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THE MACHINIST

ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

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10th Anniversary Edition

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Look ahead with excitement!

I had no intention of contrasting the above title with British dramatist John Osborne's influential play of the mid fifties 'Look back with anger'. It came naturally! The past year has filled our spirits with such hopes that we can only look ahead with excitement. Osborne's play reflected the rise of the 'angry young men'. This note reflects the rise of the 'dynamic new India'. Indeed, 2014 was the year that gave India a new government, a new dream and a new vision. And 2015 should see beginning of the realisation of that dream and vision.

And we couldn't have been happier that The Machinist celebrates its tenth anniversary (and the first since it was re-launched) at the beginning of 2015. Thank you all for being with us! Trust me; things are only going to get better here on.

In 2014, we saw the grand announcement of 'Make in India'. In 2015, we will 'Make India'. 2014 saw our satellites break free out of Earth's gravity and reach where only the most powerful country's mission could go. 2015 should see our people break free from the orbits of their limitations and achieve what even the most powerful country hasn't. Let us dream together, let us work together. And let us hurl ourselves out amongst the stars. Destiny is ours to create.

I leave you with that thought and the following lines...

"God built and launched this year for you;
Upon the bridge you stand;
It's your ship, aye, your own ship,
And you are in command." - Alfred Lord Tennyson

"IN 2014, WE SAW THE GRAND ANNOUNCEMENT OF 'MAKE IN INDIA'. IN 2015, WE WILL MAKE INDIA."

Niranjan. M

Editor

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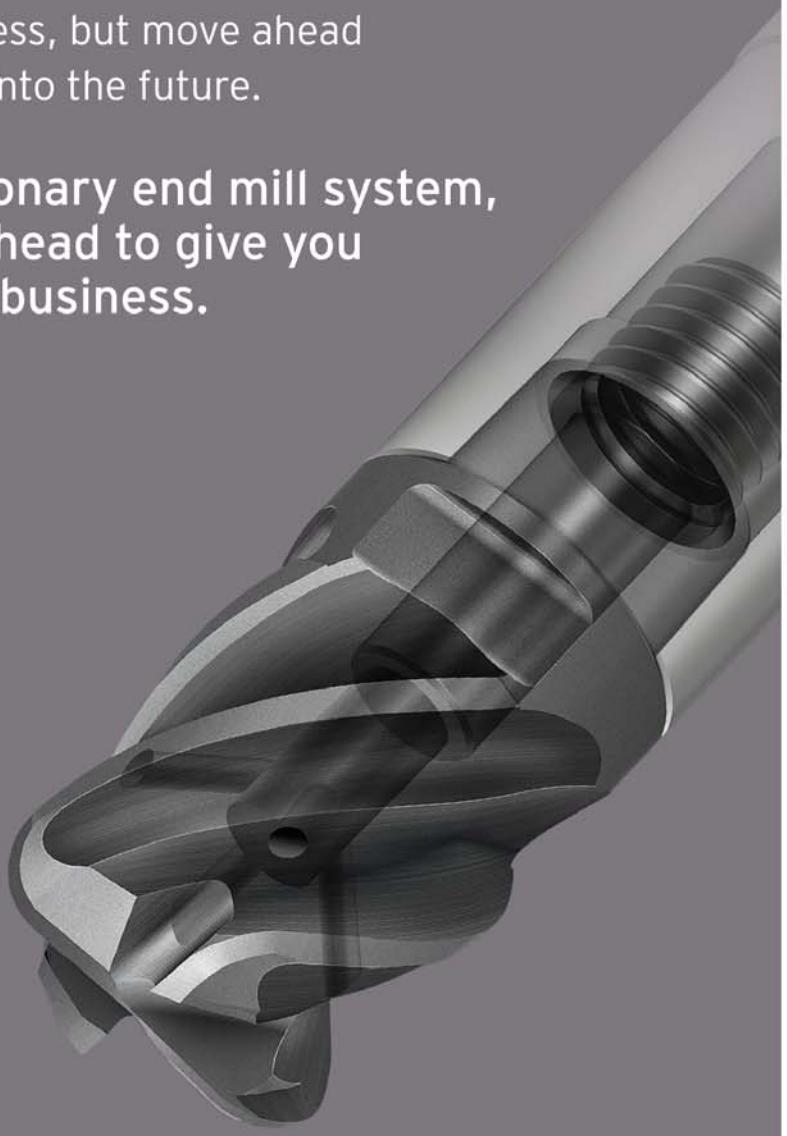

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Hope to touch US$ 100 bln trade with ASEAN by 2015: Nirmala Sitharaman

The Minister of State (Independent Charge) for Commerce & Industry Nirmala Sitharaman has said that "The trade between ASEAN and India has been reaching about US$ 80 billion level. We hope by 2015 it will touch US$ 100 billion and get doubled by 2022. So there is lot of work, there is a lot of scope."

