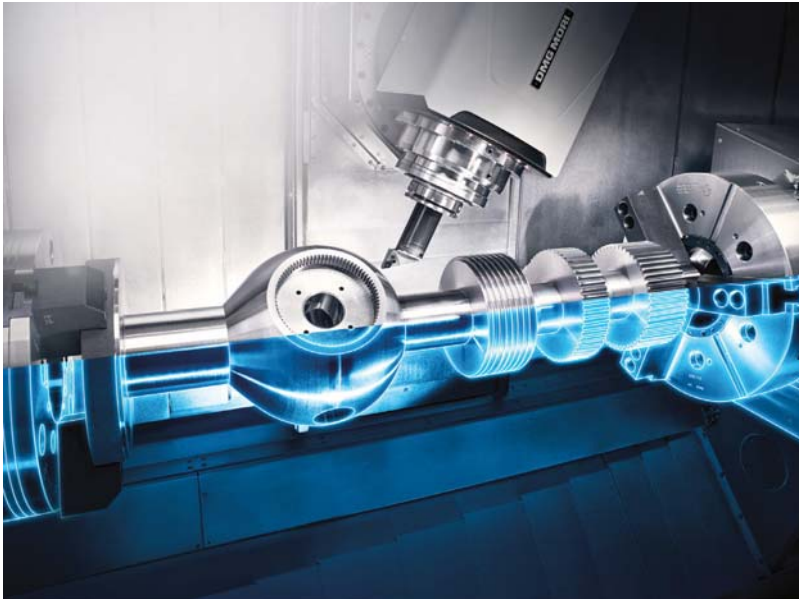
In addition, along with 50 functional expansions and improvements relating to the 16 current standard APPs, at AMB, DMG MORI will for the first time be presenting optional APPs, such as the CELOS® PERFORMANCE MONITOR for measuring Key Performance Indicators (KPI) or for so-called OEE analyses.

What is more, with the CELOS® DEVELOPER as a creative develop-

The change to digitization is becoming ever clearer – particularly in the field of machine tool design. In turn, this means that software in the production environment is becoming increasingly important.



With intelligent sensors and networked CELOS® APP, DMG MORI’s Machine Tool 4.0, jointly developed with Schaeffler, demonstrates the possibilities of digitization, among other things in predictive maintenance.



Shop-floor-oriented programming is still extremely important, particularly in the production of individual workpieces and with small and medium-sized production batches. 24 special DMG MORI technology cycles enable direct programming to be carried out at the machine 80% faster using a dialog system. Here, outstanding examples include different cycles for the production of tooth systems and gear wheels.

ment environment, the CELOS® ecosystem has now also been opened up to third-party providers. The CELOS® CLAMP CHECK and the CELOS® SURFACE ANALYZER are the first two representatives of this new generation of CELOS® partner APPs, which will now be successively followed by further innovations.

CELOS® CLAMP CHECK significantly increases machine safety in the turning area based on a wireless in-process monitoring of clamping forces. On the other hand, the CELOS® SURFACE ANALYZER, which is certified for medical and aerospace applications, determines the surface quality of the component during the process.

The DMG MORI process chain - a key component of the software strategy: The DMG MORI process chain is a good example of a successful digital transformation and a practical link between the virtual and the real world. This statement is substantiated not only by the many successful customer applications, but also based on the competence partnership between DECKEL MAHO Seebach GmbH and the Porsche LMP1 team. The background of this collaboration is the premium partnership between DMG MORI and the Porsche Motorsport team. Last season, Porsche were victorious in the long-distance world championships as well as in the driver's and constructor's championships.

Among other things, the so-called Porsche Motorsport Center in Seebach manufactures complex pump housings in small batches in different materials and technically demanding fixing elements. For this purpose, the racing stable's developers provide the necessary CAD data, while the manufacturing experts in Seebach are responsible for the whole process right up to the finished workpiece - starting with the processing of the CAD data and the CAM programming using Siemens NX CAM, to 1:1 simulation with the DMG MORI Virtual

Machine and highly accurate finishing on our high-tech machine tools.

