

THE MACHINIST

RNI No 71129/98

Volume 10 Issue 7 • July 2015 • Rs 75

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FACILITY TOUR

HOW KBL'S KONDHAPURI PLANT IS TAKING VALVES MANUFACTURING TO THE NEXT LEVEL

GREEN MANUFACTURING

WHY ENVIRONMENT FORMS A VITAL PART OF FORD INDIA PLANTS' OVERALL PERFORMANCE METRIC

INTERVIEW

GAMESA INDIA SET TO BUILD ON ITS NUMBER ONE POSITION AS THE TURBINE OEM IN INDIA

A portrait of Dr. Katsutoshi Toda, Chairman & Managing Director of Toshiba Transmission & Distribution Systems (India). He is a middle-aged man with dark hair, wearing glasses, a white collared shirt, and a dark pinstriped suit jacket. The background is a solid green color.

**Make in India,
EXPORT GLOBALLY**

WHILE AIMING TO CAPTURE 20 PERCENT OF MARKET SHARE IN INDIA TOSHIBA TRANSMISSION & DISTRIBUTION SYSTEMS (INDIA) IS EVOLVING AS A CORE T&D PRODUCTION BASE FOR MAJOR MARKETS, SAYS ITS CHAIRMAN & MANAGING DIRECTOR, DR. KATSUTOSHI TODA

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- Vertical Machining Centers
- Horizontal Machining Centers
- CNC Boring Machines

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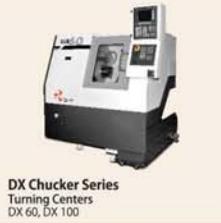
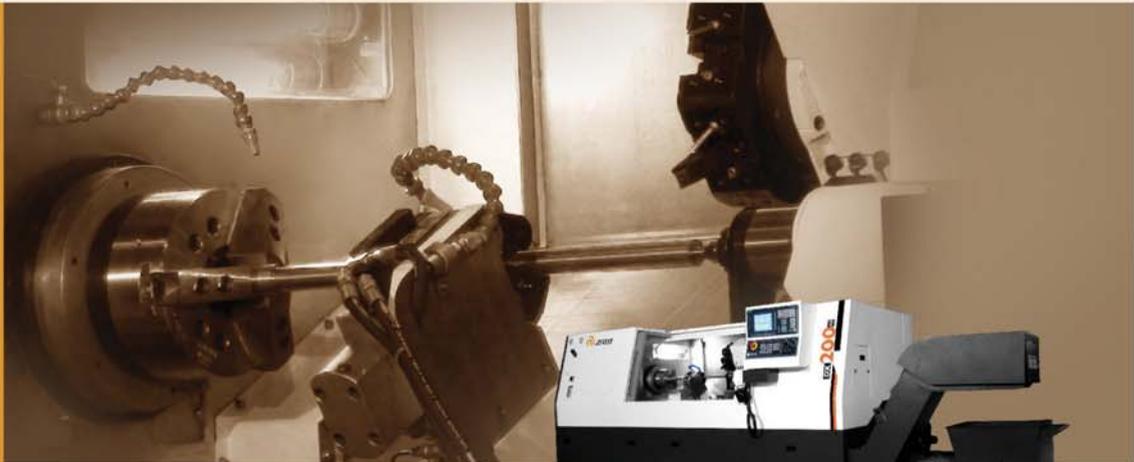
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“THERE’S SOMETHING ABOUT THE HUMAN BRAIN, YOU SEE. IT TENDS TO MISS OUT ON THE OBVIOUS SOMETIMES. AND THERE IS A CERTAIN SIMPLICITY ASSOCIATED WITH THIS ‘OBVIOUS’.”

Simplifying things!

here’s something about the human brain, you see. It tends to miss out on the obvious sometimes. And there is a certain simplicity associated with this ‘obvious’ as you can see from the following anecdote.

Many years ago, a fast growing toothpaste manufacturing plant was facing a strange problem at one of its packaging lines. Few of the boxes coming out did not have toothpaste tubes inside! The Plant Head asked the engineering department to come up with a solution. And the department did. Of course, it took three weeks and also spent its entire allocated budget of tens of thousands of rupees. The expense surely hurt but the Plant Head thought it was worth it since the problem had been resolved satisfactorily. The conveyor was fitted with a weight-based advanced sensor that sounded an alarm whenever an empty box passed it. An employee would then manually pick-up the empty box.

The first week was fantastic since every single empty box was removed from the line. Then, in the second week, the Line Manager reported that not a single empty box was being detected by the sensor. Puzzled by this, the Plant Head decided to inspect the line personally. And he was amazed by what he saw. Yes, there were a few empty boxes but they just did not reach the sensor. A fan was blowing them off the conveyor and an employer was picking them up from the ground. Someone feeling hot had placed the fan near the conveyor! And so, a fan worth a few thousand rupees had made an advanced sensor become obsolete. If only someone had thought of this before!

Campaigns like ‘Make in India’ and ‘Digital India’ should have been thought of much before. Never mind... But now that someone has seen the obvious, let us play our roles in all earnestness.

Nirajan M.
 Editor & Chief Community Officer

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THE MACHINIST

Volume 10 Issue 7 July 2015



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Printed and published by Joji Varghese for and on behalf of owners Worldwide Media Pvt Ltd (CIN:U22120MH2003PTC142239), The Times of India Building, Dr DN Road, Mumbai 400001. Printed at JRD Printpack Private Limited, 78, Resham Bhavan, 7th Floor, Veer Nariman Road, Churchgate, Mumbai - 400 020. Editor: Nirajan Mudholkar. Published for July 2015.

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ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

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'Power'ful Dreams



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Applying World-class Technologies To Achieve Global Bench-mark Quality

Complete solutions for
benchmark productivity in
complex material machining.



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NEWS

Digital employment exchange for industries launched, in line with the Digital India vision

The Union Minister of Micro, Small and Medium Enterprises, Kalraj Mishra, digitally launched the Employment Exchange for Industries recently. The Minister stated that the digital employment exchange is in line with the Prime Minister's vision of Digital India wherein through this employment exchange for industries, job seekers can find employers and vice versa.

India has successfully come back today on track of economic progress and the Central Government has created



an environment of growth and prosperity. Programs like Make in India, Skill India, Clean India have created a huge momentum to drive industrial growth and create employment opportunities for the millions of youth in the country.

The Minister emphasised that it is utmost important that these skilled hand get a platform where

they can find livelihoods for themselves. Thus, this facility will enable industrial units find suitable manpower and job seekers find suitable jobs.

Cooper Corporation expands its office facility in Satara

Satara based Cooper Corporation recently expanded into a bigger, state-of-the-art office premises – Nari-man House, to cater to the company's growing needs and business. Spread over 5.9 lakh sq m with 8.8 thousand sq m designated for corporate office, Cooper Corporation's new facility has three

floors (Ground + three floors) housing all departments with more than 240 workstations and dedicated space for trainings, discussions and conferences. Sharing his thoughts, Farrokh Cooper, CMD, Cooper Corporation said: "With the rising demand in forging and casting business along with addition of new verticals, we anticipated this need for expansion. This new facility stands testament to our commitment towards customers and the environment, which helped us chart our unparallel growth story." The building's design has been inspired by the logo of Cooper Corporation.



Hero Group diversifies into electronics sector

The US\$5 billion Hero Group has recently announced its foray into the rapidly growing electronics sector of the country, with the formation of a new company, 'Hero Electronix'. The decision aligns with the 'Make in India' vision of the government and will help the growth of the sector, further.

Hero Electronix will first acquire a majority shareholding in Mybox Technologies Pvt Ltd, the largest multi operator manufacturer of set top boxes in India. The company has lined up investments of Rs500 Crore in next few years.

WIKUS inaugurates its first manufacturing plant in India for band saw blades

WIKUS has recently unveiled its new manufacturing unit at Chakan, Pune. This unit claims to serve answers to the selection of right band saw blades with high quality performance with a wide range of innovative products, which satisfies customer's requirements. "We're delighted that this new unit is equipped to 'Make in India' and well-positioned to meet the market demand for sustainable sawing technologies in the country. "With high quality performance, this unit will offer high precision sawing tech-



nology to the customers and will help to increase our distribution reach. It also focuses more towards reaching the customers for after sales & services," said Mukund P Bharadwaj, CEO, WIKUS India. Wilhelm H. Kullmann found 'WIKUS' Spangenberg (Germany) in 1958. With 50 years of experience in developing & manufacturing

high performance cutting tools, the company has initiated positively steps towards India for establishing the manufacturing unit to serve Indian customers.



Remus Venturini, R&D, Cutting tools

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SKF Solution Factory in Jamshedpur inaugurated; will serve as satellite unit

SKF India has inaugurated the SKF Solution Factory in Jamshedpur, Jharkhand. This is SKF's third Solution Factory in India, after the main facility in west, in Pune and the satellite unit in north, in Manesar. The Jamshedpur facility will serve as another satellite unit and focus on large sized bearing remanufacturing analysis process, manufacturing of customized machined seals for hydraulic cylinders, basic hydraulic cylinder repair and maintenance related training solutions from SKF. This factory will cater



to the customers, primarily focusing on the metals and mining industry in the Eastern part of India with competencies across SKF's technology platforms

and specific asset management and maintenance services. Shishir Joshipura, MD, SKF India Ltd said, "The Jamshedpur SKF Solution Factory will play a pivotal role in bringing integrated solutions at customer's doorstep by providing asset management solutions, resulting in higher speed of service deployment for our customers in the eastern region. Lokesh Saxena, Business Head - OEM Business & Services, Industrial Markets, SKF India Ltd said, "We want to bring SKF knowledge closer to our customers."

Construction starts on Lapp's new European headquarters



Thomas Bopp, Petra Kimmerle, Dr. Nils Schmid, Ursula Ida Lapp, Michael Föll, Werner Schwarz, Siegbert E. Lapp, Andreas Lapp (left to right) laying the foundation stone for the new Lapp European headquarters.

Stuttgart-based Lapp Group is building Lapp's new European headquarters at its premises in Vaihingen-Möhringen. The first stone was laid on

June 30. "Today clearly marks the beginning of a new chapter in our company history. U.I. Lapp GmbH is a modern, dynamic company and we want to continue growing. The new headquarters will give us new opportunities to combine our strengths even more effectively," explained Siegbert E Lapp, Chairman of the Supervisory Board at Lapp Holding AG.

The building's floor space will total 8,340 sq m, and around 400 employees are expected to work there. It is expected to be completed by late 2016, at a total cost of around EUR 20 million.

CRISP India signs an MOU with NSDC to work on projects

The National Skill Development Corporation of India (NSDC) under a Public Private Partnership promoted by the Ministry of Finance, Government of India signed a Memorandum of Understanding with Center for Research & Industrial Staff Performance (CRISP), India to explore national and international opportunities for strengthening skills development in India. Mukesh Sharma, CEO, CRISP and Dilip Chenoy, MD &

CEO, NSDC signed and exchanged the MOU recently in Delhi.

The main objective of this collaboration is to work jointly on projects and plans for capacity building of NSDC partnering institutions for offering value added services to the Skill development initiative in India. Additionally, they will create suitable interventions for state level operations, which will offer quality-oriented skills and services in an efficient manner.

MAN Diesel & Turbo acquires MaxWatt Turbines

MAN Diesel & Turbo SE a wholly owned subsidiary of MAN SE (part of Volkswagen AG) has acquired 100 percent of the shares of MaxWatt Turbines Pvt. Ltd. MaxWatt Turbines is an Indian specialist company for engineering, production and service of steam turbines for applications in power generation and mechanical drives. After the acquisition MaxWatt will be integrated into the Turbo business of MDT and the new entity will operate under the name MAN Turbomachinery India Pvt. Ltd. "MaxWatt is a well-established player in the Indian and Asian power generation business in the lower power segment," said Dr. Uwe Lauber, CEO and Chief Sales Officer of MAN Diesel & Turbo SE.

"By acquiring them we expand our portfolio and add steam turbines for numerous standard applications to our existing high end product range. At the same time we gain access to new customer groups and market segments. MAN Diesel & Turbo has always chased M&A projects, if they satisfy a sound strategic rationale. With MaxWatt there are close to zero overlaps in the product ranges, which is why it is an excellent match for us."



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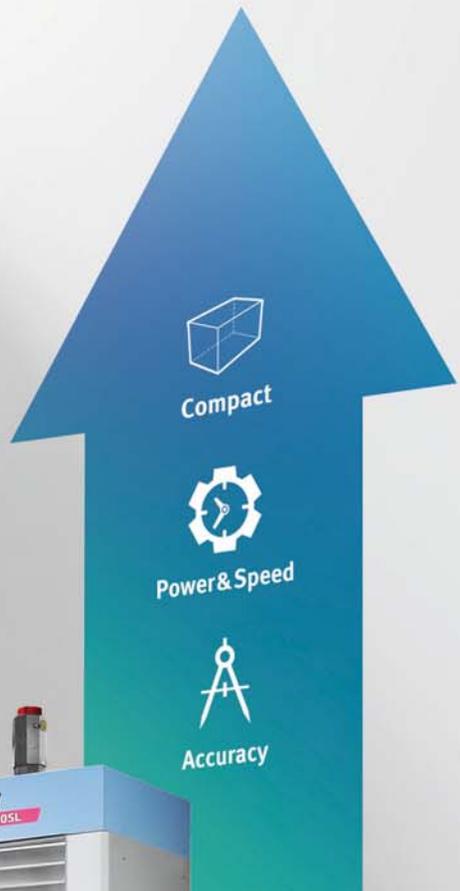
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Mark your diary

A list of key events happening between August 2015 to September 2016, both nationally and internationally

Automation 2015

August 24-27, 2015, Mumbai
www.iedcommunications.com/index.php

Global SME Business Summit 2014

December 07-08, 2015, New Delhi
<http://ciisme.in/>

Aluminium India 2015

September 7-9, 2015, Mumbai
<http://www.aluminium-india.com/>

IMTEX FORMING 2016 & Tooltech 2016

January 21-26, 2016, Bengaluru (BIEC)
www.imtex.in

Laser World of Photonics

September 9-11, 2015, New Delhi
www.world-of-photonics-india.com/

Auto Expo 2016 - Components

February 4-7, 2016, New Delhi
<http://www.autoexpo.in/components-show/index.aspx>

Global Additive Manufacturing Summit - 2015

September 24 - 25, 2015, Bangalore
<http://www.amsi.org.in/Conference.htm>

Auto Expo 2016 - The Motor Show

February 5-9, 2016, Greater Noida
<http://autoexpo-themotorshow.in/>

EMO MILANO 2015

October 5-10, 2015, Milan
www.emo-milano.com/en/home

IPC APEX EXPO

March 13-17, 2016, Las Vegas (US)
www.ipcapexexpo.org/html/default.htm

FABTECH 2015

November 9-12, 2015, Chicago, USA
www.fabtechexpo.com

IMTS 2016

September 12 - 17, 2016, Chicago (US)
www.imts.com

Machine Tool Expo

August 20-23, 2015
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www.mtx.co.in

September 24-27, 2015
Gandhinagar
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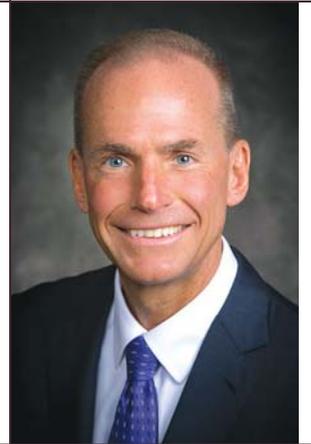




BOEING NAMES **MUILENBURG** CHIEF EXECUTIVE OFFICER

The Boeing board of directors has elected Dennis A. Muilenburg the company's 10th chief executive, succeeding W. James (Jim) McNerney, Jr., who held the position for the past 10 years. Muilenburg, who has served as Boeing president and chief operating officer since 2013, became president and CEO on July 1.

McNerney, who joined Boeing's board of directors in 2001, continues as its chairman. To ensure a smooth transition of his CEO responsibilities to Muilenburg, he will continue working as a company employee until retiring at the end of February 2016. "Dennis is an extremely capable, experienced and respected leader with an immense passion for our company, our people, and our products and services," said McNerney. Muilenburg, 51, is a 30-year company veteran. Along with Boeing Commercial Airplanes President and CEO Raymond L. Conner, he also has served since 2013 as company vice chairman. "The opportunity to lead the people of Boeing in service to our commercial and government customers is a tremendous honour and responsibility," said Muilenburg.

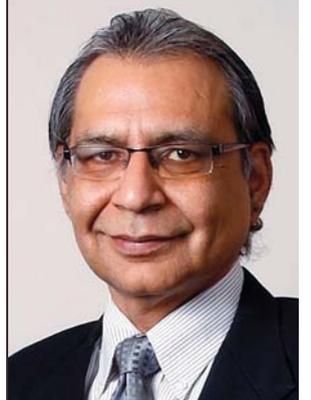


ZF FRIEDRICHSHAFEN AG APPOINTS **SURESH KV** INDIA COUNTRY HEAD

ZF Friedrichshafen AG has recently announced the appointment of Suresh KV as the new Country Head of ZF in India and in addition Head of ZF India Pvt. Ltd., the hundred percent subsidiary of ZF Friedrichshafen AG, effective from June 1, 2015. In this role, Suresh KV will be responsible for the performance and development of all lines of business for ZF in India, as well as for the operations in ZF India Pvt. Ltd. Commenting on this new development, Rudi von Meister, President for ZF Asia Pacific, said, "As ZF opens this new chapter, the ZF Board and I are confident that Suresh KV is the right person to lead the company in the Indian market. Suresh KV has been working with us since 2007 and was appointed as the Executive Director of ZF Wind Power Coimbatore Ltd. in 2010. He has a proven ability to create strategic clarity, drive innovation and growth, ensure disciplined execution, and deliver results. We believe that under his leadership ZF will continue to deliver innovations and customer satisfaction that will have a positive impact on the Indian market."

CG APPOINTS **SHANTANU KHOSLA** AS THE HEAD OF CONSUMER BUSINESS

Avantha Group Company CG has appointed Shantanu Khosla as Executive Vice President and Managing Director Designate of the Consumer business of CG. An alumnus of the Indian Institute of Technology, Bombay and the Indian Institute of Management, Calcutta, he joined as a Management Trainee in Richardson Hindustan Limited that was rechristened as Procter & Gamble India in 1985. Shantanu has served there ever since, in multiple roles. After several stints abroad in Newcastle UK, Kobe Japan, Singapore and Malaysia he returned to India in 2002 as CEO & MD of Procter & Gamble India. In his 13-year stint, he grew the revenue 15 fold - to USD 1.8 billion making it one of the fastest growing consumer companies in India. He served as the MD of two big legal entities in India - P&G Hygiene and Health Care Limited and Gillette India Limited. Shantanu brings with him rich experience of managing consumer business across markets, product categories and functions.



JK TYRE APPOINTS **VIVEK KAMRA** AS PRESIDENT - INDIA

JK Tyre & Industries Ltd has announced the appointment of Vivek Kamra as its President - India. The appointment comes in the wake of Arun K Bajoria's elevation to the vital role of 'Director and President - International Operations'. With an experience of over 20 years with the company, Bajoria will be leading JK Tyre's international operations including 'JK Ternel, Mexico' and special Strategic Assignments. Welcoming Vivek Kamra, Dr Raghupati Singhania, Chairman & Managing Director, JK Tyre said, "I am sure that Mr Kamra will provide adept leadership and lead JK Tyre on a new growth trajectory." Kamra joins JK Tyre with an extensive experience in spearheading businesses for almost a decade. Prior to joining JK Tyre, Kamra, was based in Singapore as President & CEO - NatSteel Holding Pte Limited.



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Championing the Green Cause

Ford facilities in Chennai and Sanand have implemented various green manufacturing practices, which reiterate the company's commitment to sustainability, says **Balasundaram Radhakrishnan**, Executive Director, Manufacturing, Chennai Vehicle Assembly & Engine Plant, Ford India Pvt. Ltd.

By Niranjan Mudholkar

Q Recently Ford released its 16th annual Sustainability Report highlighting its various 'Green' achievements in Mexico's Hermosillo Stamping and Assembly Plant which attained zero waste-to-landfill status. Where do your Chennai and Sanand plants stand in this regard?

At Ford, sustainability is a business model that creates value, consistent with the long-term preservation and enhancement of environmental, social and financial capital. Ford facilities in Chennai and Sanand have implemented various green manufacturing practices, which reiterate the company's commitment to sustainability. The Chennai Vehicle Assembly and



Engine Plant for example is one of Ford's five zero-landfill facilities in the Asia Pacific region. The entire hazardous waste generated at the plant is either recycled or co-processed into allied cement industries, making this plant a zero-landfill facility. The Sanand plant will also adopt measures towards zero-landfill status.

Q What are some of the key 'Green' manufacturing initiatives implemented by Ford India on the shop-floors of its Chennai and Sanand plants?

Ford India's Chennai plant has many notable manufacturing successes – we have achieved a reduction of 16 percent in terms of energy consumed per car produced since 2009. Continuous improvement measures have also led to a reduction of 30 percent in terms of water consumed per car produced, while Volatile Organic Compound (VOC) emissions have reduced by close to 40 percent, over the same period. 100 percent of the wastewater is treated and reused within the facility, making this a zero liquid discharge facility. Other notable green practices at the plant include emission control initiatives, cycle time reduction projects, reduction of waste in packaging material, switching over to LED lighting, regulating air conditioning systems, installation of solar heaters and effective use of sunlight in the factory floor.

Similarly, the Sanand plant redefines manufacturing excellence with its state-of-the-art modern equipment and advanced technology to deliver quality products. The state-of-the-art press shop, for example, will not only ensure that we



"Every year, associates in the Chennai plant work together to execute workplace improvements that can result in significant energy savings. Currently, the Chennai plant has almost 300 work groups who champion innovations and workplace improvements every day."

Balasundaram Radhakrishnan, Executive Director, Manufacturing, Chennai Vehicle Assembly & Engine Plant, Ford India Pvt. Ltd.

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produce the highest quality parts, but it will also maintain an exceptionally clean environment for employees with positive ventilation being deployed.

The Chennai plant implements the innovative three-wet paint process, which allows three coats of paint to be applied and dried simultaneously. This technology will be implemented at the Sanand plant as well. The energy efficient process significantly reduces wastage, energy consumption and helps in lowering paint shop carbon-dioxide emissions by up to 25 percent.

Q How the above initiatives are supported by off the shop-floor activities? What has been combined the impact of these initiatives? / Successfully adopting 'Green manufacturing principles', along with having a positive approach to the environment, requires comprehensive involvement of employees. How are you educating and engaging your people in this journey?

Environment is a key metric on the Global Ford Production System and forms a vital part of each Ford plant's overall performance metric. The corporate environment policy is cascaded to employees as part of their initial orientation, besides which we have periodic refresher training for staff and employees.

We also work towards constant engagement with the employees. This covers a broad spectrum, right from facilitating easy waste segregation on the shop-floor at the simplest level, to encouraging healthy competition among the work-groups. Every year, associates in the Chennai plant work together to execute workplace improvements that can result in significant energy savings. Currently, the Chennai plant has almost 300 work groups who champion innovations and workplace improvements every day.

A recent example of such collaboration resulted in the engine plant's Materials, Planning and Logistics (MP&L) team reducing carton and wood wastage. The innovative solution identified by the team helped reduce the total waste generated by the engine plant in 2014 to just 26 percent of the total waste generated in 2013. The proof of all these efforts is visible when each shop-floor is checked individually for resource depletion. It's a matter of pride that on a year-on-year basis, every shop-floor here has been recording improvements on all environment items.

We also leverage other opportunities to rope in participation from the employees towards creating a greener world. In fact, as part of the recent World Environment Day, we distributed more than 2000 saplings to employees and encouraged them to nurture them in the years to come, besides showcasing messages highlighting the importance of conservation. In the past, as part of our annual volunteer-driven initiative – the



Global Week of Caring – our employees have undertaken tree sapling planting initiatives, awareness campaigns on the 3Rs (Reduce, Reuse, Recycle) and the importance of waste segregation, reaching out to residents of nearby villages.

Q Tell us about the Ford Smart Mobility plan. What are its objectives? How is it progressing in India?

Ford Smart Mobility is our plan to use innovation to take Ford to the next level in connectivity, mobility, autonomous vehicles, the customer experience and big data, all while creating value for the company.

At the Consumer Electronic Show held at Las Vegas, USA, in January, Ford announced 25 experiments including Share-Car Pilot in Bangalore, where we are working with Zoomcar to test a sharing concept that would allow small groups, such as co-workers, apartment dwellers and families, to share a vehicle among multiple drivers. Learning from the ongoing experiment, researchers plan to develop a model for vehicle scheduling and managing ownership.

Q What role can legislation play in furthering the cause of 'Green Manufacturing'? How important will 'Green Manufacturing' be for the 'Make in India' campaign?

Green manufacturing is one of the core components of Ford production system around

the world. We were glad to see this being reflected in the Prime Minister's "Make in India" campaign with focus on 'zero effect' on environment.

Ford's vision to offer products that help conserve the environment by reducing harmful emissions has led to the development and use of the ingenious and green 1.0L EcoBoost, Ford's global powertrain technology that features a light turbo that takes less effort to spool up and as a result reduces the intake of fuel and saves running cost. More than two million consumers around the world have opted for EcoBoost powered vehicles. 