Speaking at the 2nd India – CLMV Business Conclave, the Minister said that India-CLMV (Cambodia, Laos, Myanmar and Vietnam) trade was concentrated in only a few items and there was tremendous scope to deepen and widen the trade basket. She said that now "India's Look East Policy has become very sharp focussed and it is "Act East" Policy." There is a need of "greater and accelerated engagement across the globe with East Asia. The Minister stressed that "we are very keen to open up the north-east part of India; open up the economy, improve on its connectivity with the rest of the East and therefore look at India's North-East as threshold to our Act East Policy."

Siemens Ltd reaches milestone with its IE class motors

Siemens Limited has surpassed a key milestone in manufacturing and delivering International Efficiency (IE) class industrial motors by handing the 100,000th motor to UltraTech Cement Ltd. This translates to energy savings of 300GWh, which is equivalent to the power required by 80,000 average Indian households for an entire year, since the launch of the motors in January 2012. Siemens Limited was the first company in India to launch locally-manufactured IE2 and IE3 efficiency class energy efficient industrial motors; IE3 is currently the highest efficiency class as recognised by Indian Standards.

CIL to produce 1 bln ton coal p.a. by 2020: Coal Secretary

Coal Secretary has assured that Coal India Limited (CIL) is geared up to ramp up the production of coal from the present level of about 450 million tonnes to 1 billion tonnes per annum by 2020. The coal secretary was speaking at an ASSOCHAM interactive session held in New Delhi recently.

Addressing the members of ASSOCHAM on Coal Mines (special provisions) Ordinance 2014, Anil Swarup, Secretary of Coal informed that the process of rationalization of coal linkages is imperative for cost effectiveness and efficient utilisation of the national wealth. He said, "Ministry of Coal is in consultation with railways for development of new railway lines and strengthening the existing rake capacity for smooth evacuation of coal".

"We are quite optimistic to raise the production level of coal in the country to 1.6 billion tonnes per annum out of which private players would be contributing around 0.6 billion tonnes by 2020," he added. Swarup assured members that apart from the Schedule-II and Schedule-III Mines, the other coal blocks are also being worked out for auction purpose. In order to address further grievances which might arise on account of allocation through the bidding process, a Coal Project Monitoring Group (CPMG) would be constituted soon, said coal secretary.

India achieves a significant victory at the WTO against the CVD measures imposed by US

India has achieved a significant victory at the WTO, as the Appellate Body (AB) held that the Countervailing Duty (CVD) measures imposed by the United States against "certain Hot Rolled Carbon Steel Flat Products" are inconsistent with various provisions of the Agreement on Subsidies and Countervailing Measures (ASCM). It will definitely help the domestic manufacturers who had been suffering on account of inconsistent practices by the United States Department of Commerce. The AB has emphatically endorsed India's position that a Public Sector Undertaking (PSU) shall be treated as a "public body" only when they possess governmental authority and discharge governmental functions.

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2700 visitors flock to HaasTec Manesar; representatives from more than 1300 companies

From December 10 to 13, 2014, around 2700 people from no less than 1300 manufacturing companies attended the latest HaasTec open house event in Manesar, the industrial district of Gurgaon, India. Also attended by many industry and local dignitaries, chief guest at the HaasTec was PK Salhotra, Managing Director of Roop Automotive based in nearby Sohna. Roop is one of India's largest OEM suppliers of auto parts such as steering yokes, differential housings and connecting rods, and is representative of the type of customer in the region that uses Haas CNC machine tools.

Taking the spotlight at HaasTec Manesar, and making its second public appearance in India, was the Haas UMC-750 five-axis universal machining centre which, like all machines at the event, was under power and cutting metal in order to show its capabilities to visitors. Haas specialists from the HFO (Haas Factory Outlet), Phillipscorp, CNCSSIPL were close on hand at all times to talk visitors through the demonstrations and answer any questions.

A selection of the company's technology partners were also invited to display their complementary products. Demonstrations, tours and a live Q&A counter were among other highlights of an event that was appreciated by all, including Terence Miranda, Managing Director of the HFO in Mumbai: "We only recently witnessed 2500 visitors attend our HaasTec event in Ahmedabad, western India, so to attract a further 2700 at Manesar is equally pleasing and once more demonstrates the regional support for machine tool technologies developed by Haas. I want to say a huge thank you to all those who attended."