Based on the virtualized process chain, the machining centers can be optimized in advance and thus enable perfect planning, effective collision protection and a reduction in set-up times to the absolute minimum. In other words, the importance of the DMG MORI Virtual Machine can definitely be compared with that of a racing simulator for the drivers. The system provides 1:1 simulation under real conditions - including the machine kinematics and control. The result is a high degree of safety and fast implementation in the (equally exciting) real world.

Technology cycles from DMG MORI - programming software offensive in the production hall: Shop-

floor-oriented programming is still extremely important, particularly in the production of individual workpieces and with small and medium-sized production batches. And it will remain equally important for a long time to come. Working with cycles is today the norm; standard cycles for turning, milling and drilling have long been part of the performance spectrum of modern control systems.

Backed by its decades of application experience, DMG MORI has gone well beyond this standard and currently offers 24 special DMG MORI technology cycles for turning/turning & milling or milling/milling & turning in its portfolio. This enables the operator to carry out complex machining functions directly at the machine up to 80 percent faster using a dialog system and parameterized context menus.

Outstanding examples include the machining of free-form surfaces using 5-axis interpolation, and different cycles for tooth-cutting and gear wheel production. Other highlights of the cycles include protective control for machine, workpiece and tools, the 3D quickSET® Toolkit for checking and correcting the kinematic precision of 4 and 5-axis milling machines, and the cycle for process-oriented optimization of feed speeds at the press of a button taking into account the table loading.

At the same time, it must be said that all strategies for the future at DMG MORI are people-oriented, particularly in the case of the new future trend towards the "Smart Factory". As a machine tool manufacturer, the company sees the optimum integration of employee potential as the most important success factor when implementing new approaches in production. This applies particularly to the operation of machine tools, which encompasses a multitude of complex tasks.

Source: DMG Mori?



Sandvik Coromant unveils a revolution in turning

Industry's first 'all directional turning' solution offers improved machining flexibility, productivity and tool life

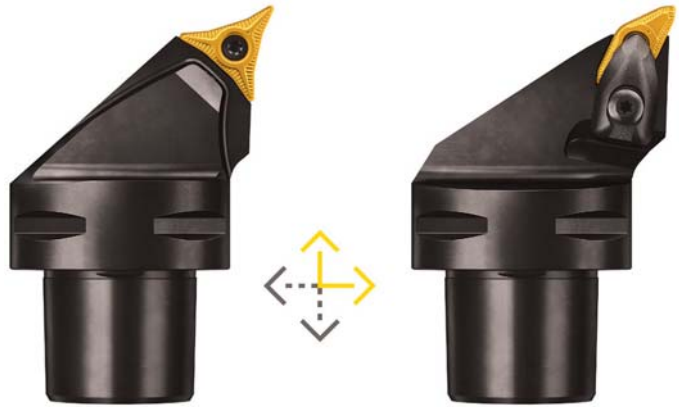
Cutting tool and tooling system specialist Sandvik Coromant has unveiled a revolutionary new turning concept that offers improved machining flexibility and the potential for significant productivity gains. The company's PrimeTurning™ methodology and supporting tools provide manufacturers, particularly in aerospace and automotive sectors, with the industry's first true 'all directional turning' solution.

Unlike conventional turning operations – which have remained largely unchanged for decades – PrimeTurning allows machine shops to complete longitudinal (forward and back), facing and profiling operations with a single tool. The methodology is based on the tool entering the component at the chuck and removing material as it travels towards the end of the component. This allows for the application of a small entering angle, higher lead angle and the possibility of machining with higher cutting parameters. Furthermore, conventional turning (from part-end to chuck) can be performed using the same tools.

Sandvik Coromant believes that some applications could see productivity increases in excess of 50% through the deployment of PrimeTurning rather than conventional techniques. Some of these improvements are due to the small entering angle and higher lead angle, which creates thinner, wider chips that spread the load and heat away from the nose radius. The result is both increased cutting data and extended tool life. In addition, as cutting is performed in the direction moving away from the shoulder, there is no danger of chip jamming (a common and unwanted effect of conventional longitudinal turning). Higher machine utilization due to reduced set-up time and fewer production stops for tool changes also enhances overall productivity.