"Green manufacturing is one of the core components of Ford production system around the world. We were glad to see this being reflected in the Prime Minister's "Make in India" campaign with focus on 'zero effect' on environment."

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Entering a new era

While manufacturers are in agreement that Industry 4.0 will bring several benefits, the major challenge would be data handling and management.

By Sunil Jose

In today's highly competitive scenario, manufacturers are looking for greater efficiencies and cost savings in the business applications and processes, using new technologies. Since, the time of renaissance, there have been significant inventions and discoveries that have changed the face of manufacturing processes and greatly impacted the efficiency and productivity. The industry has seen the metamorphoses from the usage of water and steam to electricity to the currently used electronic gadgets and integrated IT systems that are driving the automation at a jet speed in the industries reducing the need of human oversight.

Today we are at the dawn of a new era "Industry 4.0", an era where sensor technology and the interconnectivity of the machines - the Internet of Things - is driving the industry forward.

While manufacturers are in agreement that Industry 4.0 will bring several benefits, the major challenge would be data handling and management. It is something that the manufacturing community has never dealt with before and there will be a variety of data in huge volumes that would be generated by the numerous sensors fitted at various points on a production line.

Here are four areas that manufacturers should keep in mind in order to meet Industry 4.0 objectives:

Generating data: Production in today's time comes equipped with a large number of sensors that create data. Sensor data, ERP, maintenance management data, and financial data together create 'magic'. For example, if you get data from a vibration sensor alone, what you get is pure technical information. But if you combine this with data from the maintenance management system, you will be able to link that vibration pattern to performed or missing maintenance activities or specific parts that have been changed. This helps in tracking the actual root cause of an issue and make predictions as to what

might happen. Adding the financial data enables prediction of costs of future maintenance activities that may arise due to specific vibration patterns.

Transferring data: In manufacturing environments, data is generated in geographically discrete production sites, in OEM equipment in remote locations, and sometimes even in handsets. As data transfer is costly, manufacturers need a strategy, so it can be decided as to what kind of data needs to be transferred and when.

Storing data: A huge amount of data is acquired, not all of which is useful. Manufacturers need to make decisions on suitable storage technology and also decide which data is needed when, where, and how, as the cost of storage is affected by these factors.

Getting insights from data: How can data be analysed to drive better decisions? The value of data to the business is essentially linked to saving

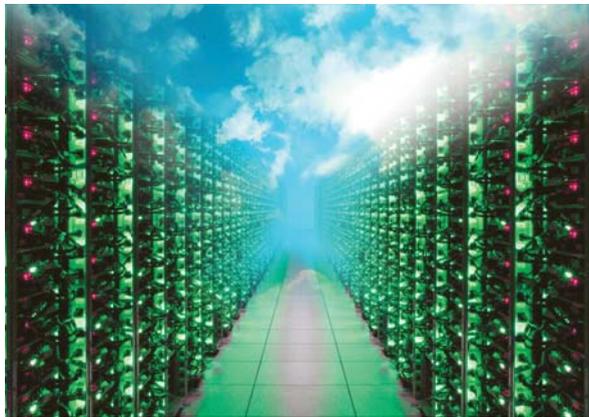
costs or increasing efficiency through improvements in a production process, a maintenance procedure, or system behaviour.

For Industry 4.0 project to be successful, engineers and IT professionals need to work together. IT has to be prepared to go much deeper in forging new partnerships with their engineering

counterparts, while respecting established processes. This will serve as a great opportunity for engineers and IT to come together to deliver on the Industry 4.0 vision.

From an India perspective, Indian manufacturing sector is starting to realise the importance of data and analytics, there is a great deal of priority being given to start capturing new data across processes and augment where it was already being done with relevant updates. Some organisations are even starting to see investments in data and analytics not as an IT project but more of business improvement opportunities in order to be locally and globally competitive. 

The author is Managing Director, Teradata India.



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Applying World-class Technologies To Achieve Global Bench-mark Quality



Responding to market trends, Aditya Birla Group's Pulp and Fibre Business has proactively created a world-class technology organisation to support the rapidly evolving needs for future success.

By Dr. Aspi N. Patel, Chief Technology Officer, Pulp and Fibre Business, Aditya Birla Group

The Pulp and Fibre Business within the Aditya Birla Group (ABG) is one of the largest manufacturers of cellulose-based synthetic fibres in the world.

These fibres, produced from renewable resources, provide comfort and softness in garments and home furnishings, key values important to today's consumers. As the market has continued to expand, higher performance textile processing technologies and the technical requirements of new applications place ever increasing demands on product performance attributes and uniformity. Seeing these trends unfold, the Pulp and Fibre Business has proactively created a world-class Technology organization to support the rapidly evolving needs for future success.

A state-of-the-art business Research and Development (R&D) capability has been created within the corporate R&D infrastructure in Talaja outside of Mumbai. Here scientists develop new process and product technologies from laboratory through small-scale semi-works operations. These capabilities are supported with corporately shared analytical, process

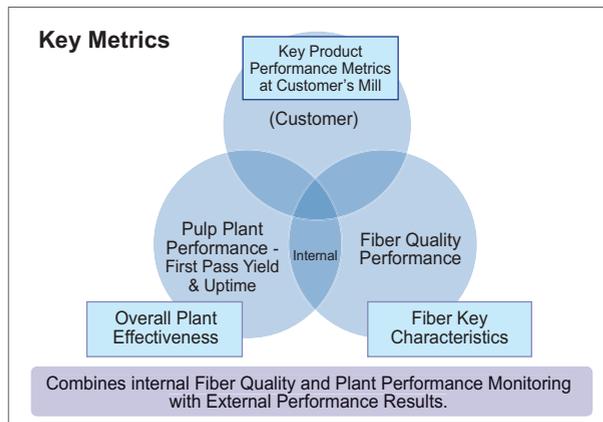


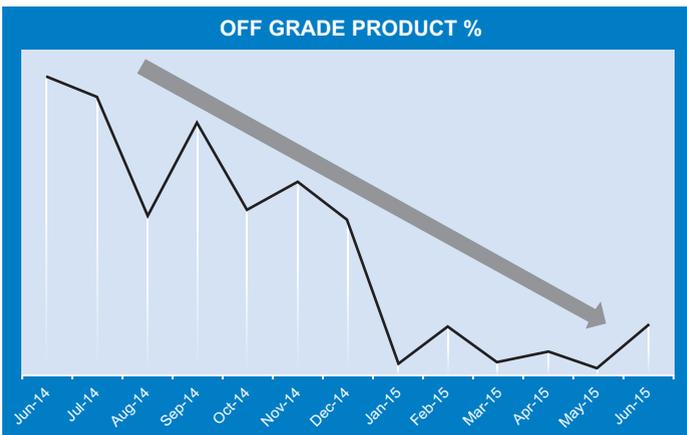
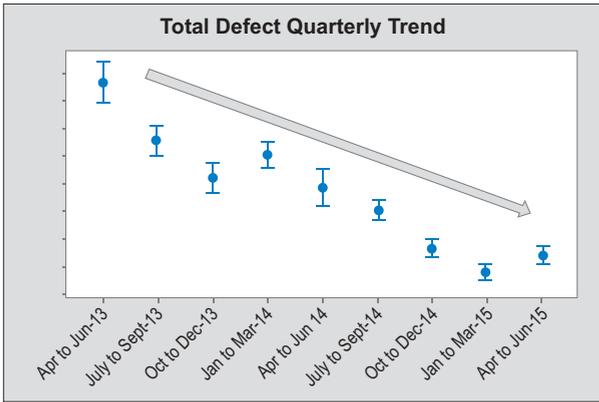
analysis and fundamental science resources. A small-scale manufacturing development capability in Kharach, Gujarat, allows effective scale-up and demonstration of new process and product technologies using equipment that is prototypic of commercial scale operations. Finally, the Textile Research and Applications Development Center (TRADC), located at the same site, provides capabilities to process new materials into a full range of garments and home furnishings using commercial processing equipment.

In parallel to creating these technology development capabilities, the Pulp and Fibre Business has developed, with the support of ABG Corporate Business Excellence, a Centre of Excellence to deploy the enhanced manufacturing operations, maintenance, control and quality systems required to meet the ever increasing customer requirements. One example of how these enhanced technology capabilities are being applied to achieve continuous improvement can be seen in our work to reduce overall process and product variation.

Continuous manufacturing processes with multiple steps and relatively long hold-up times, like that for cellulose fibre, present significant challenges to achieving uniform finished product quality. Variations in all steps can adversely affect product uniformity and the downstream performance in higher value articles. The finished product, such as fibre in the Viscose Staple Fibre process, can be periodically sampled and tested, but the amount of tested product is very small in relation to production. The customers, however, essentially test 100% of the finished product through their processing operations. In addition, fibre product specifications do not always fully capture all the diverse requirements of the down-stream applications. For example, fabric uniformity can be affected by both physical and chemical variations in the starting fibre, and the human eye is much more sensitive in discerning small deviations than typical fibre testing protocols.

Continuous manufacturing processes with multiple steps and relatively long hold-up times, like that for cellulose fibre, present significant challenges to achieving uniform finished product quality. Variations in all steps can adversely affect product uniformity and the downstream performance in higher value articles. The finished product, such as fibre in the Viscose Staple Fibre process, can be periodically sampled and tested, but the amount of tested product is very small in relation to production. The customers, however, essentially test 100% of the finished product through their processing operations. In addition, fibre product specifications do not always fully capture all the diverse requirements of the down-stream applications. For example, fabric uniformity can be affected by both physical and chemical variations in the starting fibre, and the human eye is much more sensitive in discerning small deviations than typical fibre testing protocols.





Given these manufacturing challenges, and the need to continuously improve product quality and performance as customer requirements are raised, a paradigm shift in asset management and operations control is required.

An approach, which addresses many of these challenges, is “product-by-process”. This approach is based on the premise that if each element of process material experiences the same process conditions, for example temperature, pressure, chemical composition and hold-up time, the final product should also be uniform in properties. Therefore the goal of this asset management process is to make each process step as uniform as possible. To implement this approach, a standard process is defined for each step, which, when put together, produce the desired final product requirements. Critical process parameters for each step are then controlled using Statistical Process Control (SPC) techniques to ensure on-aim conditions through the application of standardized corrective actions to address small process deviations. Finished product is deemed first quality when all the individual steps were in control during the fibre’s manufacture. Finished product is periodically tested to ensure that the standard operating system continues to produce the desired product and that no new variables have been introduced.

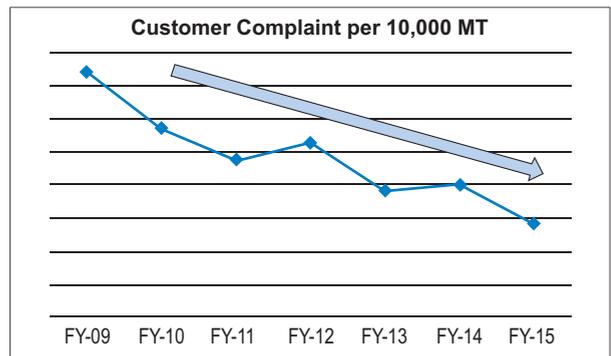
A very important aspect of improvement is having the right metrics to drive desired behaviours. As the team adopted the product-by-process approach, new metrics like First-Pass-Yield (FPY – the % of time all critical process parameters are in control) and Uptime (the % of time the operations are mechani-

cally operating to specifications) were introduced.

The advantage of these metrics is that they indicate to operations leadership the capability of deployed assets and how well they are being utilized to realize value. FPY and Uptime together provide a view of overall plant effectiveness. These coupled with internal product measures (fibre characteristics) and external customer feedback provide a comprehensive view of operating performance and product quality. The information also provides the inputs necessary to pursue continuous improvement.

When FPY and Uptime were introduced for the first time, the teams observed that the FPY / Uptime numbers were low. These data indicated, however, the significant opportunity for improvement and a means to track effective progress.

The Pulp and Fiber Business Centre of Excellence systematically developed, trained and coached the deployment of these manufacturing operations technologies, and instituted the comprehensive set of metrics to track the current process capability and improvement over time. These data clearly show areas requiring key process technology improvements for R&D action including re-design of process equipment and enhanced control systems. Site technology resources are utilizing Six Sigma tools and approaches to address chronic process variation issues. Improvements in maintenance systems supporting continuous operations are being pursued by applying global best practices with support from ABG corporate experts. Finally, Marketing,



working with TRADC, has instituted a continuous product performance feedback program to enable the manufacturing site to link process improvements with our customers’ experience.

As a result of these integrated improvement actions, significant progress in process variation reductions, product uniformity improvement and enhanced customer performance have been achieved. Examples of improved internal performance and customer experience from one site are shown in the graphs.

The ABG Pulp and Fibre Business has developed an extensive technology and manufacturing operations improvement capability that is being applied to enhance product quality and performance and provide next generation products and processes. This ongoing quality excellence and product leadership journey builds on the business’ strong manufacturing capabilities and global market reach to provide future opportunities for growth. 

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Eicher Polaris launches India's 1st personal utility vehicle - Multix



Eicher Polaris Pvt. Ltd., a 50:50 joint venture between Eicher Motors Ltd and Polaris Industries Inc., announced the launch of Multix – India's First Personal Utility Vehicle recently, thereby creating a new category in the automotive segment. Multix is specially designed for Independent Businessmen. Eicher Polaris Pvt. Ltd. has made an investment of Rs350 crore towards product development and setting up a world-class manufacturing facility with state-of-the-art technology at Jaipur, Rajasthan. The plant has an annual capacity of 60,000 units which can be scaled up to 1,20,000 units. The facility is also equipped with robotic weld lines and in-house paint system. Speaking at the launch of Multix, Sidhartha Lal, MD & CEO, Eicher Motors Ltd., said, "We have identified a large untapped segment in Independent Businessmen with an estimated population of 5.8 crores in India, and are committed to create a new and strongly differentiated automotive solution for them through Multix. Our aim is to equip the consumers with the Multix ecosystem and enable them to unlock their potential by accessing a world of new opportunities."

Commenting about the partnership and the vehicle, Mike Dougherty, Vice President, Asia Pacific & Latin America, Polaris Industries Inc., said, "When we came together to form Eicher Polaris Pvt. Ltd., we wanted to build on the synergies of our core competencies in order to bring a valuable and effective automotive solution to India. With Eicher Motors Ltd.'s understanding of the Indian market, their expertise in lean engineering platforms, and Polaris Industries Inc.'s capabilities in product innovation and category creation, we believe that Eicher Polaris Pvt. Ltd. is most uniquely positioned to achieve this and bring about a paradigm shift in automobiles for India"

JBM Auto Ltd's Sanand plant in Gujarat will supply to Ford India

JBM Auto Ltd. has recently unveiled its latest and state of the art manufacturing plant in Sanand, Gujarat. The plant was inaugurated by Nigel Harris, President and MD, Ford India in the presence of S.K. Arya, Chairman and Nishant Arya, Executive Director, JBM Group amongst other dignitaries and officials from both companies.

The total investment at the plant in Sanand is Rs200 crore where components such as C-Pillar; D-Pillar; Cowl Top; Shotgun and high level sub-assemblies etc. shall be manufactured for Ford India Pvt. Ltd, the Indian subsidiary of Ford Motor Company. The plant which is spread over 20 acres shall supply components to Ford India for rolling out 2.5 lakh vehicles annually.



Nishant Arya said, "JBM Auto has had a long standing association with Ford India and we have partnered and witnessed the Ford growth story in the Indian Automobile market. With this new manufacturing facility here in Sanand, we intend to further consolidate this association with a vision to offer the best quality products at the right time, which has been a constant strength for the JBM Group". "Sanand has brought in huge opportunities and promising potential for the overall auto industry and we at JBM Group are ready to associate and be partners to this momentum of growth. This is certainly going to massively contribute towards the Make-in-India campaign initiated by our honourable PM, Shri. Narendra Modi" he added further.

This investment has led to a generation of employment for 500 people in the region; which includes graduates from JBM's multiple Skill Development Centres who shall benefit from the company's special earn while you learn program.



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RSB to set up propeller shaft plant in Sri City, to invest Rs60 crore

In an event held recently, SK Behera, Vice Chairman & MD, RSB Group, inked a pact with Andhra Pradesh Government in the presence of Chandrababu Naidu, Hon. Chief Minister of Andhra Pradesh, to set up a state-of-art facility at Sri City at an investment of Rs 60 crore. The facility will manufacture latest generation of propeller shaft to cater to Isuzu Motors and other global OEMs - Ashok Leyland, Daimler, etc in Southern India. The plant will also cater to other parts of the country as well as for overseas markets. RSB has an on-going collaboration with world-renowned Eugen Klein GmbH, Germany and Jidosha Buhin Kogyo Co. Ltd. (JBK), Japan, for manufacture of technologically advanced Propeller Shaft.

Behera, speaking on the occasion, said RSB is a market leader in Propeller Shaft in catering to leading OEMs and this pact will further boost RSB's market share catering to CV/SUV/LCV segments. He further added that RSB is a Deming Company; quality norms are very



SK Behera, VC & MD, RSB Group (right) exchanging documents of Pact after signing in the presence of Chandrababu Naidu, Hon. Chief Minister, AP, flanked at the extreme right by SS Udgata, Director, I-Design Engineering Solutions

stringent and the Company meets uncompromising global standards.

Scania R 580 Puller gets ARAI certification; creates new category

Scania Commercial Vehicles India Pvt. Ltd. received certification from Automotive Research Association of India (ARAI) on categorisation of their on-road



Puller tractor R 580 6x4. According to the certification, Scania R 580 with capacity of gross combination weight (GCW) 200 tons when coupled with multi-axle trailer is now defined under a new category called Puller, and will be now available in the commercial market for our customers. Scania is the first commercial vehicles manufacturer in India to receive this certification from ARAI.

Scania R 580 6x4 is powered with V8 engine, making it most powerful on-road truck for the first time in India. The Scania R 580 6x4 offers high torque at low speed which is essential for over-dimensional cargo (ODC) transport. The Scania V8 engine is equipped to ensure excellent drivability, outstanding Total Operating Economy and refined vehicle handling and maneuvering qualities. A pioneer by itself, Scania R 580 is set to redefine the truck industry in India.

Scania R 580 was first showcased at Bauma ConExpo, 2014 in Delhi.

Lighter and more resistant materials for vehicle components

ContiTech Vibration Control has developed two new products for use in the automotive industry. Thanks to new materials or material combinations, they help

to improve components in passenger cars further. The new developments include a protective gaiter for premium-class passenger cars. Attached inside the wheel arch, it protects the elements of the vehicle's air suspension against stone impact,



The new torque clutch comprises three components made from carbon-fiber-reinforced polyamide or thermoplastic polyurethane. The weight is less than half that of previous variants. Photo: ContiTech

thereby extending the service life of the sensitive area. What sets the new version from ContiTech apart is the material used, which ContiTech has developed specifically for these applications. The main component is thermoplastic polyurethane. It is much more flexible and has greater rebound strength than the standard material made from thermoplastic polymers. This means that its resistance capability is much greater. "The special nature of the material can be felt immediately," says Rolf Weiß, head of Product Development at ContiTech Vibration Control in Dannenberg. "Tests have confirmed the material's resistance to abrasion."

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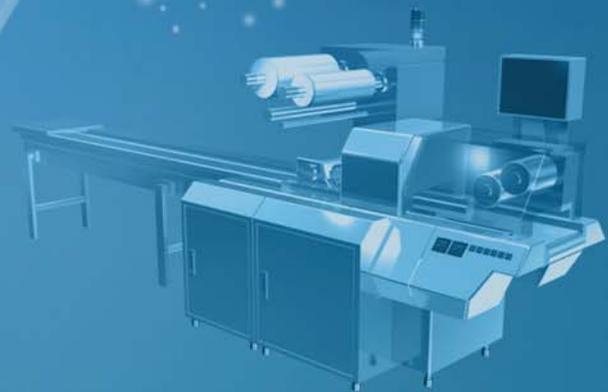
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Cambodia to be the 13th export market for Daimler India CV



Daimler India Commercial Vehicles Pvt. Ltd. (DICV), a 100 percent wholly owned subsidiary of Daimler AG, Stuttgart, Germany along with Mitsubishi Fuso Truck and Bus Corporation, Japan (MFTBC), a Daimler Company, has started the export of its robust DICV-made FUSO trucks to Cambodia, making it the 13th market for DICV. This market is growing rapidly in many sectors like garments, logistics, mining and constructions. The first vehicles have been retailed and delivered to customers.

For these sectors, out of the 5 newly developed FUSO truck models manufactured at DICV's Oragadam plant, the 'FA', 'FI' and 'FJ' models have been chosen to reinforce FUSO's leading presence in Asia. These robust and fuel-efficient trucks are already being exported to Kenya, Sri Lanka, Zambia, Tanzania, Zimbabwe, Bangladesh, Brunei and Indonesia, and are now on their way to Cambodia. While most of the current export markets demand right-hand drive vehicles, the Cambodian market requires left-hand drive vehicles. With that, DICV once again shows its flexibility to cater to specific customer's needs. DICV's distributor RMA Cambodia also promises full support on technical services and spare part availability in stock as well as financial service. Convinced customers have already made the first orders at the local dealership.

World's first rear axle transmission crossbeam made of plastic for S-Class

The world's first plastic transmission crossbeam in the rear axle subframe has been developed by ContiTech Vibration Control and BASF for the S-Class from Mercedes-Benz. It is made from the engineering plastic Ultramid A3WG10 CR, a specialty polyamide from BASF which is particularly reinforced and optimised to withstand high mechanical loads. Compared to the previous beam made from die-cast aluminium, this highly durable component offers a weight saving of 25 percent, better acoustics as well as excellent mechanical properties even at high temperatures and con-



forms to the latest crash requirements. The design expertise of BASF's simulation tool Ultrasim also made a major contribution to these properties.

The plastic load-bearing structural component meets all the requirements for the static and dynamic loads which act on a transmission beam: As a central component of the rear axle it supports part of the torque which is transferred from the engine to the transmission, and bears a constant share of the load of the differential. This is why the Ultramid crossbeam is used in all the vehicle designs from Mercedes-Benz with all-wheel drive, with the exception of the AMG cars.

BMW Group and NTU embark on S\$1.3 million electromobility research

BMW Group and Nanyang Technological University (NTU Singapore) have recently launched a new electromobility research programme, involving the all-electric BMW i3 and plug-in hybrid sports car BMW i8 that runs on electricity and petrol. This new research programme will be conducted at the Future Mobility Research Lab located on the NTU campus, which is the BMW Group's first joint lab in Southeast Asia. Both parties will be injecting a combined S\$1.3 million to drive the new research projects, on top of the initial S\$5.5 million funding allocated to the joint lab in 2013.

The new research programme will focus on two new areas, Electromobility in Asia and also Smart Materials. This is

in addition to the original three research topics that the joint lab is working on: Advanced Battery, Driver Enhancement and Intelligent Mobility.

At the launch ceremony at NTU, the BMW Group announced that the BMW i3 and BMW i8 will be provided as research platforms to the Future Mobility Research Lab.

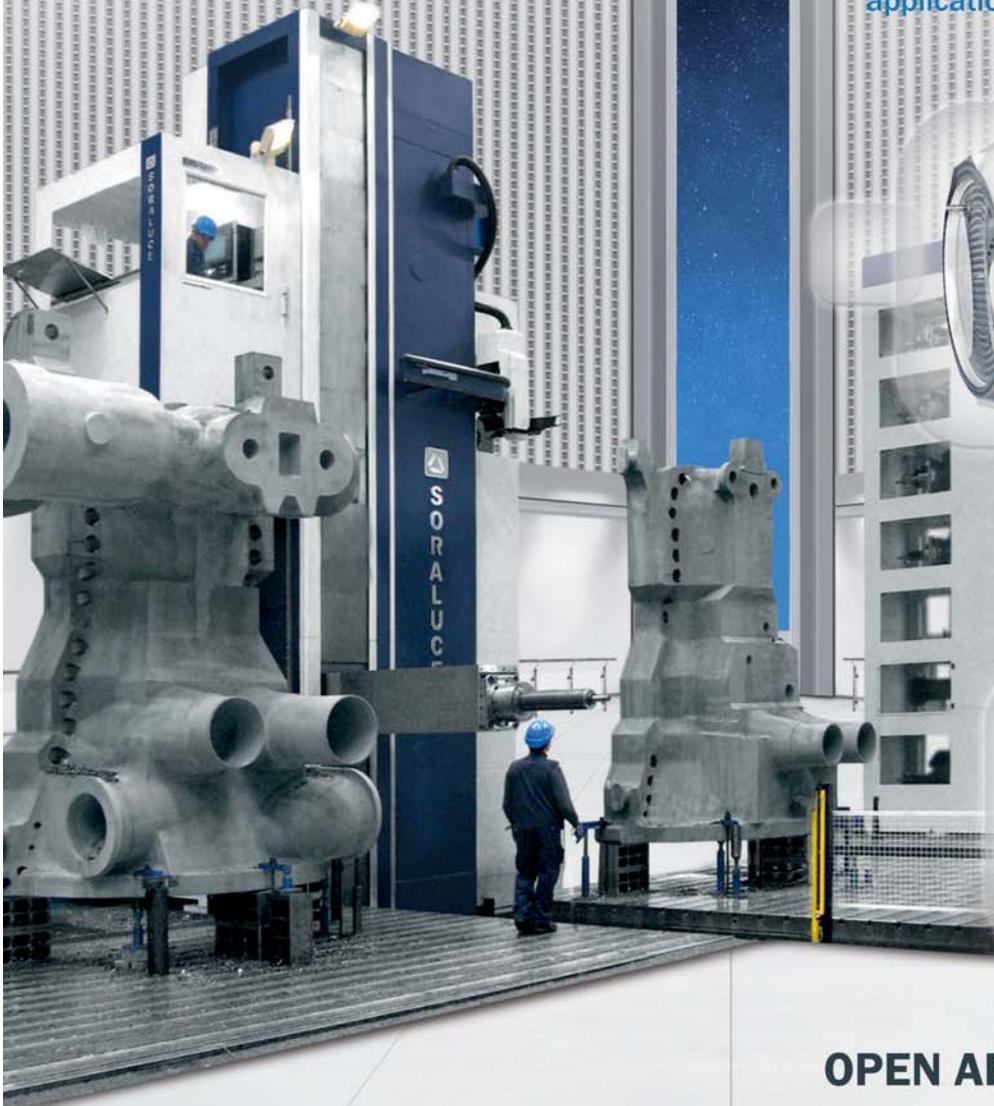
The scientists at the joint lab will use the two BMW i vehicles to conduct research on real-life driver behaviour and to collect in-depth data on vehicle performance. The two cars will also conduct on-road trials of new technologies such as a mobile application that can accurately predict traffic and estimated end-to-end travelling time.