JSPL commissions billet caster plant at Angul

Jindal Steel & Power Ltd (JSPL) has commissioned the Billet Caster Plant as part of the 6 MTPA Integrated Steel Project at Angul, Odisha. Speaking on the occasion, Ravi Uppal, MD & Group CEO, JSPL said, "We have commissioned India's largest capacity Billet Caster Plant in Angul, within a record time of one year; setting yet another benchmark in the country. This would enhance our regional product portfolio since we will now be able to produce long products in addition to the flat products already being produced in the Angul plant." The Billet Caster unit of 1x8 Strands and a maximum capacity of 2.3 MTPA has a casting speed of 3.6 mtr/min; which is the fastest in the world. The project harnessed the in-house capability of JSPL's heavy machinery division in Raipur, which provided technological equipment's and manufactured the biggest Ladle Turret for the Angul Plant.

TIL rolls out 100th Hyster ReachStacker from Kharagpur facility

TIL Limited under the TIL- Hyster partnership has recently rolled out the 100th ReachStacker, from its Changual facility Kharagpur, West Bengal recently. Sumit Mazumder, Chairman and Managing Director, TIL said: "We achieved this important milestone at an appropriate time when our Prime Minister has launched an exciting 'Make in India' campaign to turn India into a global manufacturing hub. We are confident of manufacturing and rolling out the next 100 ReachStackers in a much shorter time."

Dalmia Cement (Bharat) acquires Bokaro cement plant

Dalmia Cement Bharat Limited (DCBL) has announced the acquisition of its Bokaro cement plant by purchasing 100 percent of Bokaro Jaypee Cement Limited (BoJCL) for a total enterprise value of Rs1,150 crore (BoJCL was a 74:26 JV of JAL & SAIL). With manufacturing capacity of 2.1 million tonnes per annum (MTPA), the plant will cater to Jharkhand, Bengal and Bihar. With this plant, DCBL's installed cement capacity (including subsidiaries and associates) will reach 24 MTPA by the end of FY15. Speaking to the media Mahendra Singhi, Group CEO (Cement), Dalmia Bharat Group, said, "Launch of our Bokaro plant is a definite step forward in our endeavour to strengthen focus on the Eastern market and to deepen our pan-India presence. The plant will enhance employment opportunities for local people."

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Mark your diary

A list of key events happening between January to November 2015, both nationally and internationally

Imtex 2015
January 22-28, 2015, Bangalore
www.imtex.in

SPS Automation India 2015
February 5-7, 2015, Ahmedabad
www.spsautomation-india.in

PLASTINDIA 2014
February 5-10, 2015, Gandhinagar, Gujarat
www.plastindia.org

India Automation Technology Fair
February 26-28, 2015, Mumbai
www.iatf.in

ACMA automechanika
February 26-March 1, 2015, New Delhi
www.acma-automechanika.in

ProMat 2015
March 23-26, 2015, Chicago
www.promatshow.com

Hannover Messe 2015
April 13-17, 2015, Hannover
www.hannovermesse.de/home

RAPID – 3D Event
May 18-21, 2015, Long Beach, California, USA
www.rapid3devent.com

SUR/FIN Manufacturing and technology conference and tradeshow
June 8-10, 2015, Illinois (US)
www.nasfsurfin.com

Automotive Manufacturing 2015
June 24-27, 2015, Bangkok, Thailand
www.automanexpo.com

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

FABTECH 2015
November 9-12, 2015, Chicago, USA
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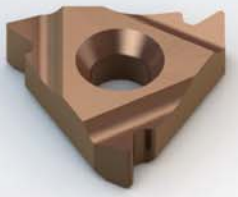

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Kishore Jayaraman

President, Rolls-Royce India and South Asia

India's defence industry, which has grown substantially in recent years, seems headed for even better days.

India appears to be on the verge of a crucial transformation. There is renewed optimism and can-do attitude among industry leaders after the new government announced measures, for the country to emerge as a low-cost manufacturing hub. The 'Make in India' concept in the defence sector has potential to raise defence manufacturing in the country from its present 30 per cent to 70 per cent in the next few years. Also, the increase in FDI from 26 percent to 49 percent and the focus on "Buy Indian" as the first choice for Defence Procurement has also given a major push to industry players who are buoyed by the new government's commitment to upgrade its armed forces with indigenous products.