PrimeTurning will be particularly beneficial to manufacturing industries such as aerospace and automotive where there is a need to perform external turning operations in big batch productions or where multiple set-ups and tool changes are often required.

"Experienced operators know that a small entering angle allows for increased feed rates," says Håkan Ericksson, Global Product Specialist at Sandvik Coromant. "However, in conventional turning they are restricted to using entering angles of around 90° to reach the shoulder and avoid the long, curved chips that a small entering angle characteristically delivers. PrimeTurning solves these problems by combining a perfect reach at the shoulder and the application of 25-30° entering



The new PrimeTurning™ methodology and CoroTurn® Prime A-Type (pictured left) and B-Type (right) tools from Sandvik Coromant enable turning in all directions for the first time.

PrimeTurning allows machine shops to complete longitudinal (forward and back), facing and profiling operations with a single tool.

angles with excellent chip control and maintained tolerances. This innovation presents countless possibilities to perform turning operations in much more efficient and productive ways. It's not just a new tool, but a totally new way of turning."

PrimeTurning is initially supported by the introduction of two dedicated CoroTurn® Prime turning tools and the PrimeTurning code generator, which supplies optimised programming codes and techniques. CoroTurn Prime inserts have three edges/corners; one for longitudinal turning, one for facing and one for profiling, thus delivering efficient edge utilisation and longer tool life.

Two unique and dedicated inserts are offered: CoroTurn Prime A-type features three 35° corners and is designed for light roughing, finishing and profiling, while CoroTurn Prime B-type with its ultra-strong corners is designed specifically for rough machining. Suitable for ISO P (steel), S (heat-resistant super alloys and titanium) and M (stainless steel) category materials, nine CoroTurn Prime A-type and six CoroTurn Prime B-type inserts are currently available, with expansion to other materials envisioned for the future. The inserts are supported by 52 variants of tool holder, including Coromant Capto®, CoroTurn QS and shanks.

The PrimeTurning code generator not only ensures maximum output but also process security with suitably adjusted feed rate and entry radius parameters. It creates ISO codes that are compatible with various CNC systems.

For more information visit
www.sandvik.coromant.com/primeturning
or send email to nikki.stokes@sandvik.com



New 7000 series inserts for stainless steel turning

Advancements in component material technology means that cutting tool suppliers have an ever increasing responsibility of being able to supply tools that can efficiently cut new materials. This responsibility is even more apparent when supplying tools for turning stainless steels.

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Stainless Steel Challenge

The new 7000 series, MC7015, MC7025 and MP7035 have been designed to be an easy-to-choose selection of grades and chip breakers. Such is the variance in the properties and machinability of stainless steels, different tool grades matched with a suitable chipbreaker is essential to achieve reliable high volume, unmanned production. A "one grade and breaker suits all" solution is no longer the best way to realise the high rates of efficiency needed for today's demanding production environment.

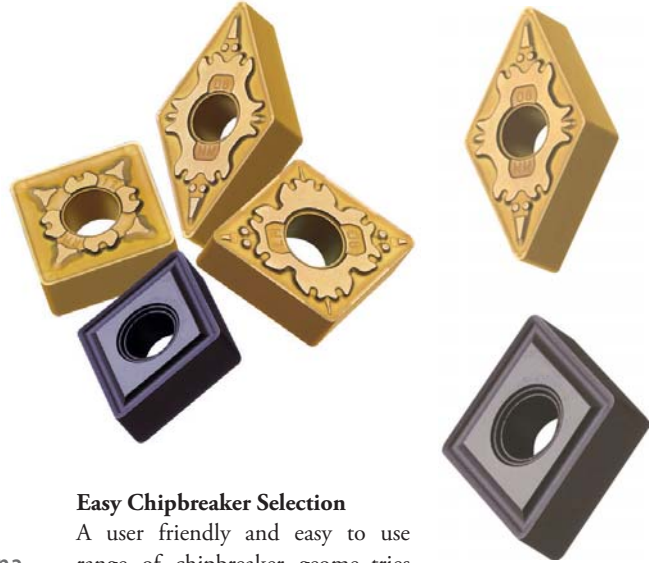
"Such is the variance in the properties and machinability of stainless steels, different tool grades matched with a suitable chipbreaker is essential to achieve reliable high volume, unmanned production."