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Ground breaking on expansion at Toyota Technical Center in Michigan



Artist's impression

With the push of a plow by a 2015 Tundra TRD Pro, Toyota officially broke ground recently on the expansion of the Toyota Technical Center (TTC) in Michigan. The ceremony at Toyota's campus in York Township marks the first visible step toward its growing investment and employment in the state while strengthening its North American research and development operations.

Toyota is investing \$126 million in the project, which includes construction of two new buildings in York Township. The landscape will add a new prototype facility for vehicle development and a Supplier Center. The Supplier Center will allow Toyota to forge even stronger alliances with its supplier partners. This new facility will enable day-to-day collaboration between the purchasing group, engineering design team and supplier partners to better satisfy the needs of Toyota customers today and into the future.

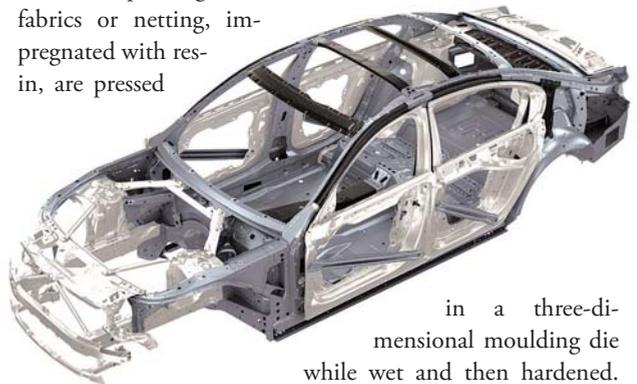
The TTC expansion also enlarges Toyota's powertrain development facility on its Ann Arbor Township campus. This element of the project will better position Toyota to develop engines and automatic transmissions for the North American designed and manufactured vehicles.

All construction will be completed in late 2016.

The new BMW 7 series pioneers the use of 'carbon core' in the body

The new BMW 7 Series is the first vehicle in the BMW Group's core model portfolio to use industrially-manufactured carbon fibre in combination with maximum-strength steel and aluminium in the body structure rather than as a visible shell material. Carbon fibre is used for the roof bows, to reinforce the roof frame, the B and C pillars, the sills, the centre tunnel and for the rear shelf. The company benefits from the knowhow gained from development and production of its BMW i models. For the first time, the BMW Group is using two enhanced, innovative and highly-efficient processes in production of the BMW 7 Series at its Dingolfing facility: wet pressing and hybrid pressing.

In wet pressing, carbon-fibre fabrics or netting, impregnated with resin, are pressed



in a three-dimensional moulding die while wet and then hardened.

The dry pre-shaping previously used in the Resin Transfer Moulding (RTM) process is no longer required. In hybrid pressing, carbon-fibre fabrics impregnated with resin, also still wet, are placed in a moulding die with sheet steel, then pressed and hardened. This bonds the steel and carbon materials to form a hybrid component. Hybrid components are light, but offer maximum rigidity and outstanding crash performance. Both processes enable highly economical large-scale production of up to several thousand carbon components per day, with compact systems engineering and short cycle times.

Dana Holding opens its 16th Global Technology Center near Austin, Texas (US)

Dana Holding Corporation has recently officially inaugurated its 16th global technology center in Cedar Park, Texas. Currently employing 35 engineers and support staff with capacity for more than 80, the 40,000 square-foot facility is devoted to the engineering and production of the company's VariGlide technology, a revolutionary new transmission design that incorporates continuously variable planetary (CVP) technology for use in light-vehicle and many off-highway transmissions. In order to ensure that VariGlide technology meets Dana's high standards for perfor-

mance and durability, the state-of-the-art facility includes engineering stations, a testing lab with a vehicle dynamometer, prototype assembly, a metallurgical and metrology lab, and a machine shop. The Cedar Park Technology Center is one of three new research and development centers that Dana has opened in the past 24 months. In 2013, the company launched a comprehensive technical center in Wuxi, China, and last year it inaugurated another in Pune, India. The company has also announced plans for a mechatronics technical center near the heart of its off-highway operations in northern Italy.

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- Automation interfaces for rapid production
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Coupling rod

Material: Stainless steel type 1.4305
Dimensions: \varnothing 120 x 395 mm
Machining time: 48 minutes
Sector: Machine construction



Drive shaft

Material: C45 steel
Dimensions: \varnothing 500 x 400 mm
Machining time: 55 minutes
Sector: Machine construction



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Main shaft support

Material: Aluminium
Dimensions: 125 × 95 × 62 mm
Machining time: 40 minutes
Sector: Automotive



Bearing

Material: Aluminium
Dimensions: 500 × 400 mm
Machining time: 55 minutes
Sector: Automotive

(1) Optional

(2) In combination with SIEMENS 840D solutionline or HEIDENHAIN TNC 620 (only for the ecoMill 70)



Powered by wind

Gamesa India foresees rapid growth in its business going forward and therefore will increase manpower across all functions, says **Ramesh Kymal**, its Chairman & Managing Director

By Niranjan Mudholkar

Q It has been a steady rise for Gamesa India as the number-one turbine OEM by market share. How do you see the evolution from the beginning in terms of the changing industry scenario in India and Gamesa's contribution to it?

Having served the industry for over two decades I have witnessed some radical changes that have been brought about in the wind industry in India with respect to its acceptance, growth, and the government's attitude towards shifting from the convention to the non-conventional. When we started way back in early 1994, the wind industry was really just picking up at that time and we had these small turbines – 220 to 250 kilo watt turbines. But today as we see our economy progressing and the acute power shortage we need to account for, the emergence of newer innovations with bigger and greater capacity such as the 2.0 MW is no surprise. It has been a big improvement in terms of technology, efficiency as well as output.

Gamesa, in India, over the last five years has come a long way. Since our inception we have steadily strengthened our roots and spread our reach across the length and breadth of the nation. It was in 2010 that we inaugurated our assembly cum manufacturing facilities and since then there has been no looking back. One of our greatest innovations the G97-2.0 MW custom-designed for the low wind speed sites typical of India has been signed on by majority of our key clientele testifying their trust in our technology prowess and ability to adapt. Today, having achieved 85 percent indigenisation in the G97-2.0MW platform, we have emerged as the market leader capturing 28 per cent of the India market. Today, as we see the thrust for renewables, we are in the process of launching our latest innovation, the G114 2.0 MW turbines which we are confident will be a game changer in the wind space.

Q You have been an entrepreneur in your own right. How would you define your business strategy in building the organisation to what it is today?

I would like to think it is the great team I work with who bring



“India's wind potential, as vetted by the Lorenz-Berkeley lab in the US more than 600,000 megawatts and we have just tapped over 23,000 megawatts out of that.”

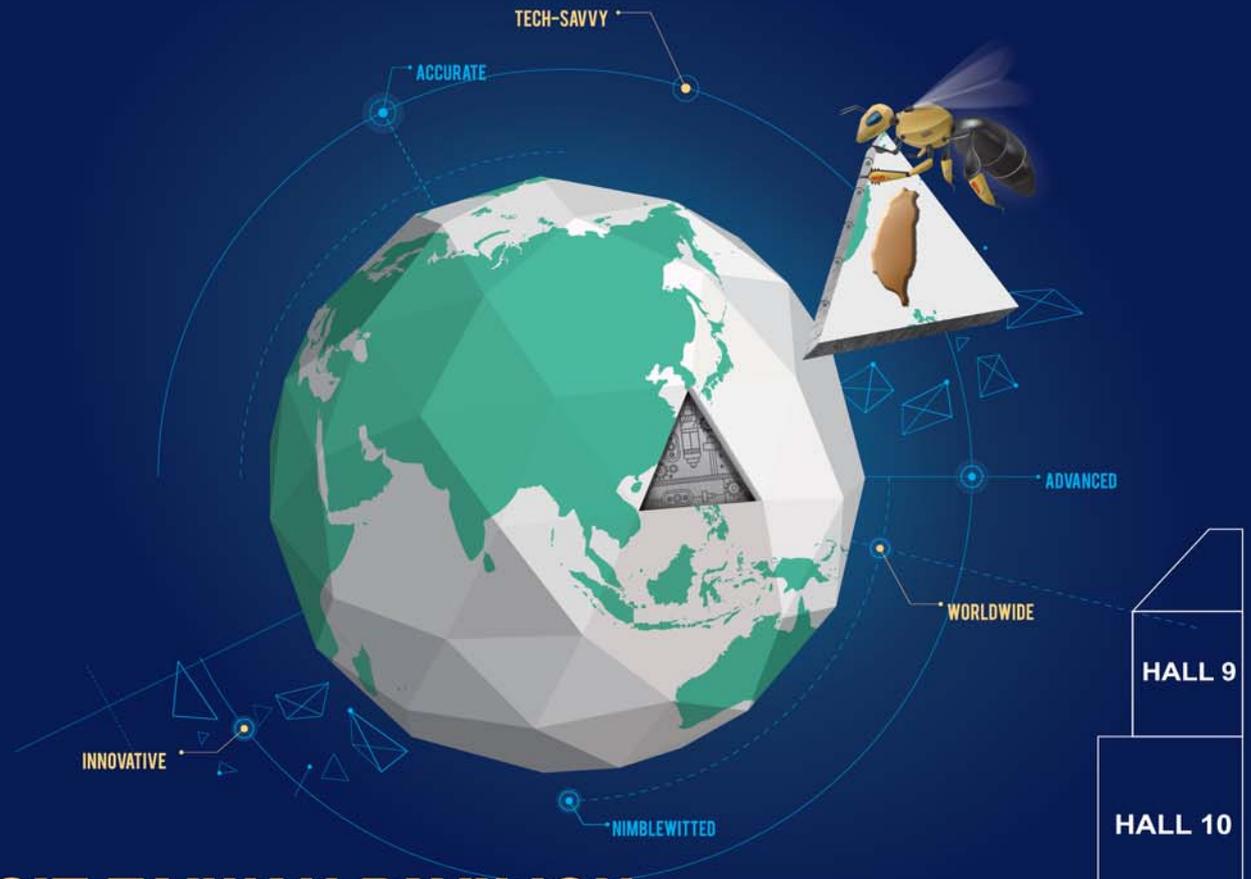
in a lot of credibility and a good product line-up. If you have the right talent working for you everything falls into place. I have always believed in an informal and open work culture with minimal hierarchy as this helps control office politics and encourages a healthy and interactive work environment that is more conducive for growth.

Our ability to go that extra mile for our customers set us apart from our peers. Though by description we are a wind turbine manufacturer, we offer solutions and service across the value chain when the need arises. This is where our capability in offering turn-key solutions comes in. With the support of a strong wind research team, we are able to identify and develop key wind potential sites across the country. Additionally, our focus towards large scale projects targeting the IPPs has helped us mitigating the issues of financial transactions risks. We have an experienced management strength that has been instru-

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mental in carving the wind portfolio of the country from its earlier days and this has been instrumental in making strategic decision in this dynamic sector

Lastly but more significantly, it has been our ability to innovate to suit the market requirement. We are strong technology company that lays adequate emphasis on R&D. Globally, we have pioneered the wind markets in developing nations and in India we have introduced some of our best solutions for low wind sites that has helped our clientele expand their markets. The fact that we were able to reach high levels of indigenisation and also that we have our own manufacturing capability has helped us achieve great control over our cost.

Q In continuation of the above question, what has been the biggest challenge for you so far and how have you overcome the same?

I believe inconsistency in long term policy to be the biggest challenge. Wind projects are long gestation projects that require time and patience. The only thing missing in India are stable government policies and commitment to wind power. Despite the fact that wind power does not usurp land, is the least invasive of any form of power, requires neither water nor fuel, is non-polluting, can be installed in stages and provides jobs in rural areas, the industry is yet to find the wings that will let it take off to the heights it should. At every level, we keep devising new rules and laws without implementing the existing ones and often the new rules work at cross purposes and add complexity to doing business.

This apart, we faced some heat in terms of building a strong supplier base in India initially but now things have changed favourably a lot of our suppliers worldwide have set up shop in India. That apart, over the years, we have created

“India has a Current Account & Trade Deficit and we cannot continue to import when we have the technology and resources here in India. The ‘Make in India’ initiative will also establish India as an export hub in the coming future.”

our own O&M services network that enables us to address any customer issues through timely interventions

Q In 2009, about 35 percent of Gamesa’s overall global sales came from Spain while it was just starting off in India. Today, there has been a complete reversal with the sales in Spain standing at nil and the India sales crossing more than 35 percent. How do you analyse this paradigm shift? What have been the key reasons for this?

If you look at Gamesa globally, you will notice that we have led the growth in developing nations such as Mexico, Brazil and India. Our presence is the strongest in the emerging economies as the opportunities to scale are

abundant.

When it comes to harnessing power from natural resources, a lot is dependent on the geographical landscape of the regional. India is a tropical country with abundance of sun and wind making it one of the most conducive environments to harness renewable power. India’s wind potential, as vetted by the Lorenz-Berkeley lab in the US more than 600,000 megawatts and we have just tapped over 23,000 megawatts out of that. So this capacity coupled with the increasing number of IPPs that have emerged today and the desperate need for addressing our need for energy security, India has emerged as a favourable nation for wind.

The next big advantage India has is that our manufacturing is extremely strong and we have a certification system that has been put in place by the government, which ensures that we have the highest quality turbines which are sold in India. What we make in India are exportable. Plus we have a great advantage of technical skills which bring down the cost of the manufacturing and that gives us a distinct edge and we can be an export powerhouse if the opportunity arises.



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Laser welding a ring gear to the differential housing.

Welding / Jointing process time:

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GEAR SHAFT

Laser welding the synchronizer wheel to the gear shaft.

Welding / Jointing process time:

16 SEC.



PROPELLER SHAFT

Assembling the propeller shaft from three single components.

Welding / Jointing process time:

14 SEC.





Q Tell us about your overall manufacturing capabilities and capacities in India. Where do you stand in terms of capacity utilisation? Are you looking at any expansion in near future?

Since commencing our operations in India, Gamesa has invested over EUR180 million towards expanding its capabilities, skill and capacities. We started operations from a modest facility in Red Hills, near Chennai to make the G58-850 kW. Soon we realised that this was not sufficient to meet local demands. So the next step was to invest in three units across India in 2012-First the construction of the state of the art Nacelles Assembly Factory in Mamandur, Chennai, then the Blade Manufacturing and the a joint venture tower fabrication units near Vadodara, Gujarat.

The Current facility Mamandur has a capacity of 1500 MW and can go up to 1800 MW. We foresee rapid growth in our business going forward especially with our decision to assemble the G114-2.0 MW turbines out of this unit and therefore will witness an increase in manpower across all functions.

Q How satisfied are you with the current government's approach to your sector? What are your expectations?

The current Government is keen on increasing investments in the sector and the MNRE is already taking about meeting an ambitious target of harnessing 266 GW of renewable power by 2022. We are a signatory to the Green Energy commitment and are confident of achieving the committed target set over the next seven years

In 2013, the Generation Based Incentive was brought back after a year of uncertainty and in 2014 the Accelerated Depreciation was revived. We believe this will fuel growth in

Currently our India capacity can cater to domestic demands. However, given our strong manufacturing facility, turbine certification standards and technical prowess, we will look at exports in the future. In the past we have exported turbines to Sri Lanka.

both, IPP and the Traditional/Industrial Segment. Additionally, the Government has also taken steps to accelerate the Green Corridor project which is a welcome move. However, Power is mainly a state subject and state governments need to take the initiative to simplifying permitting rules and ensuring long term policy stability.

So while commitments and investment are increasing, the Government still needs to address the key issues of long term policy certainty, developing infrastructure such as power lines & roads, and reducing the interest rates. Wind power by itself is competitive compared to imported coal power. All that the industry needs is a stable supportive business environment.

Q How are things on the exports front?

Currently our India capacity can cater to domestic demands. However, given our strong manufacturing facility, turbine certification standards and technical prowess, we will look at exports in the future. In the past we have exported turbines to Sri Lanka.

Q How do you view the 'Make in India' initiative in the context of your industry?

It is the need of the hour! India has a Current Account & Trade Deficit and we cannot continue to import when we have the technology and resources here in India. This initiative will also establish India as an export hub in the coming future.

Gamesa as a company is committed to maximising the local content and local manufacturing. We hope with growing demand the supply chain will be much stronger and it will enable us to not just source more from India but also have control on costs. 

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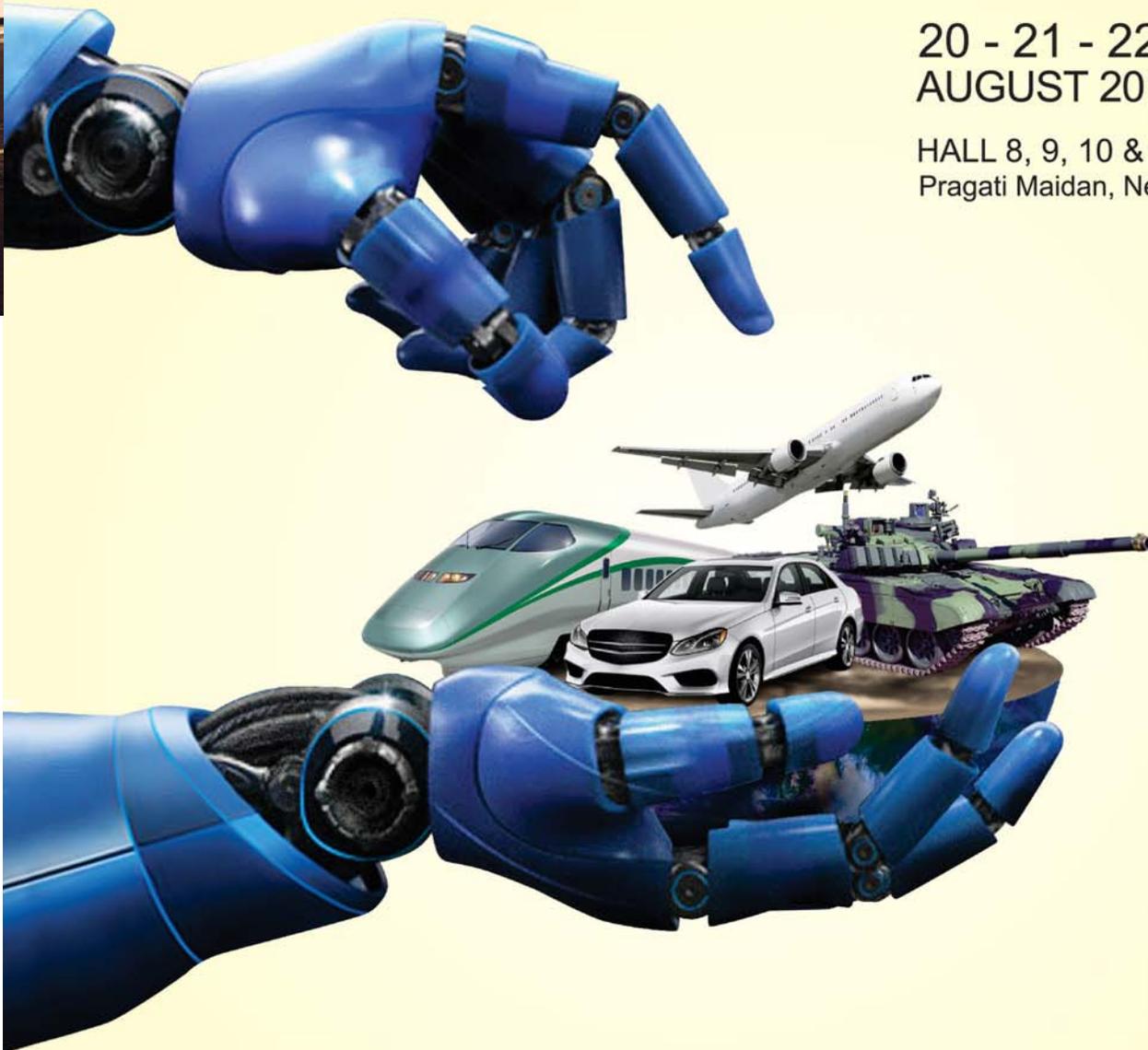


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Mahindra and Airbus announce strategic 'Make in India' relationship

Mahindra Group subsidiary, Mahindra Aerospace has been awarded a large aero-components production contract by Airbus Group company, Premium AEROTEC of Germany. The multi-year contract envisages the manufacture and supply by Mahindra of a variety of metallic components that will be fitted into several Airbus aircraft programs as part of assemblies produced by Premium AEROTEC.

Mahindra Aerospace's deliverables under this contract will be in excess of a million parts per annum. The parts will be produced at the new Mahindra Aerostructures facility located at Narsapura, near Bengaluru, India. Deliveries to Premium AEROTEC's facilities in Germany are scheduled to commence this year. Announcing the contract award during the 2015 Paris Air Show at Le Bourget, senior representatives of the Airbus and Mahindra groups mentioned that this contract is aligned with the Indian Government's 'Make in India' initiative and validates the two Groups' commitment to accelerate India's participation in the global aerospace industry while simultaneously creating high-growth opportunities within India's burgeoning aerospace and defense eco-system.



Speaking about this milestone in the context of the Mahindra Group's strategic aspirations for Aerospace and Defence, Anand Mahindra, Chairman & Managing Director, Mahindra & Mahindra Ltd. stated, "This is our vision to take 'Make in India' from policy to reality: Build bridges across cultures, countries and businesses – enable each to focus on its core – and empower each other to Rise."

Aequs expands aerospace manufacturing capabilities into the US

Aequs Aerospace, an emerging global supplier in aerospace manufacturing, has acquired the operations of Paris, Texas-based T&K Machine. T&K Machine has over 45 years of experience in successfully delivering quality parts on time to the global aerospace companies like Boeing, Spirit AeroSystems, Triumph's Vought aerostructures, and UTC Aerospace Systems to name a few.