The Indian defence and aerospace industry will offer business opportunity in the range of US$ 200 billion in the next 15 years. This provides an immense opportunity for both domestic and foreign players to form joint ventures, open new avenues for technology transfers and joint production, and forge public private partnerships. Acquisition of defence systems is intrinsically interlinked with the development of domestic industry. India's defence industry, which has grown substantially in recent years, seems headed for even better days. With a Make in India plan on board, the government is aiming to manufacture a bulk of equipment required locally and make the country a cost-effective defence manufacturing hub for domestic and export markets as well.

> "Strategic security derives much from a nation's footprint on the global economic stage. India needs to increase its presence in top globally-traded goods and services. Overseas investors have a significant role to play in plugging India into global supply chains."

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facilities here, exporting components around the world. Our International Aerospace Manufacturing Pvt Ltd (IAMPL), a joint venture between HAL and Rolls-Royce that produces components for the technologically advanced Trent family of civil aero wasn't required by an offset commitment. It was the result of recognition of the value that both parties could add to each other. Today, the IAMPL production facility represents another commitment to the long-standing partnership with HAL and the future of Indian aerospace industry.

Going forward, this experience can be considered for extending in making India a hub for defence engineering, manufacturing and export to help create more jobs and support India to achieve strategic self-reliance.

The days ahead

India is on the cusp of a major spending drive to modernise its armed forces. With the PM pushing for indigenisation in this sector, India's defence outlay is pegged at US$248 billion over the next 10 years. This means, the country has tremendous potential to bring about an all-round development with emphasis on manufacturing, job creation and skill development. With a huge export potential in engineering services and component sourcing, the country is in a position to build a vibrant domestic defence industry ecosystem.

Indian Air Force Sukhoi Mki fighter aircraft in victory formation, during Air Force Day Parade 2014

Boost to SMEs

It is encouraging to note that small and medium enterprises (MSMEs) are becoming important players in the aerospace activity. Many are undertaking research and development activities, and are involved in production of sub-systems. The government must nurture them by giving them opportunities and extend capital on easy terms so that they can tone up engineering capabilities and marketing infrastructure.

Many foreign companies will look for co-development and co-production arrangements, and scout for joint ventures. This is where opportunities lie for Indian MSMEs. Foreign investments will also bring high-technology products and give a fillip to enterprises involved in defence equipment supplies. Strategic security derives much from a nation's footprint on the global economic stage. India needs to increase its presence in top globally-traded goods and services. Overseas investors have a significant role to play in plugging India into global supply chains.

Special economic zones (SEZs)

There are special economic zones (SEZs) which should be leveraged to make it an important hub in the global supply chain on aerospace and defence production. India's first SEZ for aerospace at Belgaum in south Karnataka state was inaugurated in November 2009. The government is considering the establishment of dedicated SEZs on similar lines catering specifically to the defence sector along the lines of information technology, automobile and other specialised SEZs. This will provide manufacturers and service providers – especially foreign companies – a suitable tax-friendly environment and also aid in promoting exports of products and services.

We believe a business climate that fosters entrepreneurship and promotes new business ventures and expansion of existing ventures with stability and clarity is the best way to create new employment opportunities. Administrative and bureaucratic procedures should be simple, transparent and time-bound to encourage defence companies.

> Major Indian industrial houses such as the Tata Group, Larsen & Toubro, Reliance, Godrej, Mahindra, Kirloskar Brothers and Walchandnagar Industries are looking beyond domestic shores at export markets after sufficient experience has been gained in particular areas."

Increased PPP

Domestic defence manufacturing is dominated by defence public sector undertakings (DPSU) and Ordnance Factories Board (OFB), which together have an 80-90 percent share of domestic defence manufacturing. However, major Indian industrial houses such as the Tata Group, L&T, Reliance, Godrej, Mahindra, KBL and Walchandnagar Industries have diversified into the defence sector, forming JVs with foreign companies for both strategic and produce-specific projects. These companies are increasingly getting enthusiastic about playing a larger role in contributing to the growth and looking beyond domestic shores at export markets after sufficient experience

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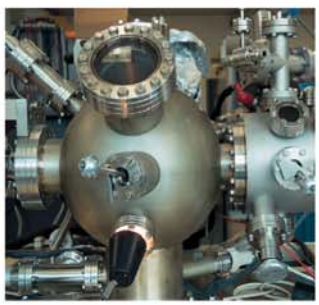

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Test flight of India's indigenous Light Combat Aircraft, Tejas. *File pic*

has been gained in particular areas.