3 Choices

MC7015 is a multi layer CVD coated grade with a smooth cutting edge to prevent chip welding during higher speed, lighter cutting applications.

MC7025 also has a multi layer CVD coating, together with an optimised substrate that displays excellent plastic deformation properties. This combination of coating and substrate makes it ideal for a wide range of medium cutting applications.

MP7035 is manufactured with a PVD coating for prevention of chip welding and a substrate specialised in thermal shock and fracture resistance. These properties make it the first choice for interrupted cutting and rough machining.



Easy Chipbreaker Selection

A user friendly and easy to use range of chipbreaker geometries is employed across all 3 grades. LM breaker for light cutting provides a sharp cutting edge to drastically reduce burrs but is optimised using different rake angles around the cutting edge to also provide the necessary strength. This provides increased quality on finished components.

MM breaker for the medium range of cutting has an ideal cutting edge land geometry configured using the latest simulation analysis. This has ensured control over plastic deformation that in turn leads to longer tool life and reduces the number of tool offset compensations needed during the life of a cutting edge.

RM breaker for rough cutting. This breaker needs a very stable edge to withstand the high forces during rough and interrupted cutting. Stability is achieved by using different rake angles for the nose and flank and also has specially optimised-for-strength edge honing. The end result provides less machine down time for increased levels of productivity.

In addition, 2 sub-breakers, GM and MA are included as a secondary selection between the main LM and MM breakers where fine tuning of performance and productivity may be needed.

MC7015, MC7025 and MP7035 are available in a wide range of negative geometries from CNMG through to WNMG types.

For more information, contact MMC Hardmetal India Pvt. Ltd.
Email: mmcindia@mmc.co.jp

Optimum inserts and breaker selection

Light Cutting	Medium Cutting	Rough Cutting
LM MC7015	MM MC7015	RM MC7015
LM MC7025	MM MC7025	RM MC7025
LM MP7035	MM MP7035	RM MP7035

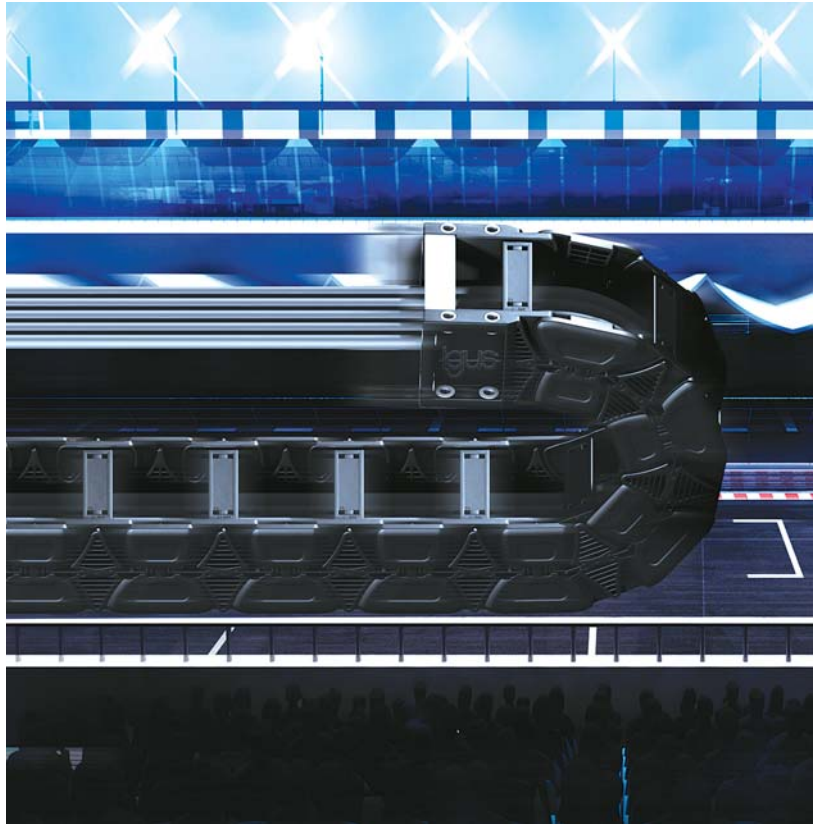


An energy chain for extreme dynamics with very low noise

New sizes of the E6.1 series from igus are now available

For applications where an extremely low-noise running of the energy chain, very high dynamics or very low abrasion is required, the motion plastics specialist igus has developed the E6.1 series of energy chains. These chains are now available in new sizes with larger inner heights of up to 62 millimetres.