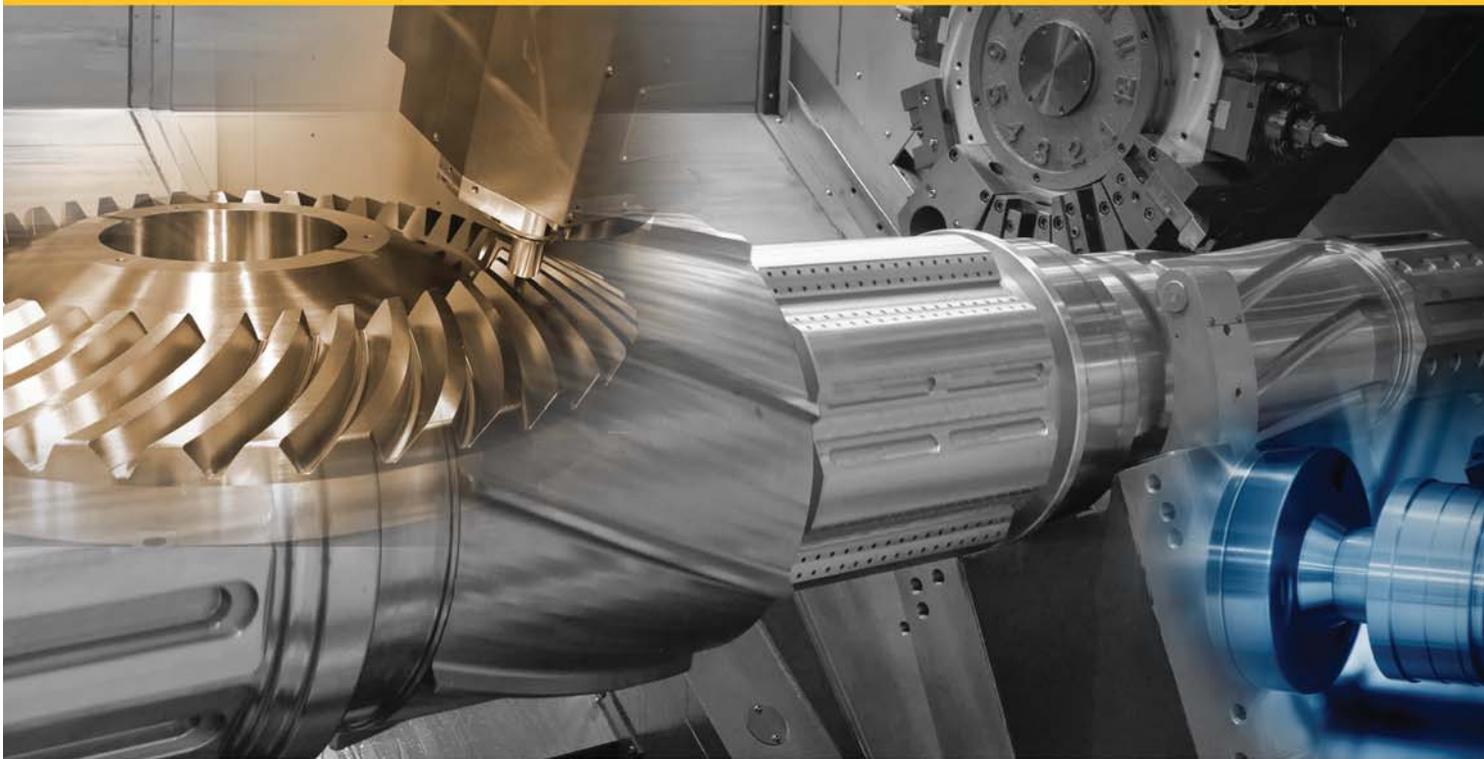
This acquisition marks the first expansion of Aequs Aerospace's manufacturing presence into the United States. "Aequs is committed to being an agile and reliable global supplier for our customers and, in line with this, we have become the first Indian aerospace manufacturer to expand into North America," said Aravind Melligeri, Chairman and CEO of Aequs. In addition to 65 skilled machinists & technicians, the 27,000 sq. ft. facility houses 28 CNC machining centers complete with the engineering, quality, and assembly capabilities necessary to serve the global aerospace market.

"As part of our strategy for expanding aerospace manufacturing capabilities and geographical presence, we're excited to welcome the T&K facility into our global manufacturing ecosystem," said Walt Sirmans, President of Aequs Aerospace. He further added that "Our expanded value chain capabilities and local/global reach will offer greater flexibility, improved value creation, and convenient customer access to meet the demanding needs of the global aerospace supply chain." Post acquisition, T&K Machine, Inc has been renamed as Aequs Aero Machine, Inc.

HAL delivers Orbiter Craft Module Structure of Chandrayaan-2

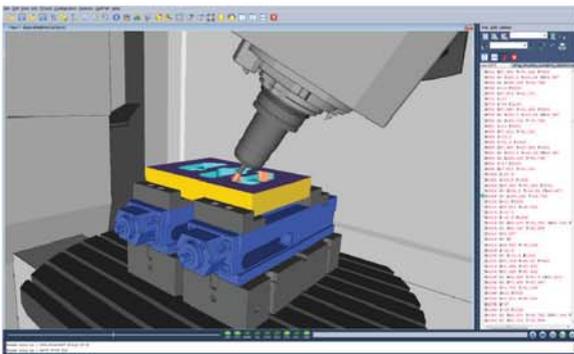
HAL has delivered 'Orbiter Craft Module Structure' of Chandrayaan-2 to ISRO Satellite Centre (ISAC) recently. Chandrayaan-2 is a two module configuration spacecraft comprising of the 'Orbiter Craft' and the 'Lander Craft'. "The Orbiter Craft Module structure is a 3-tonne category bus structure made out of a central composite cylinder, shear webs and deck panels", says T. Suvarna Raju, CMD, HAL. The Chandrayaan-2 mission is aimed at placing an Orbiter around the moon and sending a Lander and Rover to the surface of the moon. It will be launched by a Geo-Stationary Satellite Launch Vehicle (GSLV-MKII).

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Magellan Aerospace to partner with Mahindra Aerospace in India

Magellan Aerospace has recently announced the signing of a Memorandum of Understanding (MoU) with Mahindra Aerospace to develop a partnership agreement. This agreement will provide the framework for the two companies to offer their mutual customers major structural assemblies, machined components and fabrications for the global market. This agreement supports our customer's strategy to develop supply from India.

The Magellan / Mahindra MOU responds to the needs of our customers, who were seeking a solution to support larger work packages in India. Under the terms of the agreement, Magellan and Mahindra will develop a framework to partner on jointly responding to and developing new aerostructures business opportunities. Magellan will manufacture and supply large, complex machined components from its European and North American facilities, supported by detailed machined parts from Magellan's existing Indian joint ventures, API and Triveni. Mahindra will lead in providing sheet metal and the fabricated detailed parts.



Haydn Martin, Magellan's Vice President Business Development, Arvind Mehra, Executive Director and CEO, Mahindra Aerospace and Mr Stephen Roebuck, Mahindra's Director, Business Development – Aerostructures Business, Mahindra Aerospace post signing an Memorandum of Understanding (MOU) to offer their mutual customers major structural assemblies, machined components and fabrications for the global market.

HAL spearheads AASSC mandated to bridge skill gaps in aerospace sector

The newly constituted Aerospace and Aviation Sector Skill Council (AASSC) has drawn a plan to certify around 5,20,000 trainees and groom 6,000 trainers over a period of 10 years in the aerospace sector. "We have signed the term sheet with NSDC covering project objectives, segments, target training trades and broad execution plan," said T. Suvarna Raju, CMD of HAL who is also the Chairman of AASSC, on the eve of AASSC Board Meeting held at



The Board Meeting of the newly constituted Aerospace and Aviation Sector Skill Council (AASSC) held at HAL Corporate Office, Bengaluru on June 30, 2015. Courtesy: HAL

HAL Corporate Office. According to Raju about 30 courses will be introduced in the first three years to ensure greater relevance of skills in the aerospace sector battling for talent in various disciplines. "We also have a challenge to set up new institutes and centres of excellence. As an immediate step, we have now decided to appoint a CEO of AASSC with clear role to him," he said.

HAL along with Bangalore Chamber of Industry and Commerce (BCIC) and Society of Indian Aerospace Technologies and Industries (SIATI) was mandated by National Skill Development Corporation (NSDC) to set up Sector Skill Council in the Aerospace and Aviation sector for fulfilling the skill requirements of the sector. The AASSC was registered as a Section 8 Company (Non-profit organisation) under the Companies Act, 2013 on September 12, 2014. HAL holds 50 percent stake in the Council and remaining 50 percent is held equally by BCIC and SIATI. The Council has its registered office in Bengaluru, within HAL premises.

GE Aviation and Mahindra Aerospace to collaborate for aerostructures

Following a Memorandum of Understanding (MoU) established in 2014 between GE Aviation's Hamble facility and India's Mahindra Aerospace, the two companies have further developed their relationship by signing an Agreement that will initiate manufacture, Following Airbus transfer of work approval, of an Airbus Single Aisle package of work. The initial MOU enabled both companies to work together on potential opportunities in manufacture of aerostructures. This new Agreement will see them collaborate to produce small, metallic complex structural sheet details and assemblies within Mahindra's new Aerospace facility in Bangalore, India.

Stefanie Darlington, Executive Sourcing Leader for GE Aviation's Composites Value Stream said "The establishment of this Agreement marks a key step in the development of a long term relationship to support existing and potential new opportunities by adding Mahindra to our international supply chain with first hardware due in 2015."

"Manufacture of components, assemblies and aerostructures is an integral part of our vision. While this agreement makes us part of GE's supply chain, we are also working to collaboratively leverage our respective capabilities on assembly work packages for A&D majors," said Arvind Mehra, Executive Director and CEO, Mahindra Aerospace.

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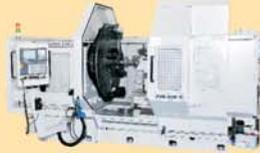
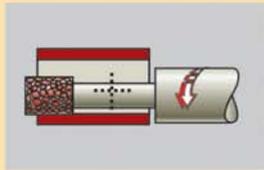


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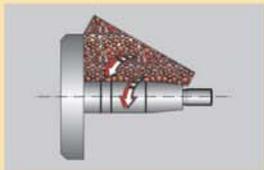


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CNC Cylindrical Grinding



AWH-1500 CNC
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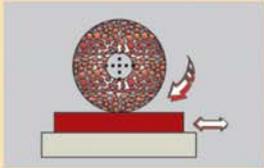


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SGR-60
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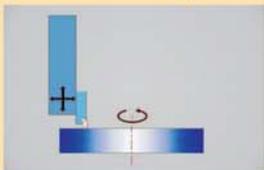


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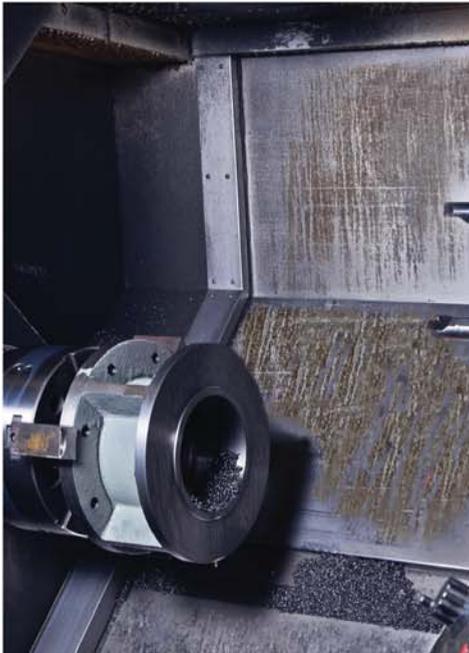
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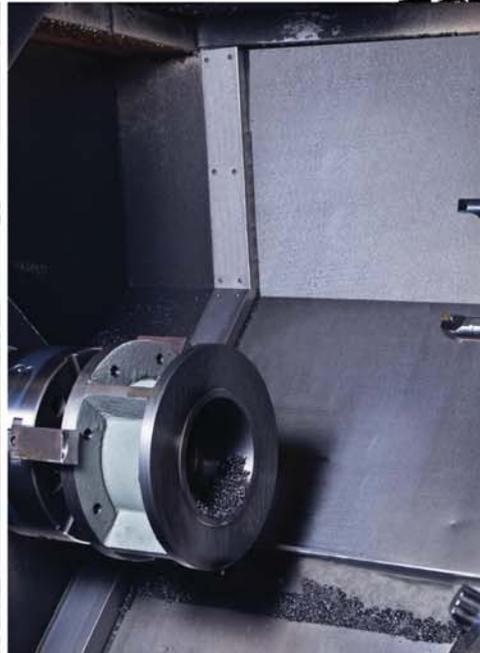
Dirty machines can affect your shop floor productivity and your image

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‘Power’ful Dreams

Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. aims to secure a 20 percent share of the Indian market by 2018, and also reinforce itself as a core T&D production base for other major markets, says **Dr. Katsutoshi Toda**, its Chairman & Managing Director

By **Niranjan Mudholkar**

When Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. (TTDI) started its journey in 2013 by acquiring Vijai Electricals Ltd., it was embarking on an ambitious journey in the Indian Transmission & Distribution (T&D) segment specifically as well as in the overall power sector in the country. While Vijai Electricals clocked sales of US\$ 250-million in FY 2013, TTDI targets sales of approximately US\$ 500-million (60 billion yen) in FY

“We are also constructing a new factory to manufacture HV Insulators and Surge arrestors up to 800kV. The construction will be completed by December 2015.”

2017. Well, it’s been only about two years since then and the company has already invested US\$ 230 million (US\$ 200 million for the acquisition and US\$ 30 million in November 2014 for a new production line). And that’s just the beginning.

“A new line for large power transformers will come on line soon in 2015, at the same time as the full scale launch of a new line for switchgears up to 800kV from our Indian plant. SIS/GIS

will mitigate the current land availability issue apart from the opportunity to augment the existing substations, which is one of the biggest challenges in the T&D Segment,” says Dr. Katsutoshi Toda, Chairman & Managing Director, TTDI.

By utilising these operations as part of an integrated global supply network, plus with the worldwide sales network of Landis+Gyr, a Toshiba Group company, Toshiba aims to achieve global sales of 700-billion yen (approximately US\$ 7,000-million) in the T&D and smart grid business in FY2015. “Last year, we also received an order from Landis+Gyr Oy, our Group company for delivery of 1,500 transformers over three years, produced at TTDI factory at

TTDI - Key highlights

- Currently TTDI has the highest market share in distribution transformers. TTDI has overall market share of 12-13 percent market share in transformers in India and after the GIS offerings in the market up to 800kV, Toda is confident to reach 20 percent of the market share in the T&D Segment.
- The aim is to reinforce Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. as a core T&D production base for other major markets, including Europe, ASEAN, and Africa.
- Toshiba plans to invest a cumulative 10-billion yen (approximately US\$100-million) in its T&D business in India, in the period to FY2016.





our Hyderabad plant in India,” adds Toda.

Dual objectives

The US\$30-million investment in November 2014 is aimed at boosting capacity with new production lines at the Hyderabad facility. “India is a high growth market that Toshiba has positioned as a strategic base for its power-related businesses,” says Toda. The purpose is dual; strengthen position in the domestic Industry while widening the horizon in the international markets. “We aim to secure a 20 percent share of the Indian market by 2018, and also reinforce Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. as a core T&D production base for other major markets, including Europe, ASEAN, and Africa. To do so, we plan to invest a cumulative 10-billion yen (approximately US\$100-million) in our T&D business in India, in the period to FY2016, including the November 2014 investment,” Toda informs.

Toshiba has a long history for T&D business in India. With the acquired local manufacturing capability, it now has additional strength in T&D business in India to expand the business volumes. “We believe that Toshiba (TTDI) can increase the market share by manufacturing and supplying customer focused world class products and services as mentioned above with Japanese quality from the local factory. The knowledge base of Toshiba and the manufacturing capabilities of India will hugely benefit Toshiba in a big way,” Toda states.

The strategy

TTDI’s strategy includes expanding its product portfolio to realise its ambitious plans. “We will enter other growing markets in India, including power electronics systems, such as high voltage direct current (HVDC) power transmission and static VAR compensators for high voltage networks (SVC), and railway power supply systems. We will also be supplying cost effective, safer Gas Insulated Transformers up to 400kV which will reduce the land area required and can be used even underground. With Landis+Gyr in Toshiba’s fold we expect to contribute to the SMART GRID and SMART CITY Projects which will further add to the improvement in our market share in the T&D segment,” says Toda, explaining the game plan.

Currently, TTDI is the biggest player in the distribution transformers segment in India with an overall market share of 12-13 percent market share. “After the GIS offerings in the market up to 800kV, Toda is confident to reach 20 percent of the market share in the T&D segment. “We have also established an EPC division with

which we shall be able to cater to Turnkey Substation business and expect a sizeable share in the AIS and GIS Substation business,” Toda adds.

Toda believes that the contract to supply 1,500 transformers to Landis+Gyr Oy, a Finnish Toshiba Group company will give a big boost to its plans in becoming a core T&D production base for other major markets, including Europe, ASEAN, and Africa. “This is the first significant contract for Toshiba’s

“A new line for large power transformers will come on line soon in 2015, at the same time as the full scale launch of a new line for switchgears up to 800kV from our Indian plant.”

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transmission and distribution business in Finland. We will manufacture 50kVa and 100kVA distribution transformers for Landis+Gyr Oy over the next three years, with options for further deliveries extending into 2021. With Toshiba's decades of experience in the high-end technology, we have plans to introduce certain innovative products to cater to the T&D segment from our existing plant at Hyderabad," he says.

Relevance of 'Make in India'

Speaking in the context of the 'Make in India' campaign, Toda says that India has always had the potential and the means to become one of the global manufacturing giants for the world. "The 'Make in India' campaign initiated by the Honourable Prime Minister Narendra Modi is very welcoming for both existing companies who have set up manufacturing base in India and the potential investors as it reinforces the government's commitment to develop industrial corridors and modern infrastructure necessary for proficient operations," he says. Toda also believes that the campaign advocates the ease of doing



Focus on energy efficient products

TTDI was selected for the National Energy Conservation Award – 2014 'First Prize' in the Manufacturers of BEE Star Labelled Appliances (Distributions Transformers) Sector. "As you are aware, 'power saved is power generated', and we are constantly undertaking our role in reducing the losses by supplying energy efficient transformers which has culminated in TTDI getting the award," says Toda.

business in India which puts the government more in light of a partner than a regulator, to create conducive business environment.

For Toshiba, India is important not only as a market, but also as a strategic export and development base with highly talented people. "Even before the 'Make in India' campaign was chronicled, Toshiba had announced a comprehensive strategy for expanding its social infrastructure business in Asia and

"The 'Make in India' campaign is very welcoming as it reinforces the government's commitment to develop industrial corridors and modern infrastructure necessary for proficient operations."

around the world that positions India as a strategic business hub for its energy transmission and distribution equipment business," Toda says.

He acknowledges that India continues to record high economic growth, and long-term capital investment for infrastructure is expected in key areas such as electricity and transportation. "In T&D, the Indian government is promoting measures to increase the number of 765kV substations, toward increasing the country's transmission capacity five times by 2017. This policy is driving demand for large power transformers and high voltage switchgears," he says, giving reasons for his optimism.

Leveraging on the strengths

One of the key strengths for TTDI is having an end-to-end manufacturing infrastructure. Leveraging on this strength will

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be pivotal to TTDI's growth plans. "Currently, our existing production line has the capability to manufacture small and medium capacity transformers and low and medium-voltage switchgears. A new line for large power transformers will come on line in spring 2015, at the same time as the full scale launch of a new line for switchgears which will support production of 765kV transformers with a capacity of 500MVA, while the new switchgear line will produce high voltage products," Toda informs. TDDI upgradation of its existing switchgear factory to cater to EHV range of switchgears is also nearing its completion. "By August 2015 we will have the state-of-the-art global manufacturing centre ready to make new range of MV & EHV products. We are also constructing a new factory to manufacture HV Insulators and Surge arrestors up to 800kV. The construction will be completed by December 2015. Since the manufacturing is localised with wide vendor base, the product will be offered at a very competitive prices," Toda adds confidently.

A new approach to technology

Globally, Toshiba has shifted its focus from 'Products' to 'Products with Services' focussing on the impact on the lives of people. And it has an interesting name for this approach. Toda explains: "Toshiba India shares its vision to create an ideal Human Smart Community, where people live in safety, security and comfort. Toshiba's vision is backed by a new approach to technology called 'lifenology,'" Toda says. Lifenology includes technology and solutions that make peoples' lives more peace-

ful, safer and more comfortable through infrastructure development and provision of innovative digital products. "Our vision and objectives are to bring a superior life to our Indian consumers through our technological innovations; technologies that are in harmony with human lives. And that's why, India has been one of the focus regions for Toshiba in the last few years with large-scale investments and policy making," he says.

Toda claims that TTDI offers products and services which are energy efficient, reliable and which also ensure that power at different voltages reach the consumers safely. "The products and services offered are with global standards at very competitive prices as they are manufactured locally as per Toshiba's global standards," says Toda.

Blending cultures

On a personal note, Toda enjoys his experience of living and working in India, a diversified country with different regional and cultural values. He is happy about the fact that TTDI draws its people from various regions of the country and each employee contributes to the success of the organisation. His formula for success is simple; taking the best of the Indian culture and the Japanese culture to create a winning combination. "I am enjoying blending the Japanese and Indian cultures in my team which creates 'Passion', 'Teamwork' and 'Enjoyment' in the work ultimately resulting in achieving personal and professional satisfaction," he says, as he signs off. 

"TTDI will enter other growing markets in India, including power electronics systems, such as high voltage direct current (HVDC) power transmission and static VAR compensators for high voltage networks (SVC), and railway power supply systems."



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'Online' of Defence

Compared to the all-industry average, manufacturing reported more incidents involving denial of service attacks and cyber-espionage. This is how you can defend.

By Ashish Thapar

The 2015 Data Breach Investigations Report (DBIR) is once again based on nine incident classification patterns that account for 96 percent of all incidents in all sectors. Three of these patterns — cyber-espionage, DoS attacks, and web app attacks — accounted for more than two-thirds of security incidents in manufacturing in the 2014 DBIR. This year, DoS attacks and cyber-espionage retain the top spots, but crimeware has replaced web app attacks as the third most prevalent incident pattern. We explore these three patterns and how you can strengthen your organisation's defences against them.

Denial of service: DoS attacks accounted for just over one-third of security incidents in manufacturing. By contrast, across all industries, DoS attacks make up just 4 percent of incidents.

DoS attacks are rarely used to steal data. Instead they are intended to compromise the availability of networks and systems, by flooding internet-addressable systems with packets of data. These packets of data are seemingly innocuous by themselves, but together they overwhelm the network with the sheer volume of traffic, and take business systems offline. In other sectors, such as retail, this might affect ecommerce; in manufacturing this may include internal operational applications that are dependent on the internet, such as CRM, ERP, and supply chain management systems.

Attacks typically last several days and during that time they can disrupt your productivity, damage customer and partner relationships, and impact your bottom line.

What can you do?

Develop mitigation plans: Ensure your policies include how to deal with large attacks and brief key operations staff on the best course of action should an incident occur. Have a solid, comprehensive strategy that details what your organisation should do in the event that your primary anti-DoS service fails.

Make sure it works: Don't wait for a breach to occur to discover that there are gaps or failures in your plan. Test it and update it regularly as your infrastructure and processes change and as new DoS techniques emerge.

Separate key systems: Don't allow less important systems to act as a gateway to more important ones. Segregate critical systems on different network circuits.

Cyber-espionage: Cyber-espionage accounted for the second biggest share of security incidents in the manufacturing sector — with 31 percent falling into this attack pattern. However, cyber-espionage is the most common classification when it comes to incidents that caused confirmed data compromise.

Manufacturers hold intellectual property that is attractive to attackers. Competitors might want their proprietary product information, but state-affiliated attackers could target manufacturers operating in areas such as aerospace or defence in search of sensitive trade or national secrets.

This data is rarely held on the internet-facing edge of the company network; rather it is kept on user devices and servers deep within the organisation. Compromised desktops provide a foothold in the network that attackers can use to move deep-



er into the organisation and find the information they need.

What can you do?

Patch promptly: Attackers often seek to exploit software vulnerabilities, so you should maintain a robust patch- management process. Apply patches as they become available.

Use anti-virus and malware detection tools: Keeping your anti-virus software up to date won't protect you from zero-day attacks, but many organisations continue to fall prey to well-known dangers.

Monitor email links and attachments: Phishing is one of the most common ways of compromising an organisation's network, so implement email scanning to identify suspicious links and attachments.

Enforce two-factor authentication: User credentials account for 30 percent of the data stolen during breaches. By implementing two-factor authentication, you can limit the damage that attackers can cause with this information.

Crimeware: Almost a fifth of all security incidents (18 percent) in the manufacturing sector were crimeware. Crimeware incidents involve the use of malicious software (malware) to compromise a system or network to access confidential or sensitive data, including user credentials and customer records.

Unlike cyber-espionage and DoS attacks, crimeware attacks are largely opportunistic. They are often carried out by organised criminal enterprises, not by state-affiliated actors.

These attacks include many different techniques, including keylogging malware, Trojans such as Zeus/Citadel, and ransomware — software that takes control of a device and only releases it back to the user once they pay the hacker a ransom. To get crimeware on to target devices, attackers use methods such as phishing or malicious web downloads.



Cyber-espionage, DoS attacks, and web app attacks — accounted for more than two-thirds of security incidents in manufacturing in the 2014 Data Breach Investigations Report (DBIR).

What can you do?

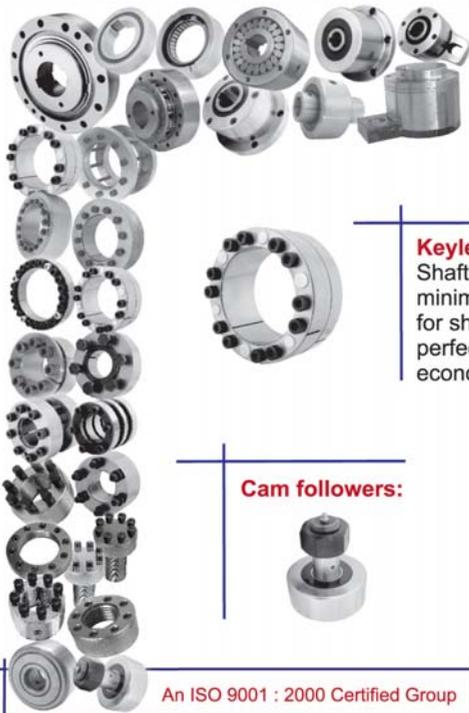
Expect malware: Be prepared by monitoring executable files that have been introduced into your IT environment and use anti-virus software to handle items identified as malicious.

Monitor traffic: Use network monitoring to identify command and control traffic from malware to known mal-

ware servers.

Educate staff: Train staff to ensure that they don't click on links or open attachments in emails from unknown senders, or enter their credentials on untrusted websites. 

The author is Executive Consulting Partner & Head - Professional Services, Verizon Enterprise Solutions, Asia.