The company igus has developed the E6.1 series of e-chains for applications where very low-abrasion energy chains are required, for example in the clean room in semiconductor manufacture. As with the predecessor series E6, instead of a pin/bore connection, elastic polymer spring elements in the side elements serve as connectors for a dampened and very smooth running of the chain. The very small pitch and contour of the chain links ensure that the polygonal effect is reduced to a minimum and the chain rolls very smoothly. Thanks to the narrower design compared to the E6, roughly 30 percent can be saved with the same inner dimensions. "Further advantages of this design principle are a very quiet and extremely low-vibration operation with only 32 dB(A)," explains Harald Nehring, authorised officer for e-chain systems at igus. "This makes E6.1 series energy chains very suitable for use in stage technology or in TV studios, in addition to applications in the clean room." The e-chains of the E6.1



"Further advantages of this design principle are a very quiet and extremely low-vibration operation with only 32 dB(A)."

Harald Nehring, authorised officer for e-chain systems at igus

For all installation sizes of the E6.1, the crossbars can be removed along the inner and outer radii, so that quick filling is possible. The means that when the chain is already installed in the machine, additional cables or hoses can easily be drawn in.

series can also be used for applications with speeds of up to 20 m/s. From now on, chains in four different dimensions are available from 29 millimetres up to 62 millimetres in height. An even larger version of the E6.1 with an inner height of 80 millimetres will follow in spring 2017.

Easy access for quick assembly

For all installation sizes of the E6.1, the crossbars can be re-

moved along the inner and outer radii, so that quick filling is possible. The means that when the chain is already installed in the machine, additional cables or hoses can easily be drawn in. Almost all of the crossbars are also equipped with a grid marking, which enables the exact positioning of separators. In the size with inner height 29 millimetres, users also have the option to order the chain with swivel-open crossbars. This means easier handling and therefore shorter installation times are possible. The very smooth and interference-free interior ensures a very long service life for the guided cables and hoses.

For more info, contact
igus (India) Pvt Ltd
E-mail: Harish@igus.in
www.igus.in



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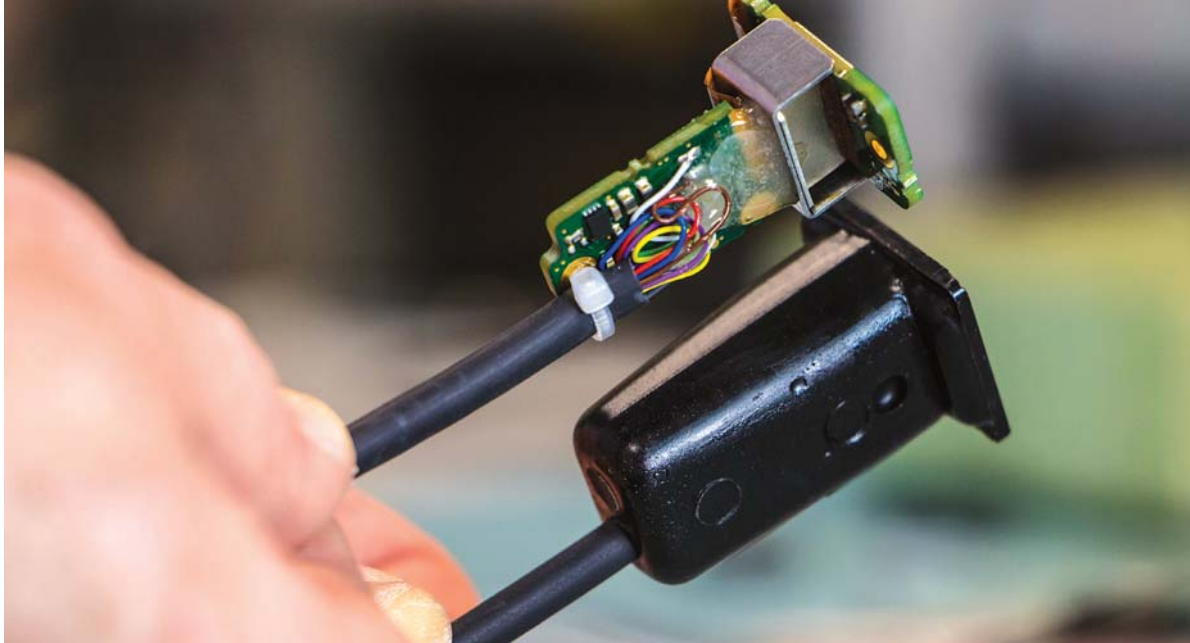
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Enhanced control solution

Know how encoders helped a boat to perform better during the race.

When Olympic hero Sir Ben Ainslie took the helm of Britain's hope to bring the America's Cup home for the first time in 166 years, he realised that his Land Rover BAR team needed the best in British manufacturing, design and innovation.

Since 2013, the AC72 and ACC class wing-sail catamarans have changed the conventional view of what a sail boat should look like. Adoption of advanced data-led simulation to aid the design process has allowed the construction, and precise optimisation of complex aero- and hydro-dynamic structures made of high-tech composite materials. Land Rover BAR's boat 'Rita' has been designed and built with the latest technologies to give the greatest advantage possible against the best in the world.

Renishaw, the global engineering company, is part of Land Rover BAR's Technical Innovation Group. The aim of this group is to bring together the best of British engineering to help win the America's Cup and bring it home. This is a huge challenge unlike any other in world sailing.

During Rita's development, Land Rover BAR realised that precision knowledge of their wing settings could be compromised by the tenuous link between the hydraulic actuators and the control surfaces or flaps. These linkages are ropes with a high degree of compliance, so the position of each actuator is often only an approximate measure of the actual flap angle. They called on metrology experts at Renishaw to design a solution.


Technical Leader for Renishaw's Encoder Products Division, Dr. Finlay Evans and his team rose to the occasion and designed a bespoke magnetic encoder solution, based around

The encoder readhead (sensor) was encapsulated to protect its internal microelectronics and special gimballed armatures were designed to isolate the encoder from structural vibrations and wing flex.

LinACE technology from Renishaw's associate company RLS. LinACE is an extremely robust absolute linear cylindrical encoder system designed for integration into hydraulic, pneumatic and electromechanical actuators as a feedback element for position or velocity closed-loop applications.

The position encoders were installed on the control surfaces of both the wing (flaps) and the port and starboard rudders. Numerous changes were made to ruggedise the LinACE encoder and make it durable enough for life at sea. For instance, the encoder readhead (sensor) was encapsulated to protect its internal microelectronics and special gimballed armatures were designed to isolate the encoder from structural vibrations and wing flex.

Correct ride height has also been ensured by a magnetic bond between the readhead and its stainless steel partial arc scale.

These design features are crucial to the success of the overall encoder system. Any design failures would have meant failure to deliver an encoder in the time scale requested – the biggest challenge that Finlay and his team faced. It was literally a race against the clock. In crossing the finishing line, Renishaw has provided Land Rover BAR with a position encoder control solution truly befitting of their world-class status. 

Source: Renishaw Metrology Systems Ltd



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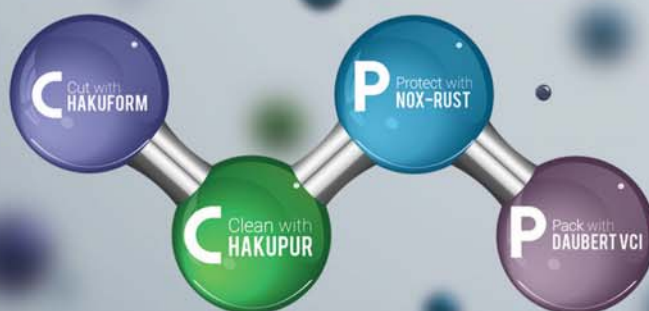
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Data Cable Coupler to safeguard data connectivity

Automation controlled factories have a large number of data cables installed. Maintenance and support services help maximise system performance at every stage of its life cycle. However, constant use of cables might result in production setbacks and replacing the cable might not be a viable solution. Epic Data Cable Coupler by Lapp Group helps safeguard data connectivity. It helps keep the production up and running with easy to assemble solution. An innovative solution, the EPIC DATA CABLE COUPLER connects two network data cables on the production floor or in the field immediately.