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Big focus on regional manufacturing

The Indian Machine Tool Manufacturers' Association (IMTMA) has announced its first ever Delhi Machine Tool Expo 2015 at Pragati Maidan, New Delhi, from August 20 to 23, 2015.

With prime focus on manufacturing solutions of the regional industries, the Delhi Machine Tool Expo will be a one-stop destination to display technologies and solutions needed to upgrade and improve productivity and quality requirements and demonstrate solutions to manufacturing industries especially SMEs.

The Delhi Machine tool expo is a business-to-business exhibition that will encourage manufacturing industries and SMEs to reach for higher quality, productivity and achieve competitiveness by adopting modern machines and technology. Expressing his expectations, President, IMTMA and MD, TaeguTec India, L. Krishnan said, "The exhibitions hold the key to opening avenues for penetrating the regional markets, exchange ideas, and share new technologies for enhancing productivity." Elaborating on the forthcoming show, MD, Jyoti CNC Automation, Parakram G. Jadeja added, "Exhibitions are one of the most vital tools to enhance the brand visibility as well as business. We foresee a huge flow of visitors from North India to witness this state of art event crafted by IMTMA. Hopefully this event will complement the post monsoon demand of machine tools across the industrial spectrum and will give a tiny but important contribution as a catalyst to our mission 'Make in India.'"

Regarding the response received for the expo, Director General, IMTMA, V. Anbu said, "Companies across several regions and verticals have already booked space for showcasing their products at the event. With more than 150 exhibitors not only from India but also from overseas, the show will have the presence of some of the prominent global machine tool manufacturers which is an added advantage for the visitors to see the best manufacturing technologies."

The Expo covers an area around 10,000 sq m in four halls (Hall No. 8, 9, 10 and 11) in Pragati Maidan, New Delhi with participation from 5 countries and group participations from China, Taiwan and the US. IMTMA is looking forward for a large footfall of visitors for the show and expects it to translate



“The exhibitions hold the key to opening avenues for penetrating the regional markets, exchange ideas, and share new technologies for enhancing productivity.”

L. Krishnan, President, IMTMA & MD, TaeguTec India



“We foresee a huge flow of visitors from North India to witness this state of art event crafted by IMTMA. Hopefully this event will complement the post monsoon demand of machine tools across the industrial spectrum and will give a tiny but important contribution as a catalyst to our mission 'Make in India.'”

Parakram G. Jadeja, MD, Jyoti CNC Automation



“With more than 150 exhibitors not only from India but also from overseas, the show will have the presence of some of the prominent global machine tool manufacturers which is an added advantage for the visitors to see the best manufacturing technologies.”

V. Anbu, Director General, IMTMA

into trade enquiries and business generation. The Delhi Machine Tool Expo 2015 will have trade delegations from various sectors. It will be the best place to judge the requirements of the regional market in sectors such as automobiles, auto components, defence, railways, telecom and many others. The exhibition holds tremendous significance for all players associated with the manufacturing industry. The Delhi Machine Tool Expo is a starting point. 





Gateway to innovation

The Machinist caught up with Samir Gandhi, Director, Gandhi Automation Pvt. Ltd. at Intec 2015.

Q How is your experience at Intec?

Intec, Coimbatore is a great platform for presentation of innovative varieties of high speed doors, rolling shutter, dock leveler, dock shelter, motorized gates and other products. We have been participating in Intec for many years now. This event is a platform where we get to meet decision makers from various sector like manufacturing, pharmaceutical, consultant etc. We already have clients in Coimbatore. This is a platform for presenting innovative designs and world class products; this event is one not to be missed.

Q Tell us about your innovative products?

Dock levers and dock shelter can be used in warehouses. These help in safe loading and unloading of goods also in reducing time and you don't need a highly skilled operator for operations of dock leveler. Dock shelter can be used to prevent damage to goods.

Q To whom do you credit your success?

The synergy between the different processes allows us to offer our customers high quality products. All thanks to our highly trained and experienced technicians. And with the use of special materials, we are able to satisfy any customer requirement. Credit also goes to our well trained customer care team. We look forward to providing most reliable solutions for any environment.

Q Your vision?

We are number one in the domestic market. We look forward positively towards Intec and increasing our presence in domestic market. Our constant effort is on providing right product to the customers and world class after sales service. 

By Shivani Modi



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A Competitive Edge!

CGTech's VERICUT software is widely used in aerospace and defence to improve the efficiency of all types of CNC Machine Tools, says **Bryan Jacobs**, Marketing Communications Manager, CGTech.

Q We understand that CGTech's VERICUT is widely used in aerospace and defence to improve the efficiency of all types of CNC Machine Tools. Tell us more about this.

VERICUT software is used to simulate CNC machining in order to detect errors, potential collisions, or areas of inefficiency. It enables NC programmers to correct errors before the program is ever loaded on the CNC machine, thereby eliminating manual prove-outs. It also optimises NC program cutting speeds for more efficient machining. When you invest in VERICUT, you're not just buying a software program; you're teaming up with a manufacturing partner with the largest group of CNC machining experts in the world. We are continually exposed to new manufacturing methods and technologies worldwide, gaining expertise that can give you a competitive edge. Some customers include: HAL, L&T

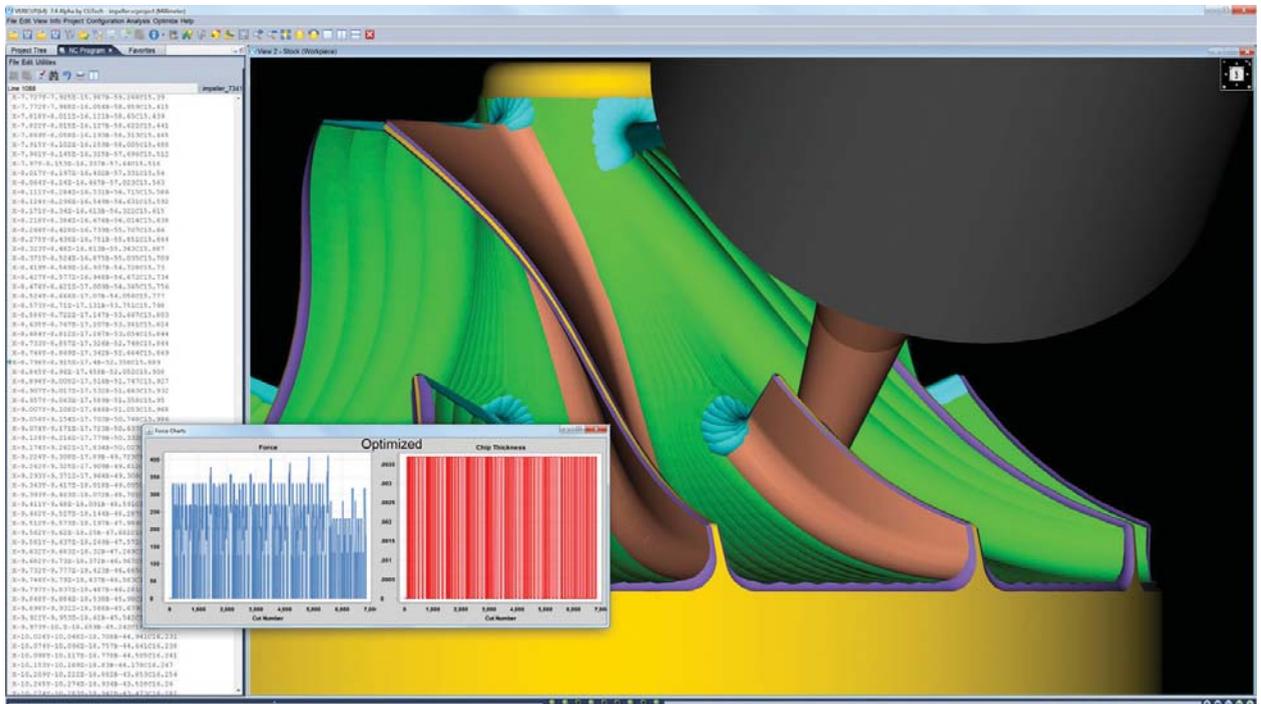


Group, Tata, Mahindra & Mahindra etc.

Q At the 2015 Paris Air Show, CGTech exhibited its expanded range of software applications for the aerospace industry. What was the highlight of this showcase from CG Tech?

CGTech's VERICUT software is widely used in aerospace and defence to improve the efficiency of all types of CNC Machine Tools. VERICUT is CNC machine simulation, verification and optimisation software that enables users to eliminate the process of manually proving-out NC programs.

It simulates all types of CNC machining, including multi-axis milling, drilling and trimming of composite parts, water jet cutting, robotic machining and mill/turn centers. VERICUT runs standalone, but can also be integrated with leading CAM systems used in aerospace including Dassault Systemes CATIA, Siemens PLM NX, Delcam PowerMill



CGTech's newest optimisation module, Force, is a physics-based optimisation method that determines the maximum reliable feed rate for a given cutting condition

and Open Mind HyperMill.

Aerospace applications featuring the world's leading CNC machine tool suppliers including DMG MORI, Mazak, Starag, GROB, CMS and Hermle were featured.

Throughout the show, CGTech also demonstrated VERICUT Composite Applications: VERICUT Composite Programming (VCP) and VERICUT Composite Simulation (VCS). CGTech featured projects that highlight the use of off-line NC programming and simulation software for Automated Fiber Placement (AFP) machines and Automated Tape Laying (ATL) machines including robot cells. VERICUT Composite Applications are machine independent and machines from the world's leading composites machinery suppliers, including Electroimpact and mTorres, were featured.

Q How does the VERICUT Drilling and Fastening (VDAF) software help the aerospace industry?

Airframe drilling and fastening has a different set of requirements for process simulation. The CNC machine drills holes through an assembly of airframe components such as the outer skin and inner frames, connecting stringers and other structural hardware. It then installs a fastener through the hole and ties the components together. A given assembly operation can have more than 10,000 drill and fasten operations in a single NC program. While it may seem obvious to assume the drilling operation is a machining operation, the purpose of

the simulation is not to validate the material removal by the drill. It is instead important to validate that the drill passed through the proper assembly components and drilled the correct hole in the correct location and at the correct size. The process simulation requirements for automated airframe assembly are very different from machining, even though both may do drilling operations with a CNC machine.

VERICUT Drilling and Fastening (VDAF) is software for simulating and programming auto-drilling and fastening machines. These machines are used to assemble large aero-structures and it is essential to avoid programming errors and collisions at such a late stage in the aircraft manufacturing process. VERICUT allows the user to program drilling and fastener assembly operations in a virtual machine tool environment and provides simulation to check for a variety of potentially disastrous error conditions. VDAF interfaces to leading CAD/CAM/PLM systems such as Dassault Systemes CATIA and Siemens NX, and is independent of the assembly machine manufacturer.

Q How does 3D machine simulation help shops engaged in aerospace manufacturing?

VERICUT software simulates CNC machining so that aerospace manufacturers can be more efficient, more competitive, and more profitable. A machine crash can be very expensive, potentially ruin the machine, and delay the entire manufac-

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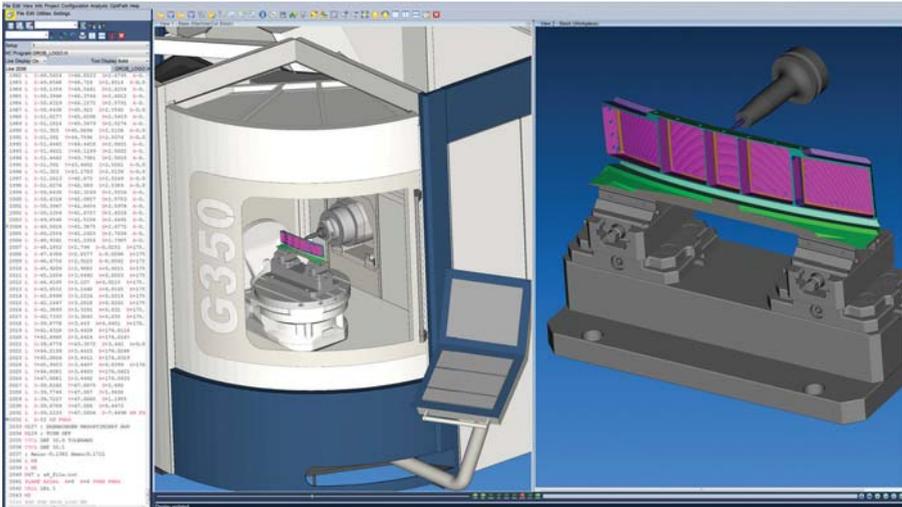
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VERICUT software simulates CNC machines, such as this GROB G350, so that aerospace manufacturers can be more efficient, more competitive, and more profitable.

turing schedule. But with VERICUT, aerospace manufacturers can dramatically reduce the chance for error and avoid wasting valuable production time proving-out new programs on the machine. CNC Machine Simulation detects collisions and near-misses between all machine tool components such as axis slides, heads, turrets, rotary tables, spindles, tool changers, fixtures, work pieces, cutting tools, and other user-defined objects. You can set up 'near-miss zones' around the components to check for close calls, and even detect over-travel errors.

Today's NC machine tools process complex NC programs. VERICUT was designed by NC programmers and professionals in NC simulation and verification software, many of whom came from the aerospace industry. Because of this understanding and expertise, VERICUT is a powerful tool when using multi-axis machines, complex NC code, and/or advanced programming techniques.

VERICUT accurately emulates CNC control logic. Each control in the shop can be accurately simulated to account for different types of machines, programs, parts, and functions. VERICUT includes a library of flexible, easily modified controls from makers such as: Siemens, Heidenhain, Fanuc, and many others.

VERICUT features the most accurate collision checking available. Rather than just checking points along a path, VERICUT checks along the entire path of travel by sweeping through space. The user does not have to specify a "step size" tolerance that can slow the simulation if too small or miss the collision if too large.

Aerospace manufactures are currently under tremendous pressure to produce parts as quickly as possible. Late deliveries are unacceptable and many shops are already running at full capacity. With this in mind, there has been a lot of interest in CGTech's newest optimisation module: Force™.

VERICUT Force is a physics-based optimisation method that determines the maximum reliable feed rate for a given

cutting condition based on the following four factors: force on the cutter, spindle power, maximum chip thickness, and maximum allowable feed rate. It calculates ideal feed rates by analysing tool geometry and parameters, material properties of the stock and cutting tool, detailed cutting edge geometry, and VERICUT cut-by-cut contact conditions. Force interpolates cutting conditions using a proprietary set of materials coefficients to account for the strength of material and the effects of friction and temperature. The materials data

VERICUT is designed to support advanced control functions including:

- Look-ahead or 3D cutter compensation.
- Tool tip programming & tool length compensation.
- Gage length reference point programming.
- Canned cycles and fixture offsets.
- Rotary axis pivot points.
- Variables, subprograms, and macros.
- Subroutines, looping, and branching logic.

is created from actual machining tests and does not rely on extrapolating from finite element analysis results. The unique cutting coefficients used by Force result in the most accurate cutting force calculations available today. Turning and drilling optimisation capabilities are coming soon.

Force excels in difficult to machine materials, and especially complex multi-axis cuts such as 5-axis flank milling. Once the material is characterised, it can be applied to a broad range of cutters and machines in future NC machining operations. It's easy to set-up and can also predict tool wear.

The initial users of this technology are already seeing productivity improvements of up to 50 percent. Other benefits include reduced development time, shorter cycle times, less process variation, longer machine life and improved part quality. It can also prevent tool breakage due to deflection.

What does VERICUT support more efficiently - 'low volume, high variety production' or 'high volume, mass production'?

VERICUT enables you to eliminate the process of manually proving-out NC programs. It reduces scrap loss and rework. The program also optimises NC programs in order to both save time and produce higher quality surface finish. VERICUT simulates all types of CNC machine tools, including those from leading manufacturers.

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Focused on systems

With a focus on specialised products and robust manufacturing systems, the Kirloskar Brothers Ltd Kondhapuri Plant is not only carving a niche for itself but also steadily growing its business

By Niranjan Mudholkar

Of the seven manufacturing plants that Kirloskar Brothers Ltd. (KBL) operates in India, the Kondhapuri plant located in Pune (Maharashtra) is unique in at least a couple of manners. Besides being the only valve manufacturing unit within the Group, it is also the only KBL plant that conducts business on project basis.

Interestingly, it is in the current financial year that KBL decided to build valve manufacturing as an independent business entity within the Group with a separate P&L sheet. Earlier the flagship facility of KBL, the Kirloskarwadi plant

was also manufacturing valves but now the Kondhapuri plant has been given the exclusive responsibility for valves manufacturing within the Group. “We want to have a more structured approach to this business with the aim of serving our customers more effectively and efficiently,” says Shrinivas N Sant, GM & Head – Operations, KBL Kondhapuri. Sant, who took charge of this plant quite recently, believes that with

a focus on specialised products and robust manufacturing systems, the Kondhapuri Plant is not only carving a niche for itself but also steadily growing its business.

Spread over about 8.5 acres of land, the Kondhapuri plant is also the first valve manufacturer to be accredited

“While Kondhapuri clocked an annual turnover of Rs120 crore in the last financial year, Sant is positive about achieving Rs 150 crore for the current financial year.”





“It is important for every team member to understand where we stand today and where we aim to go. And if we are to successfully achieve our set targets then it is absolutely essential that there is complete transparency between managers and workers and vice versa.”

Shrinivas N Sant,
GM & Head - Operations



Vital statistics

Location: Kondhapuri, Pune (Maharashtra)

Name of the company: Kirloskar Brothers Ltd

Plant Head: Shrinivas N Sant, GM & Head - Operations

Key products manufactured: Different types of valves (Sluice, Butterfly, Multi-door, Kinetic air, etc.)

Number of shops: Three (shop 1 for gate valves, shop 2 for process industry valves and shop 3 for large valves)

Size of the plant: 4,300 sq m built-up space on 34,000 sq m land

Total staff strength - (blue collared + white collared): 150

Operational since: 2001

Key raw material: Castings sourced from Kirloskarvadi and Kolhapur Steel (in-house)

Capacity: 50mm up to 5000 mm and can handle weight up to 50 tonnes.

Facilities available: Structural analysis, hydro testing, steam testing, corocoating, grit blasting, painting, storage facilities, gauge room, 500 kVA power back-up. Only valve manufacturer in India to have all testing facilities in-house

R&D facility: In-house (at Kirloskarvadi)

Key machines used: Drilling machines, VTLs, HBMs, test rigs, EOT cranes

Key market addressed: Both exports (10%) & domestic (90%)

Key customers: All major power generation companies, refineries, chemicals companies, water utilities, municipalities



CSR activities

- WASH initiative for nearby school children
- Vasundhara international film festival
- ENCON awareness program for suppliers and school children

with ISO 9001 certification in India. “In fact, ours is also the first KBL plant to have the ISO 50001 certification,” shares Sant. As the Plant Head, Sant puts a lot of emphasis on communication at all levels in the facility. “It is important for every team member to understand where we stand today and where we aim to go. And if we are to successfully achieve our set targets then it is absolutely essential that there is complete transparency



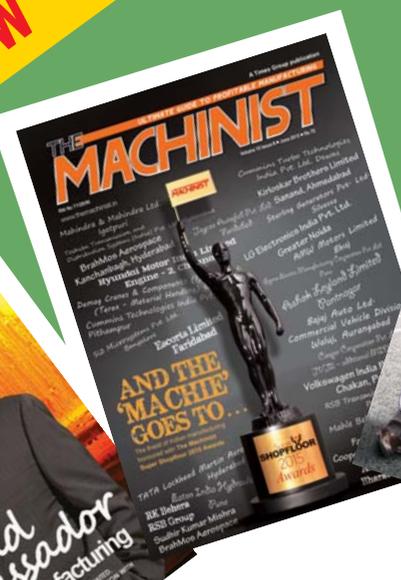
between managers and workers and vice versa,” he states. At the same time, Sant and his team are working on improving the manufacturing systems to continuously enhance the productivity and efficiency of the plant and that too without much investment.

Equally important is the focus on energy management and sustainability at this facility. “That is part of our corporate culture at KBL,” Sant says with certain pride. “We have incorporated ‘Green’ within our way of working. So whether it is eco-friendly paint booths or rain water harvesting, it is must for all KBL plants.” Sant further shares that each employee at the Kondhapuri plant (and every KBL plant) is educated on the importance of energy efficiency and protecting the environment. Specifically, the Kondhapuri plant also features many ‘green’ features like STP, ETP, solar lighting, wind mill as well as a dedicated green cover in the plant campus. “In fact, we also come out with an annual sustainability report published through E&Y,” Sant adds.

The Kondhapuri plant is involved in the manufacturing of a variety of valves, which includes in-house machining of critical components and in house assembly testing of all valves, using CNC machines, new generation inspection and testing equipment. Development of new products and upgradation of existing product for critical application are the other major activities undertaken by the plant. “Our manufacturing focus includes large variety and low quantity production. To suit this production requirement, we have started working on implementation of TPM,” Sant informs. Products from the Kondhapuri plant are currently sold both in the domestic market as well as the exports market with the latter (exports) contributing about ten percent in volumes. “Our key international markets include US, some of the Gulf countries, Egypt, Sri Lanka, Vietnam as well as a few African

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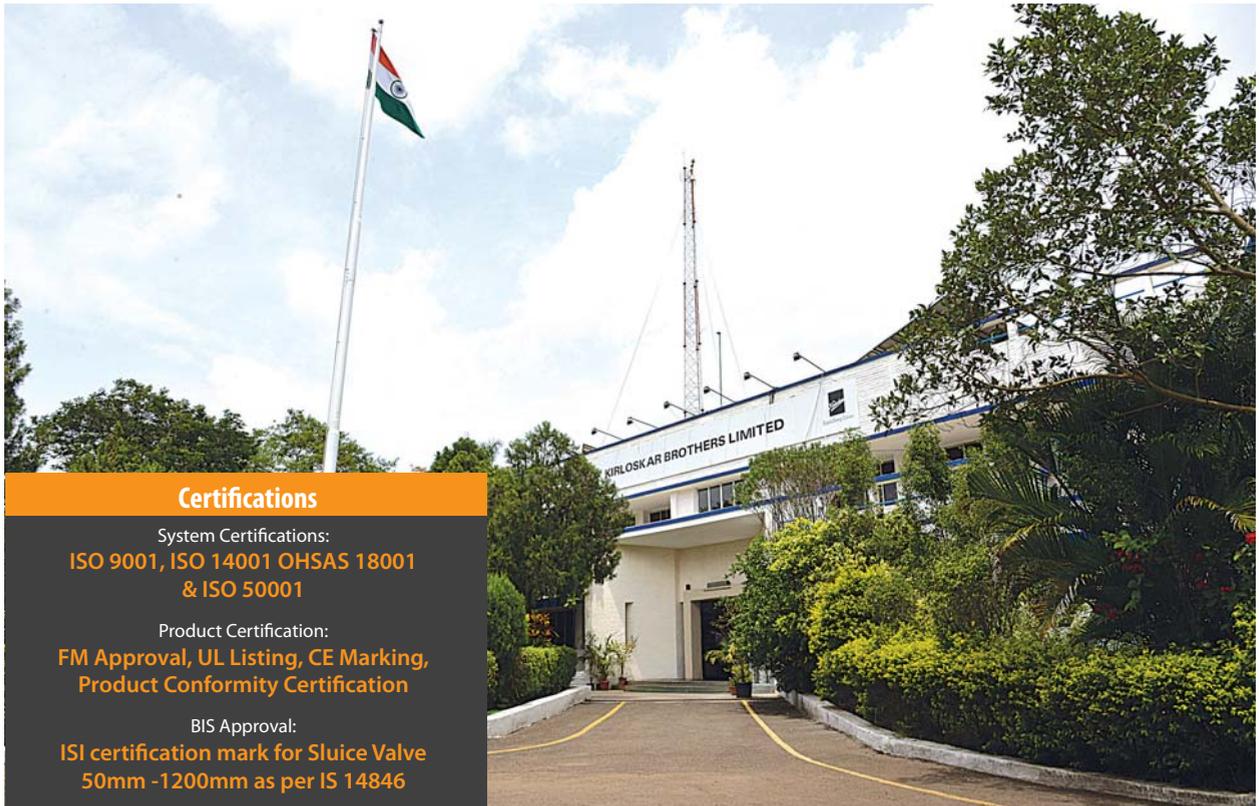
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countries. And we are constantly looking at widening our global horizons,” Sant shares.

While entering the administrative building of the Kondhapuri plant, one notices a board at the entrance which says ‘Centre of Excellence’ in association with R M Dhariwal Sinhgad Management School. “This Centre of Excellence was set up for mutual benefits of KBL employees and management school students for sharing industry knowledge/experiences and get updates on the modern management topics,” shares Sant, adding that training and development is an important aspect of the Kondhapuri plant as it is of every KBL facility. The Kondhapuri plant conducts various training programmes for its workmen and staff, which also includes product training for new joiners. “We provide various behavioural training programmes like communication skill, leadership development besides functional training programmes like finance for non-finance staff, problem solving, 7 QC tools as well as quality systems,” he adds.

While focusing on operational efficiency, productivity, people development, robust infrastructure and sustainability, the Kondhapuri plant prides itself in product innovation. “While our existing products are well appreciated in the market across industry sectors, our team is constantly working at improving the performance and features of these products for the benefit of our customers,” Sant says, sharing some interesting cases.