The newly launched Epic Data Cable Coupler is a cost-effective solution to repair physically damaged data cables which ensure a minimal production shut down. It makes use of Insulation Displacement Contacts (IDC) technology and requires no special tooling. Epic Data Cable Coupler's robust industrial design and construction ensures it is EMC shielded for no loss of signal quality. What more, the Data Cable Coupler can be reused. It is a product that every Maintenance Repair Officer (MRO) should have it handy to restore the problem and ensure the production starts within no time. The product is available in 2 versions - Epic Data CCR FA for Industrial Ethernet cables up to 10 Gigabit, Cat. 7A and Epic Data



CANCCCR for PROFIBUS/CAN BUS/Sensor actuator cables.

Epic Data Cable Coupler is IP65/67 protected and vibration proof. It is available in five pins and eight pins that can resist ambient operational temperatures ranging from -40°C to +85°C.

Application areas for Epic Data Cable Coupler are:

- Repair kit for breaks in network data cable
- Connects two network data cable
- To extend existing cable systems
- To connect shielded cables up to five cores and eight cores
- DeviceNet, Sensor/Aktor wiring, Ethernet, Ethercat and Profinet

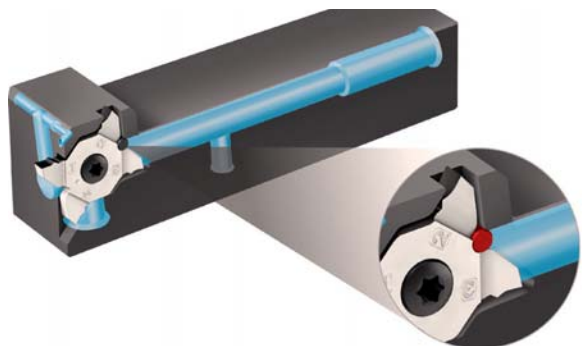
Source: Lapp India

Four cutting edges – one innovative system

Walter Cut MX impresses thanks to its handling and process reliability

With the Walter Cut MX, Tübingen-based Walter AG is launching a tool for grooving and parting off that adopts proven technology and eliminates the weaknesses of existing systems from competitors. The self-aligning, tangential clamping of the MX system and the dowel pin location in the insert seat lead to greater repeat accuracy, stability and process reliability. Furthermore, unlike comparable systems, it is impossible to fit the inserts incorrectly in the Walter system, which makes handling completely reliable. In addition to the high-precision toolholder system with precision cooling, the Tiger•tec® Silver PVD cutting tool materials of the indexable inserts also ensure maximum tool life.

The inserts themselves have four precision-ground cutting edges. Cutting depths of up to 6 mm and cutting widths from 0.8 to 3.25 mm are available in the standard range. Walter provides customers with custom sizes and designs, e.g. an insert to produce a radial groove with a chamfer measuring up to 5.65 mm wide, in the shortest possible delivery time via Wal-



Self-aligning clamping plus dowel pin location: The precision-cooled Walter Cut MX system redefines safety. Image: Walter AG

ter Xpress. Due to the extremely precise centre height and the ground cutting edges, the system is ideal for precision grooves, circlip grooves and small diameters. This makes Walter Cut MX particularly interesting to small parts manufacturers with high requirements for accuracy. The efficiency of the system is such that only one type of cutting insert is required for both the left- and the right-hand toolholders. Furthermore, if one cutting edge breaks, you can continue working with the rest.

For more information, visit: www.walter-tools.com

"Due to the extremely precise centre height and the ground cutting edges, the system is ideal for precision grooves, circlip grooves and small diameters."

Panasonic recommends Windows 10 Pro.

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