For example, the KBL team developed the Tamper proof Kinetic Air Valve, which can save 43,200 litres of water per



valve per month for a 150mm size valve. Another example is that of the Butterfly Valve with Flow through Disc. “This valve achieved material saving of 1,200 kg in case of this 3600 mm valve through design resulting in minimum head loss, streamlined flow and weight reduction,” Sant says, adding that there are many such examples.

“Product innovation is an ongoing activity for us and we believe it will be key in our objective of increasing market share in this competitive industry,” he adds. Of course, Sant is confident that with an excellent system in place, the Plant is all set for registering an impressive growth. While Kondhapuri clocked an annual turnover of Rs120 crore in the last financial year, Sant is positive about achieving Rs 150 crore for the current financial year. “Of course, we are looking Rs200 in the next two years,” he says with a smile as he signs off. 



Growing steadily

Freudenberg has continued with its successful growth trajectory in India and will continue to leverage on this growth with systematic investments.

Freudenberg, the global family-owned company, continues on its successful trajectory in India. The technology group generated overall sales of Rs1,497 crore (+ 32.8 percent vs. 2013) in India in 2014. As of December 31, 2014, Freudenberg employed 2,800 full-time associates at around 50 locations in India - with four R&D centers and 14 production sites with state-of-the-art shop-floors. With that and various initiatives Freudenberg supports the national program of Prime Minister Narendra Modi, 'Make in India', which aims to turn the country into a global manufacturing hub.

"India is a market of considerable potential for the Freudenberg Group and the country makes a considerable contribution to the Freudenberg Group's innovative strength. We are therefore committed to systematic investment in this region over the long-term. In 2014, the Group made local investments totalling to Rs. 97.6 crore in India", said Dr. Jörg Matthias Grossmann, Regional Representative India at a press conference in Bengaluru recently.

Largest investments

One significant project is the new production site of Chem-Trend and Klüber Lubrication in Mysore that will officially open in August 2015. For a total of around Rs135 crore, it is one of the largest investments in the Asia-Pacific region of the Freudenberg Group. This is where more than 20 products will be developed and manufactured for the customers in the South East Asia/Pacific region. The site at Mysore - buildings with a surface area of 17,000 m² on a site of some 40,000 m² - also hosts product development facilities and major tribology testing facilities with equipment such as an FZG test rig. FZG stands for Gear Research Centre. This is the only one within Klüber outside Munich and the only one in India until now.

At the start of the year, Freudenberg Sealing Technologies massively expanded its commitment in India. The company has been involved with the Indian market through its joint



"We are committed to systematic investment in India over the long-term. In 2014, the Group made local investments totalling to Rs97.6 crore in India."

Dr. Jörg Matthias Grossmann,
Regional Representative
India

venture Sigma Freudenberg NOK (SFN) in Mohali since 2001. In February 2015, SFN opened a second, completely new factory in Basma about 35 km away. The plant marks a new stage in Freudenberg's commitment to India. At a cost of more than Rs. 155 crore, a highly modern production facility

has arisen on more than 23,000 square meters. For the most part, radial shaft sealing rings and O-rings will be produced at the site for the automotive sector and general industry. The growing demand in a number of segments - the auto industry, agricultural and construction machinery, mining, power stations, and the steel industry - made the construction of a second production facility essential.

Make in India

"Our R&D and manufacturing activities as well as various other initiatives foster our long-term commitment," said Grossmann. With that Freudenberg supports the national program of Prime Minister Narendra Modi,

'Make in India', which aims to turn the country into a global manufacturing hub: raising manufacturing from 15 percent to 25 percent of India's Gross Domestic Product within ten years, creating new jobs, making foreign investments easier and offering perspectives to young people. "Make in India has been our strategy for more than a decade," stressed Grossmann. At the new SFN factory in Basma for example, more than 2,000 employees - half of them women - will manufacture seals for the Indian market and for export.

Education is also key for Freudenberg as an employer. A few years ago, the company started its FIELD (Freudenberg India Entrepreneurial Leadership Development) program with the intention of training and developing Freudenberg's future managers in the areas of sales, operations and finance. The participants of the program are mainly recruited from the Indian Institutes of Management in Bangalore and Kozhikode, the Indian School of Business and the National Institute of Industrial Engineering. 



Innovate or perish

The reality is that a major transformation is coming to the manufacturing sector, led by the forces of technology, innovation and new innovators.

By Jeff Dobbs and S.V. Sukumar

Innovation is becoming more and more a priority for those in the industrial manufacturing sector and India is no exception. KPMG International's Global Manufacturing Outlook (GMO) survey for 2015, shows that globally manufacturers know that investing into breakthrough technologies is a "must do" long-term strategy with more than two-thirds of respondents confirming they are focused on long-term innovation strategies.

The reality is that a major transformation is coming to the manufacturing sector, led by the forces of technology, innovation and new innovators. As a result, we see the pace of innovation accelerating and new disruptive innovators revolutionising new product development, manufacturing processes, automation and business models. KPMG International's Global Manufacturing Outlook (GMO) report explores



Jeff Dobbs, KPMG's Global Head of Industrial Manufacturing

"Indeed, we believe that those manufacturers able to leverage their customer-facing D&A experience and capabilities to improve their supply chain operations will ultimately win in the marketplace."

the steps that manufacturers around the world are taking to prepare their organisations for the innovation and technology-driven transformation that is to come. The insights and take-aways contained within the report will help manufacturers better understand their competitive position and prepare their organisations for long-term growth and competitive advantage. The GMO survey is based on a survey of 386 senior executives, conducted by Forbes on behalf of KPMG International, and was completed in early 2015. Respondents represented six industries: Aerospace & Defense, Automotive, Conglomerates, Medical Devices, Engineering and Industrial Products, and Metals.

A notable 75 percent of India-based (36) respondents say companies strategic focus engineering/innovation led versus 50 percent globally with a further 56 percent having breakthrough innovation as their primary strategy for pursuing innovation.





S.V. Sukumar, Head of Strategy and Operations, KPMG in India

“As domestic competition increases and prices start to come under pressure, many in India recognise that they will need to innovate in order to protect their margins and attract premium prices for their products.”

An additional 58 percent have the development of new products as their top strategic priority over the next year and 83 percent say they are focused on the longer term (5 to 10 years) innovations strategies versus 69 percent globally.

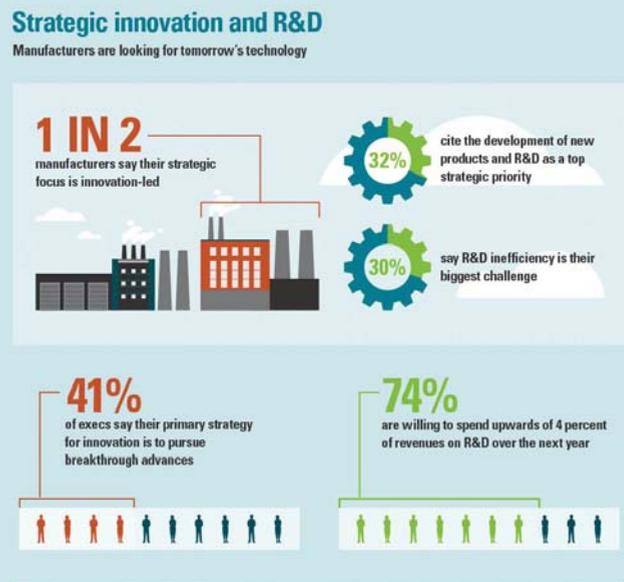
The fact that manufacturers in India are highly focused on innovation is not surprising. As domestic competition increases and prices start to come under pressure, many in India recognise that they will need to innovate in order to protect their margins and attract premium prices for their products. This, in turn, is driving India’s manufacturers to quickly start embracing high-tech and advanced manufacturing technologies.

Fifty percent of Indian respondents say they have spent between 4 and 5 percent of their revenues on innovation/R&D in the last two years and additional 19 percent say their spend was greater than 6 percent. Looking ahead, Indian respondents plan to spend even more. Thirty-one percent say they will spend between 4 and 5 percent of their revenues on invocation/R&D and 61 percent say greater than 6 percent in the next two years.

However, it is clear that – in India and in the rest of the world – manufacturers could be gaining much more value from data and analytics (D&A), particularly on the supply chain side. Indeed, we believe that those manufacturers able to leverage their customer-facing D&A experience and capabilities to improve their supply chain operations will ultimately win in the marketplace.

The vast majority of Indian respondents and their global peers estimate they are only using D&A tools 1 to 10 percent of time across many functions including important areas that can support company growth, reduce costs and minimise risks such as financial reporting, product costs and profitability and customer insights.

India is clearly changing. And new consumer pressures, new market reforms, new competitors and new innovations are starting to help elevate the market from being a ‘low-cost’ manufacturing destination into a ‘high-value’ and ‘high-quality’ destination instead. While this will clearly provide



significant dividends for India’s manufacturing ecosystem, it will also mean that manufacturers will need to keep a close eye on their costs if they hope to remain competitive in one of the world’s fastest-growing marketplaces. 

About the authors: Jeff Dobbs is KPMG’s Global Head of Industrial Manufacturing and S.V. Sukumar is Head of Strategy and Operations, KPMG in India



In favour of Quality

Why are Steel Associations and Federations opposing proposed Quality Control Order?

By Mohan Gurnani

Since Steel and Steel Products Quality Control Order 2014 was proposed, the merchants' association BIMA, FAM and more recently FII have galvanised efforts to revoke it. Implementation of this order is said to jeopardise the quality of supplies, cost of production and international business relationships.

As per the proposed Steel and Steel Products (Quality Control) Order, several steel products would require mandatory Bureau of Indian Standards (BIS) registration, which currently takes about 10-12 months of processing. Anguished merchants see this as an unnecessary addition to the process terming it as 'Inspector Raj'. The fact that this would highly affect the imports of Hot Rolled steel; the merchants would be forced to pay 20 percent more to the local suppliers, which in the longer run would affect the customers.

In the month of May this issue was extensively discussed in a meeting attended by Steel users, Traders, Importers, Agents, Japanese & South Korean trading Giants and other Associations like Wire Manufacturers Association, Tin plate Association, Cold Rolled Steel Manufacturers Association. A press note of this meeting stated, "The (Quality Control) order states, the objective was to control quality of Steel in India, but in effect, it will monopolise the business and benefit local Steel mills who will increase the price and the user industry will be hit hard. Ultimately, it is expected that the steel price will go up substantially."

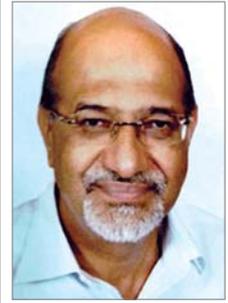
BIMA (Bombay Iron Merchant Association) in its letter to Narendra Tomar, Union Minister of Steel, also highlighted how current global and national quality compliance mandate are in place and have effectively played vital role in maintaining in good quality of imports. The letter stated, "Quality compliance is most easily achieved by mandating globally accepted and renowned third party inspection agencies to certify all steels, which the ministry feels relevant, for their quality compliance when entering this country. The Central Boiler Board which is head-

ing the Dept. of Explosives and certifies quality for steel utilised in the most critical application follows this practice from four decades. No one has ever complained about the same, not any quality issue raised."

This order is forecasted to not just affect the cost and quality of the production from the local suppliers, but also affect the international relations in a negative way. More recently, FII (Federation of Industries of India) in its letter to Steel ministry stated, "...the proposed Quality Control Order, 2015, if not withdrawn by the Steel Ministry, would have a massive adverse impact on our international trade relations as no foreign country or their companies, would go for cumbersome BIS registration procedure for the sake of exporting small quantities of steel, occasionally to a few engineering companies in India."

Further emphasising on this point, the letter said, "The foreign companies are equally competent to introduce same kind of non-tariff restrictions on export from India. Under such restrictions, how our PM's 'Make In India' programme would become a success here, if other countries stop our exports through similar non-tariff restrictions."

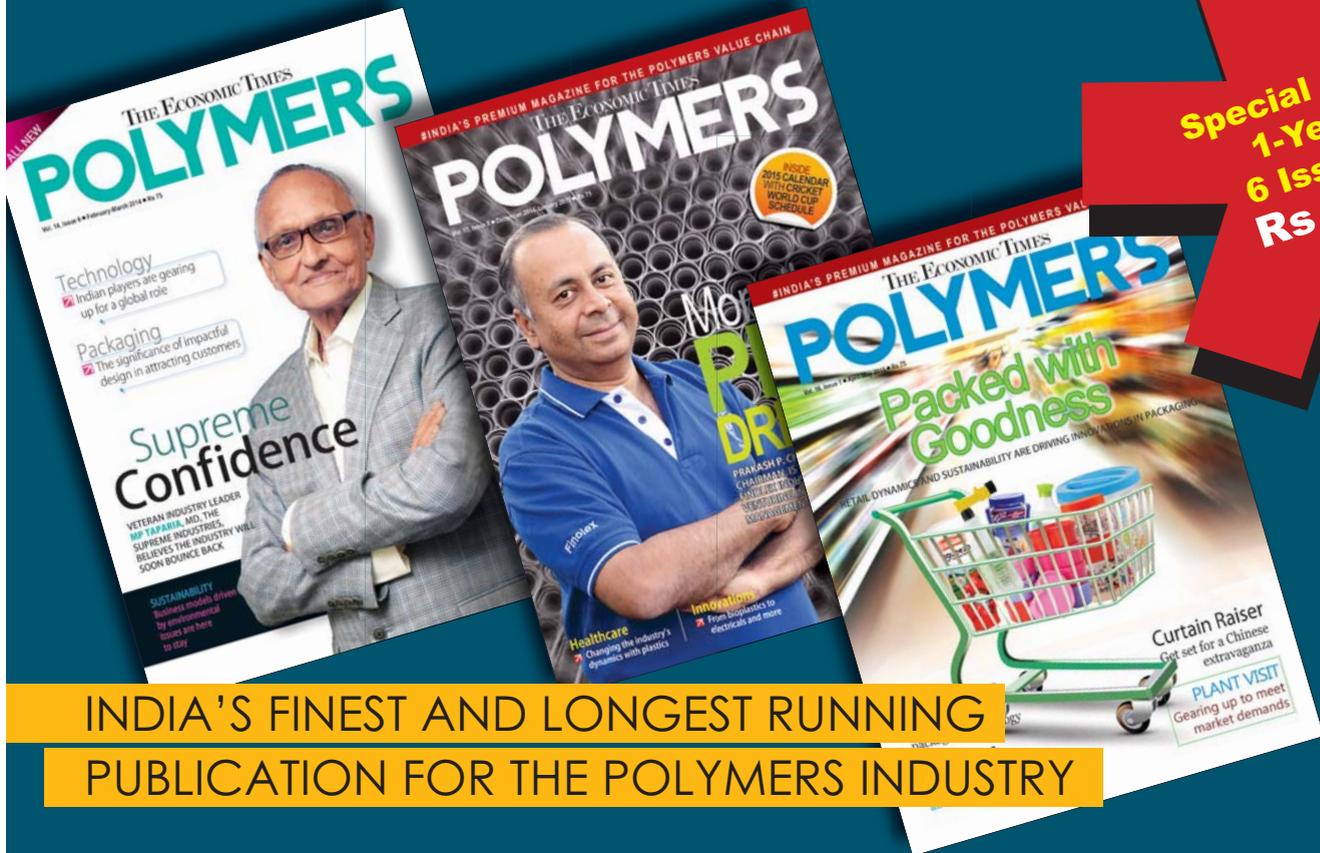
With steel companies from China are expanding their production overseas due to their merits in quality and effective pricing, merchants also demand government to relook at competency of the Indian suppliers in India was to compete globally. 



"No foreign country or their companies would go for cumbersome BIS registration procedure for the sake of exporting small quantities of steel, occasionally to a few engineering companies in India."



The author is President of Federation of Associations of Maharashtra & Chairman of The Bombay Sugar Merchant Association Ltd.



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Handling growth in sync

A steel manufacturing plant was looking for a competent partner who could understand the challenges and design a complete material handling system to integrate the various processes.

BMM Ispat Ltd. is a Rs20 billion company, part of the renowned BMM Group. Its plant at Danapur, Hospet (Karnataka) is a true blue steel plant manufacturing high-quality steel products. As part of a new Brownfield project, the company is planning to expand the existing capacity, for which ElectroMech is supplying 13 cranes in the first phase. This facility is being constructed to expand the product range and to include a semi-automatic process, which will increase production.

BMM Ispat approached ElectroMech during the summer of 2012 and after a thorough evaluation of ElectroMech's proposal, placed an order for 13 cranes to be used at various stages of their manufacturing process. Through a detailed understanding of its workflow and several interactions between both the teams, cranes of most efficient design, effectively matching the application requirements were selected.

The processes and challenges

BMM Ispat's plant is spread over a vast area of 50 acres (approximately 200,000 sq m) and the entire manufacturing process is divided into four stages. The Company was looking for a competent partner who could understand the challenges and design a complete material handling system to integrate the

various processes. The objective was to ensure safe, quick and precise handling and appropriate manoeuvring during loading at the despatch bay.

Steel melting shop: The first area is called the steel melting shop, which handles all the operations from the melting of raw material to forming of billets of desired shape and size. Here the metal is processed in the molten form and handled by ladles. The formed billets are to be rotated in 90 degrees and are to be transferred on the idle rollers to take them to two different storage locations.

Furnace and rolling mills: The second phase of the entire process consists of furnace and rolling mills and includes handling of long metal billets of an average length of 12m each. The process is initiated by passing the billets on to idle rollers installed besides

the furnace. The rolling facility is spread over 200m length and the preheated billets are passed through various horizontal and vertical rolling mills to give them the desired shape. The dies of the presses are required to be changed frequently to suit the particular product to be rolled, which includes rolled angles, TMT bars, metal rods and I-beams.

Quenching and cooling: The final phase includes the dispatch of the finished products. The despatch yard is spread over an area which is 380m long and 50m wide. This consists of parking bays for trucks and a railway track for loading on

“Through a detailed understanding of BMM Ispat’s workflow and several interactions between both the teams, cranes of most efficient design, effectively matching the application requirements were selected.”



railway carriages. The despatch area has to store and handle long rods and beams. Rotating crabs are used to control the angle of long metal bars and other similar components in the despatch bay.

The solutions

Steel melting shop: ElectroMech responded to BMM Ispat's challenge with some unique ideas. Detailed analysis, design iterations and trials resulted in an integrated solution that has proved to be foolproof, achieving the intended task swiftly. A total of 13 cranes were designed to handle the material through various processes right from the steel melting shop to the placement of bars and rods on railway carriages. In the steel melting shop (SMS) where billets are formed, a total of four cranes with rotating trolleys assist in the manufacturing and storage of the billets. Two cranes of 20MT each covering a span of 32.8m and another two 20MT cranes with 27.2m span cover the manufacturing and storage of the billets before they are sent for further processing. Since these cranes are part of a process and in constant use, these are designed for class 4 duty. The ambient temperature in the steel melting shop is approximately 60 Celsius, requiring all the components of the crane to be able to withstand such high temperatures. Hence, a slewing wheel type of arrangement was selected to be able to work in this area. An air-conditioned cabin is also provided for the operator.

Furnace and rolling mills: The furnace is served by a 10MT crane with 22m span, which also has a rigorous initial application of installing the furnace and rollers. Once the installation of the furnace is completed, the crane will be used for replacing the rollers and for regular maintenance applications. Once the billets are transferred to the furnace for heat treatment purpose, they pass through idle rollers where they are re-heated. Two cranes serve this area; one crane of capacity 25/5MT with 28m span and another of 20/5MT capacity and 34m span. Since the dies have to be changed depending on the product to be manufactured, the 25/5MT crane is in constant use. All these cranes are designed for class 3 duty.

Quenching and cooling: Rolling is followed by the quenching and cooling of rolled items. The material to be handled in this stage is in the form of bundles and the same continues till the despatch of the final product. Here, two 15MT, 28m span, class 3, double girder cranes are installed to assist the installation of the machinery during plant set up stage and later on will be used to handle the material being processed at this bay.

In the steel melting shop (SMS) where billets are formed, a total of four cranes with rotating trolleys assist in the manufacturing and storage of the billets. Two cranes of 20MT each covering a span of 32.8m and another two 20MT cranes with



Bay 2: Cranes for rolling mill bay (2 cranes)

27.2m span cover the manufacturing and storage of the billets before they are sent for further processing. Since these cranes are part of a process and in constant use, these are designed for class 4 duty. The ambient temperature in the steel melting shop is approximately 060 Celsius, requiring all the components of the crane to be able to withstand such high temperatures.

Hence, a slewing wheel type of arrangement was selected to be able to work in this area. An air-conditioned cabin is also provided for the operator.

“A total of 13 cranes were designed to handle the material through various processes right from the steel melting shop to the placement of bars and rods on railway carriages.”

Despatch

Once the processing of the material is complete, it moves towards the despatch bay. The despatch bay is 380m in length and is entirely covered by 3 nos. 12.5MT, 34m span, class 3 duty cranes. Like in the case of the steel melting shop cranes, these cranes also have 360 degrees rotating crabs, however, the mechanism used here is a slewing bearing. This mechanism was narrowed down upon after many discussions between the design team of ElectroMech and BMM team. There were two types of rotating mechanisms that were finalised - one that operates with the help of gears and the other by using rails and wheels.

The first one is used for continuous operations and hence the maintenance had to be kept to the lowest possible. The latter crane was operated under normal working conditions hence easy accessibility and simple mechanisms had to be provided. Since the despatch bay is in continuous operation, the cranes installed here are used rigorously for loading of finished components. The other two cranes will be used to load and unload materials onto despatch vehicles into the respective parking areas. The BMM Ispat team and ElectroMech team worked closely to develop a suitable system and commission it in the stipulated time span. 

Source: ElectroMech



The Big Leap!

The time of momentum growth in India is over. Organisations now have to start thinking about gaining market share and building a sustainable business.

By Abhijeet (Avi) Ranade

The time of momentum growth in India is over. Organisations now have to start thinking about gaining market share and building a sustainable business. A business which is sustainable in growth, profits and return on capital employed. This is only possible when organisations start thinking about their relevance in the marketplace, their clients/customers and society.

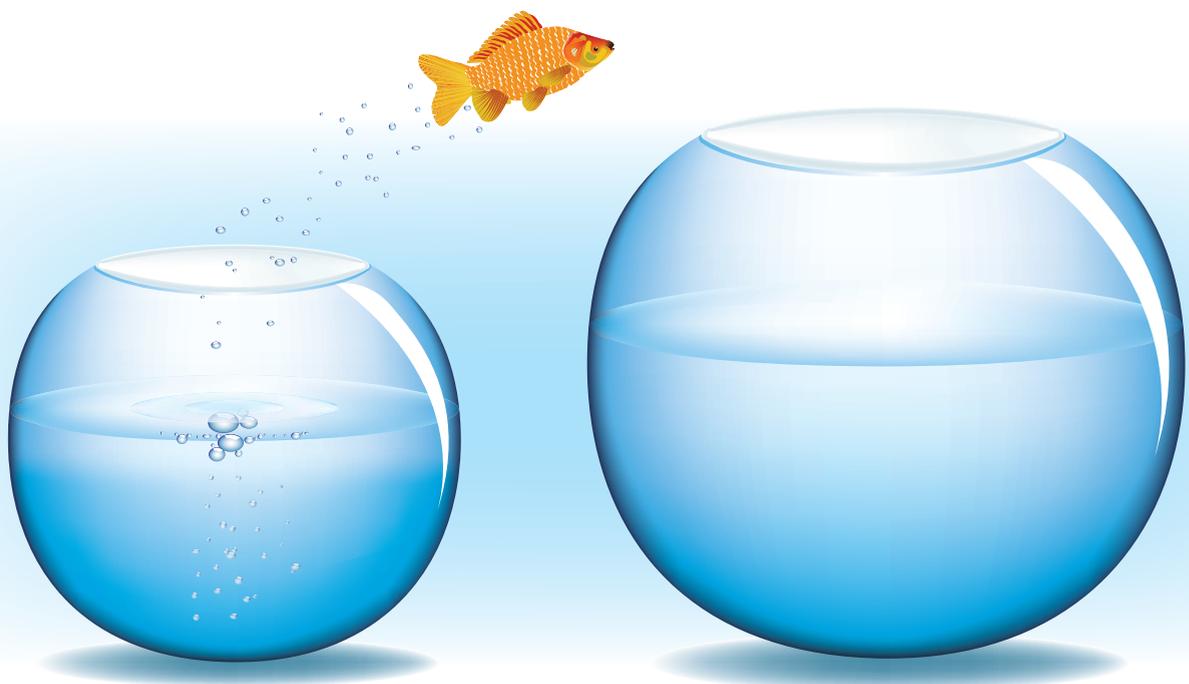
Many businesses fail when they think that manufacturing to their capacity is the way forward and forget to check the pulse with their clients/customers and society. Is your product relevant anymore to their clients/customers? Why does the client really buy your product/service? How do you contribute to society, the environment, etc? What is the real value delivered?

What is the meaning of the word relevant? The Oxford dictionary states “bearing on or having reference to the matter in hand”. Interestingly the word that follows relevant is reliable. But let that be another story. Relevance is also linked to “relief”, which is explained as “mitigate the tedium or monotony of” and/or “take a burden or duty away”.

So what does this mean in business? It means an organisation that makes/ defines the market or is important/relevant in the ecosystem takes away the burden of certain actions from the client. Obviously all this has to be legal, environmentally friendly, within compliance and regulation (which can be different from being legal) and all the rest. The organisation is a critical piece of the client’s ecosystem and that it lends some form of gratification, the client / customer is dependent on the organisation and will find it difficult to exist if the organisation stops servicing them.



Is your product relevant anymore to their clients/customers? Why does the client really buy your product/service? How do you contribute to society, the environment, etc? What is the real value delivered?”





India, for the longest time, was almost monochrome in its business, except for maybe Bollywood. Everyone had maybe two choices for any product or service from the organised sector and the unorganised sector, known for its “innovation”. I use that term very loosely. Over the last few years the burst of growth due to increase in spending power of the consumer has fuelled competition in products and services between the local business and MNCs, which has led to consumers having a lot of choice.

Choice and growth means consumer is truly the king or queen. Indian companies are going to have learn what it means and how to remain relevant to their clients/customers, and the fact that it is not easy, but very difficult, and requires the ability to almost reinvent themselves, products and services, business models and pricing models every 3-5 years. This also means that the clients/customers really have to understand what does it take to be customer centric, what is their customer promise and how will they deliver that via their extended supply chain. As you can see their own capacities slowly become just an element amongst many others in their ability to fulfil a customer promise.

I suppose the distinction is between enterprises that successfully ride each wave and those who are constantly in survival mode. In the past, the time available for companies to survive was measurable in terms of decades. Today the markets and consumers move a lot quicker and are very unforgiving. It is time for Indian companies to get out there and understand their markets, their clients/customers, the real value of their products and services and aspire to build a sustainable enterprise in the market having the ability to fulfil their customer promise at each transaction via an extended supply chain. Difficult? Yes but has to be done in order to survive and grow this VUCA (Volatile, Uncertain, Complex and Ambiguous) world.

It is important to understand the segments in the population, in case of both B2B and B2C, which will buy or are buying the product and service, what value do they perceive/realise from the product and service and at what price point. What is the value proposition expected by the client and what is the client promise that one can deliver? Post that, formu-



Sometimes organisations have to even create new products that make their present products redundant.



Being global is a mind-set; it is not about hiring a few expats to show an American/European, Chinese or African face. It is about truly being global and running multiple business models and supply chains to fulfil customer promise in a variety of cultures and regions around the world.”

lating and streamlining fulfilment processes and systems to deliver that specific client promise to the clients and in doing so ensuring one turns a profit.

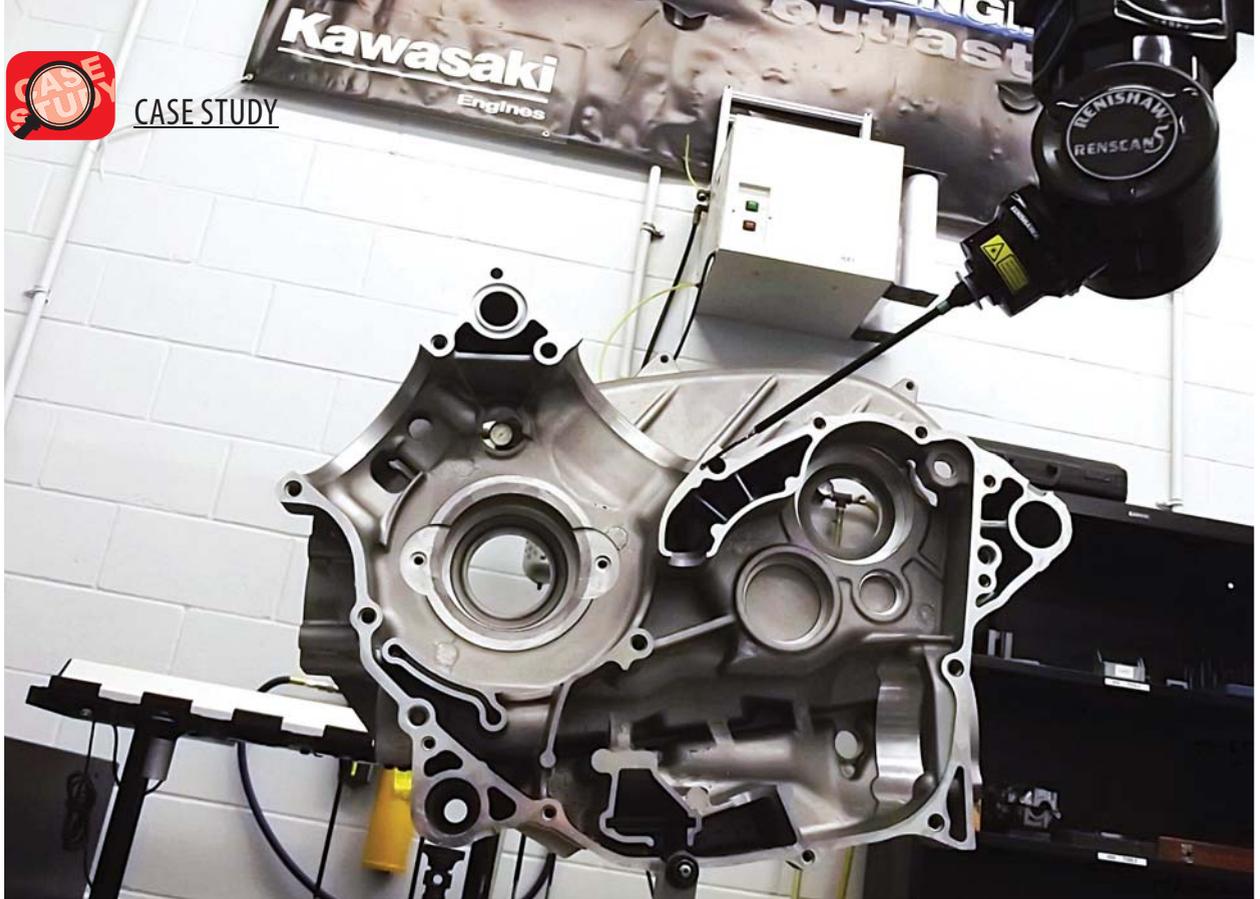
This will deliver a customer centric lean business which will be sustainable. That brings me to the next shift required; market share is about the global market share and hence being relevant in the ecosystem of the product or service globally. Being global is a mind-set; it is not about hiring a few expats to show an American/European, Chinese or African face. It is about truly being global and running multiple business models and supply chains to fulfil customer promise in a variety of cultures and regions around the world.

A business cannot be parochial as market share is global. Once the enterprise has managed the shift in mind-set towards gaining meaningful global market share then the next critical point to evaluate is whether the existing extended supply chain, setup sometime in the past, is

fit for purpose, its costs and inbound and outbound logistics, for servicing the markets to fulfil the customer promise.

Another key element for sustainability of an enterprise is the willingness to accept the market realities, accept technology changes and sometimes even create new products that make their present products redundant. Is your organisation ready? 

The author is an Executive Director with Valcon, a management consulting company with Scandinavian roots and a global reach.



Good Times are Rolling!

Scanning probes speed form-data collection and feedback to machining cells, reduce CMM fixturing and cut probe calibration time from hours to minutes.

Kawasaki encourages motorcycle enthusiasts to “let the good times roll”, but good times of another sort are rolling at the company’s Maryville, MO small engine plant. At this plant, two 5-axis scanning probe systems are slashing CMM inspection and probe calibration times, and speeding up QC feedback for machining of small engine components.

The 5-axis Renishaw REVO systems, installed on Mitutoyo Crysta-Apex 121210 CMMs, replaced two PH10 articulating heads using SP25 scanning probes on traditional 3-axis CMMs. The REVO-equipped CMMs have cut inspection times by half or more on scanning intensive applications, eliminated the need for custom probe configurations, cut probe calibration times from six to seven hours to about 45 minutes, and added new capability to collect large amounts of form measurement data, improving part quality.

Of primary importance, the REVO systems have greatly increased inspection throughput, data quality and flexibility of the QC department, enhancing its value as a strategic support asset to both manufacturing and R&D.

The Kawasaki Production System: Kawasaki’s 800,000 sq ft Maryville plant, opened in 1989, produces single and

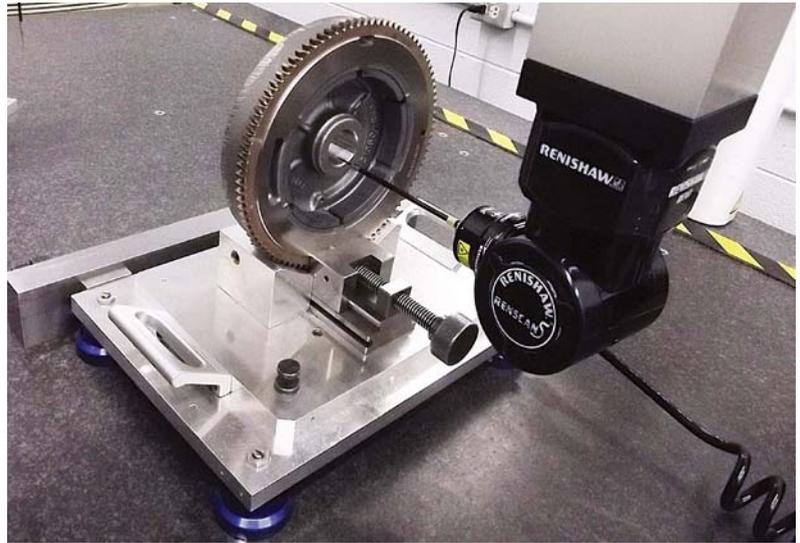
twin-cylinder air-cooled or water-cooled engines, 1000 cc or smaller, for commercial and consumer lawnmower OEMs, as well as for a sister plant that manufactures ATVs and Mule™ utility vehicles. Operations at Maryville include aluminium die-casting, plastic injection moulding, extensive amounts of machining, painting and assembly. All engines – approximately 500,000 per year – are run-off before shipping as well. “We use the Kawasaki Production System (KPS),” said JC Watts, Quality Control Technical Group Supervisor at the Maryville plant. “Our quality and engineering requirements are comparable to the best in the automotive industry, though our manufacturing is focused on lower volumes of many different kinds of products.”

The plant has 50 machining lines, typically arranged in a U-cell pattern with start and end machines across from each other. “Primarily, it’s one-piece production with machining lines running a part through multiple processes at a high rate,” Watts explained. Kawasaki utilises automation in many die cast and some machining operations, accomplished through the integration of Kawasaki robots. On one of the crankcase lines, robots load raw materials and unload finished parts that are placed into inventory for assembly to draw upon. Machined parts include aluminium, cast iron and steel.

“We’re running similar tolerances that automotive pow-



ertrain uses for high-end products, and there are probably four or five critical processes for our aluminium parts and 15 for the steel parts,” Watts added. It is not uncommon to find tolerances ‘in single digits in microns’ for form, and 0.05 mm true position. The QC lab is responsible for inspecting 125 different mass-produced parts, as well as vendor parts and those produced for engineering development. The environmentally controlled lab is located adjacent to the machining lines, and parts intended for routine inspection are delivered on carts or via train (an electric vehicle towing several trolley carts). Critical components may be hand delivered for priority inspection during a line changeover or if an operator suspects a problem.



Revo head inspecting a FX series small engine flywheel

5-axis scanning advantage: “When I started here, we had a couple of 3-axis CMMs with PH10 articulating heads and SP25 probes, and another CMM with a fixed probe head,” Watts explained. “We were frustrated with having to make probe configurations and being limited to what we could do even with the articulated heads. We had so many different probe configurations that calibration times of six to seven hours took a bite out of our inspection throughput, too. We wanted to do better than what the industry considered the norm, so we looked at several options and the 5-axis REVO system appeared to be the fastest and most flexible available. It was the best fit for our requirements.”

Kawasaki bought a new Mitutoyo Crysta-Apex 121210 in 2009 with the REVO system installed from the factory, and retrofitted an identical machine in 2010, after the first machine was up and running with all the part programs.

The REVO 5-axis scanning probe head can collect up to 6000 data points/sec. It is engineered for high-speed precision measurement of contoured surfaces and complex geometries requiring high-volume data collection to validate fit and form with high accuracy. It uses two rotary axes, one in the vertical plane and one in the horizontal, for infinite rotation and positioning. Five-axis software drives the measuring head and synchronizes its motion with the linear axes of the CMM. Look-ahead algorithms drive the probe path and CMM in coordinated continuous motion. The head adapts position while measuring on the move, maintaining stylus tip contact with changing contours

“We might have 30 different crankshafts, for example, but because everyone has the same features, only in a different size or location, we can use the same inspection program to measure all the parts. That’s one of the big advantages we gained.”

JC Watts,
Quality Control Technical
Group Supervisor at
Kawasaki’s Maryville plant

at scanning speeds of up to 500 mm/sec.

“Though our SP25s were scanning probes, we were doing 95 percent touch probing because scanning was too slow with a 3-axis CMM,” Watts explained. “Our cylinder and crank bores are probably the best examples of where we believed touch probing was inadequate. To accurately collect enough data points to measure the geometry of a bore 80 to 100 mm in diameter and 150 mm in length, the SP25 probe took so long we limited those inspections to machine set up or special requests from our design department. Now on every crank case we measure, the REVO does a spiral scan of bores and the system outputs the values to software. We also send a graph of the data points to our network that can be used by anyone in QC, engineering or production, and it really helps troubleshoot problems. You can visualise the problem. What would take 3-4 minutes with an SP25, we’re measuring in 10 seconds with the REVO.”

The REVO scanning heads have all but eliminated the need for touch probing. Now 95 percent of inspections utilise scanning, with no ‘time penalty’ as before, allowing Kawasaki to collect so much data that it challenges the speed of computers doing the analysis. The REVO probe can also do ‘head touch’ probing or be used for traditional machine-touch probing when the situation calls for touches.

“With scanning inspections, our production and engineering people have a lot more confidence that the data is valid,” Watts added. “With touch probing it is easy to get one speck of dirt that causes an out-of-round condition if you’re only sampling seven or eight points. It can throw the location of that circle off. We have specific documented exam-



ples of where there were flatness errors we would not have caught with touch probing, and cylinder bore geometries that would not have been caught with touch probing because of the amount of data sampled with the touch probe. We still caught these problems before they left the plant, but the parts were scrap. The REVO scanning capability allows us to catch form errors much more quickly, without a time penalty on our inspections.”

Fewer probe configurations, more flexibility: With REVO, the Maryville operation now has two probe configurations that measure all of its mass production parts, reserving custom probes in a changing rack for a few special applications. Special configurations for vendor parts have also been eliminated because the infinite positioning angles of REVO allow measuring of a part without special fixturing or consideration of which probe to use. With so few probes, calibration time



Revo-equipped CMMs at Kawasaki's Maryville

has dropped to around 46 minutes. Now QC technicians monitor the calibration instead of calibrating every shift.

Flexibility of the REVO system has also proven to be a time-saver for Kawasaki. “We can measure any part on either machine with a limited amount of fixturing and no special calibrations,” said Watts. “We measure all our parts on three types of fixturing. The REVO probe orients itself to the part after it’s initially aligned. The utilisation of special fixtures has almost been eliminated, without concerns of measurement error due to part alignment.”

Kawasaki programs all of its inspection routines in-house using Mitutoyo’s Mcosmos 3.1 software. The upgrade to REVO instigated a shift to parametric and modular programming of inspection routines through in-house development of coding. This allows a program to be used for a part family. “We might have 30 different crankshafts, for example, but because everyone has the same features, only in a different size or location, we can use the same inspection program to measure all the parts,” Watts stated. “That’s one of the big advantages we gained.”

Faster inspection: Watts says the transition from 3-axis to 5-axis programming is not difficult, and a programmer with limited ability can still program REVO inspections as 3-axis. However, when it comes to optimising speed of inspection, it is critical to use head motion as much as possible. “This allows you to scan parts the quickest, without inducing measurement error,” he added. “REVO opens up a lot of possibilities, with few limitations, so speed gains are obtainable for both the higher and lower skilled programmers.”

Inspection results may be relayed to the machining lines manually or they can be accessed locally by line operators over a computer network. “We take advantage of some of the ‘best fit’ algorithms and work with our production engineers, especially on parts that require more complex algorithms to get the adjustment right, and to utilise multiple process adjustments simultaneously. The REVO allowed us to utilise parametric programming, which in turn allowed us to expand our capability across the board more easily.”

Five-axis CMM scanning has been a game-changer for QC at the Maryville plant in terms of speed, data quality, and inspection capacity, according to Watts. “We’ve enjoyed big gains from having two machines that are completely redundant, so if one machine breaks or is down for calibration, it’s no problem to measure critical parts on the other machine. That’s a big advantage in the QC lab, because we were the ones who, in a pinch, had to get the large part on the small CMM, or the part

requiring the odd angle probe on the machine that didn’t have it. We used to get requests from R&D to measure certain geometries, and it was next to impossible to achieve in the time allotted. Now we can provide the data much quicker and, being scanned data, our people have greater confidence in it. This new flexibility, the reduced fixturing, form measurement, the parametric programming – these are all collateral advantages, in addition to the raw inspection speed.”

The Maryville facility has run more than 50,000 parts through the two REVO equipped CMMs, and Watts indicated there are plans to expand the use of the REVO system to gear inspection and cam lift if it proves feasible. “We’ve developed our own algorithm and sub-routine in our software for cam lift, and, that’s something that would have been more difficult to do without the REVO system due to the angle the probe requires to measure the lift on the lobes.” 

Source: Renishaw



Swiss Made Precision

Five Swiss companies - Blaser Swisslube, JENOPTIK, EROWA, Fritz Studer and 3M (Schweiz) - came together to offer synchronised and tailor made solutions through a series of seminars held in different cities

Some of the finest Swiss companies with expertise in different segments had recently joined hands to organise the four-city Grinding Technology Seminar in the month of June. Held in Bangalore (June 22), Pune (June 24), Ahmedabad (June 26) and Singapore (June 30), this seminar showcased the coordinated and custom-made solutions from these competent partners. Besides the signature Swiss-made precision, these solutions were more economical while offering real customer advantages. These companies included: Blaser Swisslube, JENOPTIK, EROWA, Fritz Studer and 3M (Schweiz).

The objective behind this collaborative endeavour was to demonstrate the common competence and experience in providing complete solutions for cylindrical grinding processes. For example, a Blaser representative spoke about how the understanding of microbiology in water miscible coolants had led to a cutting edge solution like Blasocut. A spokesperson from Erowa discussed standardisation in grinding while focusing on an innovation called the Rapid Change System in the context of work piece holding. A technical presentation from JENOPTIK explained the significance of process gauging while the Studer presentation touched upon the importance of optimising production as well as how the company is taking a comprehensive approach to energy efficiency both internally as well as for its customers.

Applications ranging from single part to mass production in the following fields:

Tool making
Automotive
Mechanical engineering
Hydraulics
Precision parts
Mould and die making.

A 3M presentation on an innovative solution called Cubitron II talked about drastically reducing cycle times for both OD grinding and ID grinding. All the technical presentations highlighted the signifi-



Highlights of the seminar

- Complete solutions around the grinding application, presented by internationally renowned Swiss companies.
- High concentration of technical competence in one location, focusing on your needs.
- Very high practical relevance based on the presentation of detailed case histories.
- Ample time for individual discussions and/or consultation.

cance of TCO (Total cost of ownership) rather than the initial investment cost by focussing on key issues like high efficiency, better control, productivity, environment friendliness and energy efficiency amongst other things.

The profile of participants included manufacturing / production engineers, heads of grinding departments, technical Staff in R&D, and many others interested in the cylindrical grinding technology. The seminar received excellent response from the attendees who found the experience extremely relevant and useful.

For technical presentations and other information, visit: <http://www.smp-seminar.com/>



L to R: **Arvind Singhatiya**, V.P. Corporate Affairs – Ola, **Girish Karkera**, Editor - TopGear Magazine India, **Amit Sagar**, National Head, Passenger Car Unit - Tata Motors, **Mandira Bedi**, **Sunil Shetty**, **Deepak Lamba**, CEO - Worldwide Media, **Shri Gautam Chatterjee**, IAS, Addl. Chief Secretary (Transport), **Milind Bharambe**, Joint Commissioner Traffic Police Mumbai, **Jayant Mhaiskar**, MD-MEP, **Sheila Sail**, DCP (Crime Against Women Cell)

Safe Streets, Safe Citizens

Do you think buying cars equipped with airbags and ABS or wearing a helmet while riding a two-wheeler will single-handedly save you from fatal injuries in case of an accident? If your answer is 'yes' then think again because when it comes to our city's roads, there's more to our safety than safer vehicles.

And, that's because when we talk about road safety, one of the biggest factors we tend to forget is that with each passing day, there are thousands of people joining us on the roads who may not necessarily know how to use the infrastructure made available to them. Spreading awareness about road fatalities isn't a one-man job, and we all need to work together to bring about a change.

So, in a joint initiative to make Mumbai's roads safer, BBC TopGear Magazine India has announced a three-week long campaign named 'Street Smart, Street Safe Mumbai' supported by the Mumbai Traffic Police. With Bollywood actor Sunil Shetty as brand ambassador, the first week of the campaign will focus on decongesting the streets of Mumbai by encouraging carpooling and the use of public transport. The weeks to follow will witness events creating awareness about basic traffic rules, women drivers' safety, and

Dignitaries carpooling their way in a Bolt from Tata Motors



noise pollution caused by honking. In attendance at the press conference were high-profile civic personalities and businessmen including Gautam Chatterjee, IAS, Addl. Chief Secretary (Transport), Sheila Sail - DCP (Crime Against Women Cell), Amit Sagar, National Head - Passenger Car Unit, Tata Motors Limited, Arvind Singhatiya, Vice President of Corporate Affairs - Ola and BBC TopGear Magazine India Editor, Girish Karkera. Demonstrating their commitment to the cause, Milind Bharambe, Joint Commissioner Traffic, Jayant Mhaiskar, Managing

Director - MEP Infra, Mandira Bedi and a few other dignitaries carpoled to and from the event. Another highlight of the campaign is the launch of a Mumbai Traffic app. Supported by Google Maps, the app (for Android users) provides updates about heavily congested areas and suggests alternate routes. The app also features a one-click Emergency Alert, which sends your last known location to three contacts of your choice, with a view to make the roads safer for women drivers.

"Progress also brings its fair share of not-so-good things. Traffic is one of them. We cannot escape it but what we can do is use our roads safely and more efficiently. It is a holistic approach that we need right now. Our endeavour with 'Street Smart - Street Safe' is to highlight what we all can do together", said Girish. As part of the initiative, the 'Decongest Mumbai' campaign will run from July 3, followed by a 'Women's Safety Drive' on July 8, 2015. 'Traffic Angels', an activity where school children and volunteers will form a human chain to guide pedestrians and prevent jaywalking, will be held on July 14. 'Horn Not OK' will involve monitoring noise levels across the city by installing decibel meters at key junctions in a bid to bring down noise pollution. Various other activities and contests will be held across the city. The campaign will wrap up on July 21, 2015 with an event that demonstrates the importance of obeying traffic laws.



The road ahead and more

MEP's Jayant Mhaikar on traffic problems, solutions and learnings

What are the new initiatives being planned by MEP?

MEP is one of the leading players in OMT and Toll Management segment across the Country. MEP has given prime importance to road safety and commuter's convenience. MEP believes in technology and thus has installed Electronic Toll Collection system based on RFID Technology on many of its projects such as Rajiv Gandhi Sea Link, Mumbai Entry Points and toll plazas of National Highways Authority of India. MEP projects are well equipped with CCTV cameras along with a Controlled Surveillance Room to monitor the movement of traffic to avoid incidents. Rajiv Gandhi Sea Link is one such example where we have been able to reduce the number of mishaps and accidents.

As someone who has been associated for long with road projects, how do you view the problems caused by traffic?

India has the second largest road network in the world, aggregating 4.7 million kilometers of roads constituting the most common mode of transportation, and account for about 85 per cent of passenger traffic and around 60 per cent of the freight traffic in the country. However National Highways, with a length close to 79,000 km, constitute a mere 2 per cent of the road network but carry about 40 per cent of the total road traffic. Limited network of roads leads to the traffic snarls, which is causing the fuel wastage, increased travel time, wear and tear of vehicles and roads as well. This necessitates a large scope of growth in the road trajectory.

To decongest the traffic in the city of Mumbai, there is a requirement of elevated roads in addition to the 55 flyovers in and around Mumbai on five major corridors, which also has been instrumental in catering to growing traffic population.

What can Mumbai learn from metropolises abroad when it comes to managing traffic?

The city needs exclusive lanes for public transport systems so as to have hassle free transportation for the public at large, aided by facilities such as dedicated parking lots or parking hubs on taxable basis, which will provoke commuters to use more and more public transport.

Congestion charging is another widely followed practice across the globe for traffic management.

People should inculcate the practice of carpooling, which will reduce number of private vehicles on the roads.

Other useful way can be implementation of Highway Traffic Management System with features such as patrolling, help line service, GPS, VTS etc. Auto sensor signaling could be implemented for faster clearance of the vehicles in traffic prone zones.

“PEOPLE SHOULD INCULCATE THE PRACTICE OF CARPOOLING, WHICH WILL REDUCE NUMBER OF PRIVATE VEHICLES ON THE ROADS”



Mr. Jayant D. Mhaikar, Vice Chairman & Managing Director, MEP Infrastructure Developers Limited

How does MEP manage the various projects in over 10 states?

MEP has an experience of more than 12 years in the toll management industry across 12 states in the country. We have a separate toll operations division with a strong work force of skilled manpower. We provide all facilities to our workforce to help them deliver their best output resulting in the smooth functioning of the toll plazas. We impart rigorous training to our staff for the effective plaza management.

We have a strong bent for the advanced tolling systems and thus use RFID technology based electronic tolling, smart cards for the faster clearance of the vehicles from the plaza.

We have a well-qualified and experienced civil team to cater to the need of the routine and periodic maintenance of the roads so as to provide excellent quality roads for the vehicles.

As a road user what is the one thing about traffic that irritates you most?

As a citizen of the country the thing which bothers me the most is the traffic congestion and lack

of traffic awareness at large. Commuters on the road should follow the traffic rules and regulations for their own safety and for the safety of the fellow commuters as well. People should take the initiative to become habitual for the traffic discipline so as to have hassle free traffic movement which will give joy of journey to each one of us.



Celebrating customers

DISA India celebrated “Customers’ Day” with more than 60 participants attending from 45 companies across India at its Tumkur plant in Bengaluru.

DISA India celebrated “Customers’ Day” with more than 60 participants attending from 45 companies across India at its Tumkur plant, Bengaluru, on April 27, 2015. The profile of the participants included senior management and owners of the foundries and castings units.

The programme began with a welcome note followed by a technical presentation and an exhibition of Wheelabrator’s new generation shot blast machine VH-10/12, DISA MATIC 030 machine and DISA MATCH 20/24 machine. The event was highly technical and completely focused on the display of three machines.

“These three exhibits can be a game changer in the Indian foundry industry in coming years,” said Viraj Naidu, Managing Director, DISA India Limited in his welcome address. All customers were happy with the presentations and appreciated DISA India’s effort to organise such focused event and wished to attend such more events in future. The company presented next generation innovations as follows:

Wheelabrator VH-10/12: Wheelabrator offers a new Hanger type solution for foundries. Hanger type blast machines are very flexible solutions and meet jobbing foundry/forging company requirement cost effectively. The only variable factor is the fixture design, which gets modified with respective parts. DISA India continued to focus on these machines and tried to optimise solutions to give customers increased added value. Its key features include: small foot print; pit-less machine; load carrying capacity of 800kgs/hook; high performing wheel (SATURN HD); its safety door is operated through electromagnetic motor, etc. Further, it can install, connect and blast with quick installation time; it is easy to move the machine if the production process changes and has a magnetic separator (optional).

New Generation DISAMATIC 030: The Company’s DISA-



These three exhibits can be a game changer in the Indian foundry industry in coming years.”

Viraj Naidu, Managing Director, DISA India Limited

MATIC offerings have been producing castings at the lowest cost per casting. Its innovative DISAMATIC 030 -- the first DISAMATIC moulding machine ever produced in India -- includes high-end hydraulics, and various TPM concepts like visibility while in operation with transparent doors. There are 8 “Made in India” DISAMATIC 030 moulding lines in operation. The product’s key features include: it can produce up to 250 uncored moulds per hour and/or up to 220 cored moulds per hour; with mould sizes of 480x600x120-340 mm or 535x650x120-340 mm; it has high-pressure double-sided squeeze for high-density mould consistency; straightforward operation and maintenance; lower mismatch; high uptime; lower capital investment; shorter payback time, etc. Besides, it offers years of profitable service; fast delivery of original spare parts; hotline support; on-site technical support from offices close to you, etc.

DISA MATCH 20/24: DISA India’s advanced horizontal flaskless moulding machine was launched at IFEX 2012 in Bengaluru. The revolutionary DISA MATCH moulding technology offered several options available to foundries looking for efficient, high-quality production of castings in shorter runs with frequent pattern changes.

It showcased its latest DISA MATCH 20/24 to customers which is designed and manufactured to deliver high capacity of 180 uncored mould per hour; more precise or maximum machine related mismatch guarantee of 0.15 mm; repeatable and automatic core setting with Automatic Core Setter (CSE); easy and fast pattern change using Quick Match Plate Changer (QMC); high uptime with local availability of parts and service; lower capital investment cost as it is available for sale in rupees in India. There are 35 DISA MATCH moulding machines in operation in India. 



Haas UMC-750SS High-Speed 5-Axis Universal Machining Center

Haas Automation expands its line of universal machining centers with the UMC-750SS, a Super-Speed version that offers high performance and speed for quickly machining 5-sided (3+2) and simultaneous 5-axis parts.

The UMC-750SS is a 5-axis, 40-taper universal machining center with 762 x 508 x 508 mm travels, 30.5 m/min rapids, and an integrated high-speed, dual-axis trunnion table. The machine is equipped with a 15,000-rpm inline direct-drive spindle, a high-speed 40+1 tool side-mount tool changer, and Haas Automation's powerful high-speed machining software.

The UMC-750SS's high-speed, roller-cam trunnion table offers 150 deg/sec feedrates to quickly position parts to nearly any angle for 5-sided (3+2) machining, or provide full simultaneous 5-axis motion for contouring and complex machining. The trunnion provides +110 and -35 degrees of tilt and 360 degrees of rotation for excellent tool clearance and large



part capacity, and the 630 x 500 mm table features standard T-slots and a precision pilot bore for fixturing versatility. To simplify job set up, the UMC-750SS features Dynamic Work Offsets and Tool Center Point Control, and comes standard with Haas Automation's Wireless Intuitive Probing System.

The machine's 15,000-rpm inline direct-drive spindle is powered by a 22.4 kW vector drive system that yields 122Nm of cutting torque. The Haas inline system

couples the spindle directly to the motor to reduce heat, increase power transmission, and provide excellent surface finishes.

A wide selection of high-productivity options is available for the UMC-750SS, as well, including a belt-type chip conveyor, high-pressure through-spindle coolant systems, expanded program memory, and much more.

If you're searching for a high-speed 5-axis solution to reduce setups, increase accuracy, and boost throughput, look no further. The UMC-750SS from Haas is the answer.

Haas DM-1 High-Speed 40-Taper Drill/Mill Center

To compete in today's economy, machine shops must produce parts quickly and accurately, while optimizing their floor space. Whether you're a high-mix production business looking to increase throughput, or a sub-contract machine shop looking for a small, fast 40-taper machine, the DM-1 from Haas Automation is the solution.

The DM-1 is a high-speed, lean-style machining center with a compact footprint that allows multiple machines to be placed side-by-side to make the most efficient use of valuable shop floor space. Its high acceleration rates, fast axis speeds, and short tool change times – combined with a 40-taper inline spindle – make the DM-1 an attractive high-productivity machining center.

The DM-1 has a 508 x 406 x 394 mm work cube and a 660 mm x 381 mm T-slot table. The 40-taper inline direct-drive spindle turns to 15,000 rpm, and allows high-speed rigid tapping, with up to four times retract speed. The spindle is coupled directly to the motor to reduce heat, increase power transmission, and provide excellent surface finishes. A 15-hp vector drive system provides 62

Nm (peak) of cutting torque for milling and boring operations.

The DM-1 provides cutting feedrates to 30.5 m/min for high-speed milling, and the machine's 18+1 side-mount tool changer swaps tools quickly to reduce non-cutting time. High-speed 61 m/min rapids combine with high acceleration rates to shorten cycle times and increase throughput.

For efficient chip removal, the DM-1 features steeply sloped internal sheet metal. Optional twin chip augers transport chips to exit at the rear of the machine, allowing multiple machines to be placed close together. A 170 L flood coolant system is standard, with options for a programmable coolant nozzle and high-pressure through-spindle coolant systems. A wide selection of options are available to further boost productivity, including high-speed machining software, wireless tool and work probing, 4th- and 5th-axis capability, and much more.

Built in the USA by Haas, the DM-1 Drill/Mill Center is backed by the worldwide network of Haas Factory Outlets – the most extensive system of support and service in the industry.



For further information please contact: <http://www.cncsimpl.com/> or www.HaasCNC.com



TaeguTec Mill2Rush Triangular Insert - First of its Kind

TaeguTec has broadened its Mill2Rush line and become the first in the business to introduce a double-sided triangular insert for extended flute cutters.

Expanding the popular TNMX 18 series, TaeguTec has also added Mill2Rush TNMX 18 splitter inserts thus greatly increasing the amount of applications, industries and materials that the family of inserts and cutters cover.

The TNMX 18 addition is characterized by a double-sided triangular insert with an 8 millimeter thickness and 13 mm depth of cut – all factors that enable for powerful machining and adds to the Mill2Rush family of cutting tools an even greater choice in heavy duty 90 degree machining.

Some of the other features include a high heli-



2 Splitter insert types (TNMX 18)

SMR2	SMR3
<ul style="list-style-type: none"> - 6 Corners - 2 Grooves 	<ul style="list-style-type: none"> - 6 Corners - 3 Grooves - Different Periphery Color

that promotes rigid clamping.

The latest design improvements have introduced other advantages to the TNMX 18 line. For example, the splitter insert's grooves located along the cutting edges reduce the cutting load, vibration and noise under unstable machining conditions such as long overhang or weak fixtures. As such, the splitter inserts promote very stable machining and higher productivity as the grooves also generate reduced cutting load which, in turn, allow for higher table feed during machining.

cal and positive cutting edge geometry that also makes the machining process stable, which in turn increases productivity while cutting on cost, and an angled screw clamping design

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DXG-100 - Single Spindle Turning Machine with a 2-Axis Gantry

DXG-100, Single Spindle Turning Machine with a 2-Axis Gantry, this machine is ideally suited for producing precision components in mass, which could even multiply the productivity. The unique feature of DXG 100 is its unmanned loading to unloading operation. The machine is equipped with the gantry robot and a dual gripper unit with a change over station for second operation. For Gantry Robot the machine is equipped with an Auto Feeder Unit with Job Stacking which can accommodate input work piece in quantity for auto loading.

SX-6 - High Speed Machining

SX-6 is result of vast experience in High Speed Machining. The machine is having a compact footprint with Column Moving Structure dedicated for continuous production that require precision component in mass. The concept of base and column structure with all the moving axis-mass on the column helps to achieve high dynamics while maintaining higher machining accuracy. The unique feature of SX6 is its hydraulic operated integral pallet changer and servo controlled ATC. High speed Spindle having acceleration of 1.1 m/s² rotates at 12000 rpm to meet requirement of small component machining.

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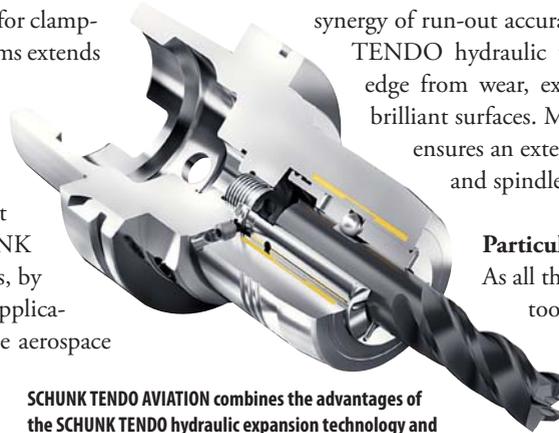


New flagship for demanding precision machining

SCHUNK, the competence leader for clamping technology and gripping systems extends its program for high performance hydraulic expansion toolholders with the TENDO AVIATION. After the introduction of the powerful SCHUNK TENDO-E compact universal toolholder in 2010, SCHUNK continues this unique story of success, by focusing on demanding precision applications, which particularly occur in the aerospace industry. Safety mechanisms such as anti pull-out locking mechanisms are partly mandatory in this industry.

Combining advantages of two clamping technologies

TENDO AVIATION combines the strengths of hydraulic expansion technology with the ones of Weldon toolholders: it convinces with a permanently high run-out accuracy, a balancing grade of G 2.5 at 25,000 min⁻¹, perfect vibration damping, and a fast tool change using an Allen key. For the use of Weldon shanks, an integrated anti pull-out locking mechanism ensures an orientation of the tools and form-fit clamping, which prevents slipping out of the tool, and even tight shape and positional tolerances can be maintained. Moreover, the potentials of tool and machine can be fully used. TENDO AVIATION allows maximum torque transmission at a consistently high precision and process reliability. Compared with conventional Weldon mountings, and heat shrinking toolholders, where the run-out accuracy decreases with time, it offers tremendous advantages. The typical



SCHUNK TENDO AVIATION combines the advantages of the SCHUNK TENDO hydraulic expansion technology and of a Weldon chuck. An integrated anti pull-out locking mechanism avoids slipping out of the tool and damages at the workpiece. Moreover, the cutting data can be partly increased.

synergy of run-out accuracy and vibration damping of the TENDO hydraulic toolholders prevents the cutting edge from wear, extends the tool life, and ensures brilliant surfaces. Moreover, the uniform load profile ensures an extension of the service life of spindle and spindle bearing.

Particularly economical

As all the SCHUNK hydraulic expansion toolholders, the TENDO AVIATION does not need any additional and partly expensive peripheral equipment. This price-attractive high-end toolholder is exclusively

manufactured at the SCHUNK headquarters in Lauffen, Germany, and as a first step they are available for the

interfaces HSK-A63 (ø 8mm, 10 mm, 12 mm, and 16mm; and HSK-A100 (ø 16 mm, 20 mm, and 25 mm). The clamping diameter can be reduced by using intermediate sleeves. In contrast to the ER collet cucks, or the heat shrinking mountings, TENDO AVIATION is resistant against dirt, and requires low-maintenance. In order to increase the service life of precision mountings, and to maintain maximum process stability during sensible processes, the precision mounting can be inspected, and if necessary optimized during a performance check of the SCHUNK Service.

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Nozzle Changer Available On Electra FL

Following the successful integration of the nozzle changer on its CO2 laser systems, LVD is extending the option to the Electra, LVD's high-speed fiber laser cutting system. Featuring storage for 10 nozzles, the option brings greater autonomy, reduces piercing times and increases overall throughput on the machine.

Materials and thickness can vary throughout the production day. With the nozzle changer the laser cutting machine will select the right nozzle for every job. Requiring no operator intervention, the nozzle changer reduces downtime, by quickly performing nozzle changes including cleaning the nozzle and checking the nozzle alignment.



The Electra FL is LVD's high-speed fiber laser cutting machine. Now also with nozzle changer option. Photo: LVD



Electra FL with nozzle changer. Photo: LVD

The automatic nozzle changer is available on the Electra FL 2 kW, 3 kW and 4 kW models.

For more info, contact: Product Manager Laser, Kurt Van Collie, LVD Company nv; Tel: +32 56 43 05 11; Email: kvcl@lvd.be; Website: www.lvdgroup.com



New platform for the grinding of large crankshafts



The newly developed JUCRANK 8 from JUNKER is up to ten meters (32.8 feet) long and grinds forged large crankshafts in just one set-up

JUNKER builds a new platform for cylindrical and non-cylindrical grinding of workpieces with a swing diameter of 470 mm and a part length capacity of up to 4,800 mm, initially applied for grinding of large crankshafts

“Your CBN technology is so economical. Do you also have a machine for grinding large crankshafts?” was a question repeatedly posed to JUNKER. The grinding machine specialist researched the request and discovered: To one point, primarily antiquated machines are installed worldwide for large crankshaft grinding. To another point, downsizing can be observed in generator and marine engine design; several smaller engines are of course easier to handle than one large one. As a result, the need for modern production methods and new machines is on the rise. To satisfy this need, JUNKER decided to develop a larger platform with many technical refinements.

The platform will first be used in the JUCRANK series for grinding large crankshafts. As these weigh up to 1,000 kg, it is a challenge just to set the parts up for the process. To adjust the table assemblies, JUNKER has developed a slide with an integrated length measuring system. As a result, the setup technician first brings the work heads into position, then the steadies.

Newly developed steady with CNC control: First, to enable the processing of such unstable workpieces JUNKER had to develop its own steady. Currently available systems are simply too bulky and not rigid enough for high speed grinding. The new patent-pending steadies are CNC-controlled and have only one axis each. This considerably increases their stability and stiffness. Each of up to a maximum of 11 steadies can be controlled individually and applied to a section at any time – even during the process. This key feature allows for higher sequence flexibility of the grinding process. To make this possible, JUNKER applied its proven control concept to a larger, high-performance control system. After all, in its simplest execution the JUCRANK 8 already offers 24 CNC axes.

Integrated measuring: Large crankshafts are mainly produced in small batches, and in some cases as single pieces. Further-

more, the forging and hardening costs are so high that scrapping a part is disastrous. JUNKER has added an integrated measuring system to overcome these challenges.

First the two grinding wheels, each mounted on a wheelhead with its own X and Z-axis, pre-grind the main and pin bearings. The diameters are measured during the process. Then it becomes apparent that the grinding machine is also a measuring machine, as it measures the entire workpiece after pre-grinding: The taper of each element,



The largest JUNKER platform built to date will soon be put to use for the grinding of crankshafts. Other applications are to follow

the bearing widths, lift heights - simply everything - is measured.

Based on the measuring data, the JUCRANK 8 finishes the grinding process while using the WK axis developed further by JUNKER: During grinding it swivels the grinding spindle, compensating for tapers in the process. With this technology the grinding machine can provide each main and pin bearing with its own profile shape, i.e. if necessary with specific crowning. With this functionality, the machine then also grinds the two shaft ends if required. These often feature a taper and not a flange or post end.

As a result, the forged crankshaft is completely ground and ready for installation after only one set-up. Another possibility of applying the new JUCRANK technology is for the re-grinding of used crankshafts. The crankshafts are ground based on the measurements taken by the machine in record time.

Prospective applications outside of crankshafts: There is also plenty of potential for other applications – for example: printing rollers, electric motor shafts, and many more.

For more info, contact Erwin Junker Maschinenfabrik GmbH,

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STUDER S41 – The all-rounder for complex grinding jobs.



The S41 CNC universal cylindrical grinding machine is characterised by outstanding technology and cost-effectiveness. The machine grinds with much higher precision, paired with a much greater metal removal rate. In addition the longitudinal and cross slide, as well as the swivel axis for the wheelhead are equipped with electric direct drives, which move to the working position much more quickly and precisely.

Higher precision, better surface quality, higher metal removal rates – these are the constantly increasing requirements made by the market on the cost-effectiveness of grinding machines in a nutshell. In fulfilling these requirements, Fritz Studer AG once again sets standards with its S41 CNC universal cylindrical grinding machine. The developers used the practical know-how from a predecessor machine proven worldwide over many years, but the machine scores with a number of outstanding design features. It works more quickly and precisely and also offers a broader range of applications, with production options that are highly attractive with regard to cost-effectiveness. And by saving on auxiliary times, it considerably shortens the cycle times of the grinding process.

Maintenance-free guide system

The new StuderGuide® guideway system ensures high precision of the longitudinal and cross slides when both stationary and during movement. The StuderGuide® guideway system uses the advantages of hydrostatic and hydrodynamic guide systems and avoids the slip-stick effect or floating of the slide. Also contributing to the machine's high precision is the fact that the solid gray cast iron longitudinal and cross slides rest completely on the guideways over the entire travel. With this maintenance-free guide system, Studer guarantees a straightness of < 0.003 millimeters over a measured length of 950 millimeters. The first test results even gave values of < 0.002 millimeters.

Machine variants expand market potential for users

In addition to the considerable increases in working speed and precision, the S41 also has a number of advantageous characteristics which enable the user to cover an extended workpiece range, and thus a broader market range.

- For instance the height of centers on the standard version has been increased to 225 millimeters. The machine is also optionally available with a height of centers of 275 millimeters; this is not achieved by means of distance plates, but by making the workheads higher. The maximum distance between centers is 1000 millimeters on the standard machine, but a machine variant with a distance between centers of 1600 millimeters is also available. Thanks to the greater heights of centers and distances between centers, workpieces with weights of up to 250 kg can now also be machined. The machine is equipped with a hydraulically clamped tailstock for the heavier workpieces.
- Up to four external grinding wheels or three internal grinding spindles enable over 30 grinding head combinations. The grinding wheels are no longer driven by belt drives, but only by motor spindles. The machine can also be equipped with motor spindles for high speed grinding (HSG). Internal grinding spindles with speeds from 6000 to 120,000 rpm can be used. Automatic balancing systems and frequency converters for each external grinding spindle allow the grinding process to be specifically matched to the respective conditions of use. Wheelhead variants are also available with a vertical spindle for grinding keyways or with a traverse grinding axis for traverse grinding of internal tapers.

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Corrugated hose 2.0: igus presents new ideas in energy supply

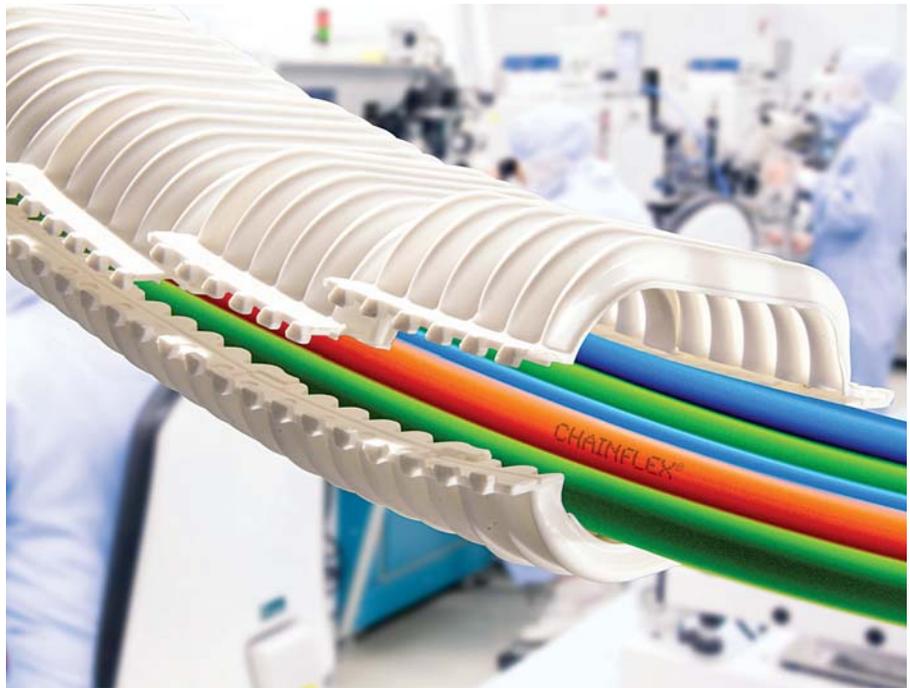
With the e-skin and e-shell, discover new options for flexible and affordable cable guiding

In machinery and equipment construction, as well as in medical and automotive industries, corrugated hoses are an integral part of the energy supply system. At the Hannover Messe, the Cologne-based igus GmbH presented an entirely new idea: the e-skin. This easy-to-open hose can self-supporting contrast to comparable products, and can even be used in the clean room for short unsupported lengths. Existing corrugated hose systems can obtain a more defined movement with the new snap-on e-shell.

Corrugated hoses are used in a variety of applications, especially where the demands on the energy supply system are not particularly high. The advantage is that they are light, versatile and can guide energy, media and data at very low costs. With the e-skin and e-shell, igus showed at the Hannover Messe the development potential hidden in this product and how it makes moving energy even easier.

The e-skin: Compact design for unsupported lengths: The e-skin is a hose consisting of an upper and lower shell, which when clipped together is completely enclosed. Due to the simple and reusable opening mechanism, a trouble-free maintenance and inspection of cables is possible. igus also provides an additional tool with which the hose can be opened and closed quickly. In contrast to the conventional corrugated hose, the e-skin has a defined direction of movement and also can support itself. It can therefore be used for short unsupported lengths as a horizontal energy supply system. With its oval design the modular, expandable tube also offers more space than round corrugated hoses. Cables can be guided carefully using interior separation modules. Likewise, the e-skin can be tailored individually for each application by selecting different materials. The injection moulding process also allows for different colours, different even for the lower or upper part – and even for small quantities.

By virtue of the construction method and the high flexibility, the e-skin can be used in a variety of industries - from



e-skin can be used in the clean room for short unsupported lengths. (Source: igus GmbH)

Corrugated hoses are used in a variety of applications, especially where the demands on the energy supply system are not particularly high. The advantage is that they are light, versatile and can guide energy, media and data at very low costs.

machine tools and medical technology through to sophisticated electronics manufacturing. Here, high speeds and accelerations are possible as they are required, for example, in pick-and-place applications. Because it is abrasion resistant, dust-proof and waterproof, it can also be used in clean room environments.

The e-shell: reinforcing existing system: In addition to the e-skin, igus offers a reinforcement for existing corrugated tube systems: the e-shell. The clip is easily attached to the normal corrugated hose, so that filling can be done at the top side of the joints of the corrugated hose. It is stabilised so that it can only move in one direction. Due to the guide elements on both sides, the corrugated hose has self supporting capability. If this solution is used for several corrugated hoses, they can be reliably guided side by side. Thanks to the defined minimum bending radius, the e-shell safely and reliably protects the cables in the corrugated hose.

For more details contact: Harish Booshan, Product Manager, E-ChainSystems® & ReadyChains®, igus (India) Private Limited, Phone: +91-80-49127809 (Direct); Email: Harish@igus.in or Visit www.igus.in

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