The need of the hour is to combine the competencies of public and private sectors. Enhancing technological and manufacturing thresholds will spread the costs of domestic development and attract funds needed to sustain high-cost research and development. Private sector participation will create additional capability in India to manufacture aircraft so that the requirement, both of the military and civil sectors, could be met in a more cost-effective manner and in shorter time frames.

Working with an open mind, the ministry of defence should explore all viable approaches like formation of consortia, joint ventures and public private partnerships for optimum results. Similarly, the potential of academia, research and development institutions, and reputed technical and scientific organisations should be made use of.

The offset policy (which stipulates the mandatory offset requirement of a minimum 30 per cent for procurement of defence equipment in excess of Rs300 crore) introduced in the capital purchase agreements with foreign companies will ensure that an eco-system of suppliers is built domestically.

> With a Make in India plan on board, the government is aiming to manufacture a bulk of equipment required locally and make the country a cost-effective defence manufacturing hub for domestic and export markets as well."

Skilling

There is an immediate need to have a vibrant skill development set up in the country. India will have approximately 25 per cent of the world's total workforce by year 2025. On the other hand, by 2022, India will require about 500 million skilled workers across all skilled sectors, specifically in the manufacturing; the country will see a skills gap of nearly 90 million workers — almost twice the current figure.

Synergy between policy, industry and academia has to be created for re-aligning the university education system to the industry needs. A close collaboration between industry, academia and government has to be managed to address the inputs (quality /skills of faculty, curriculum content & design , mode of delivery) in order to ensure the output (Graduates/ Diplomas) is skilled productively.

Conclusion

The Indian defence sector will be a significant opportunity for both foreign and domestic players, given the government's intent to promote the domestic defence industry via a fresh dose of defence reforms. The 'Make in India' initiative is a major enabler designed to facilitate investment, foster innovation, enhance skill development and build best-in-class manufacturing infrastructure. The clearance of 33 defence applications and the deregulation of defence product list, excluding a large number of components from purview of industrial licensing, will provide a major impetus to advanced manufacturing in defence sector in the country.

Rolls-Royce has strong domestic relationships with many partners like HAL, QuEST Engineering and TCS. We continue to explore new partnerships for similar synergies. With a higher FDI limit, there will be opportunities to further contribute in the development and modernisation of India's defence sector by offering world-class innovative products and services. At Rolls-Royce, we are well poised to cater to the growth opportunities available in the India region. We look forward to continue to offer India a unique combination of technology, experience and innovation that can help to improve the capability of our customers.

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Corporate Business Excellence
Bringing out the best in Manufacturing

Birla Carbon Patalganga is amongst the Group's current five 'Model Plants'. The aim for 2016 is to have at least 10 more Model Plants.

The Aditya Birla Group has adopted Corporate Business Excellence (CBE) in its quest to become global and achieve a common language of excellence.

The recently conducted recruitment drive by the Aditya Birla Group for its third Global Manufacturing Leadership Program, received an incredible response. Some of the best minds in the manufacturing industry signed up for this illustrious program in a bid to gain expertise on a global scale. This landmark endeavour also sees manufacturing professionals embrace the best practices that the Group has undertaken in the last two decades. What started out as World Class Manufacturing (WCM) in 1995, based on the Japanese Quality model, Total Productive Maintenance (TPM) blossomed into Corporate Business Excellence (CBE) in 2010. According to Jagdish Ramaswamy, President, Corporate Business Excellence – Aditya Birla Group, "The aim was to become global and achieve a common language of excellence."

The shift was natural. WCM was restricted to the manufacturing units only, whereas CBE looked at giving a more holistic approach to the framework by including the services businesses as well. The Corporate Business Excellence Cell incorporates best practices from renowned international business excellence/quality models such as the **Malcolm Baldrige National Quality Award (MBNQA)**, the **EFQM (formerly known as European Foundation for Quality Management) Excellence Model** and the **Deming Prize**. It was the idea to go global, that pushed the Group to charter their own excellence framework. "Deming was valid for Japan, MBQNA for US and EQFM for Europe. We extracted best practices from each of these and customised them to our needs and functions so that they could be easily adapted by our units and businesses," says Ramaswamy,

When the WCM framework was formulated in 1995, the biggest challenge was how the units would implement TPM and what their assessment parameters would be. Hence, an extensive training program was organised. It comprised of a 'WCM Kick-off' where a WCM Road-Map was discussed and each unit was given guidelines and a charter to follow. It also required forming of cross-functional sub-committees within the unit that helped check the quality of manufacturing from time to time. After the new framework was formed in 2010, CBE started following a similar orientation process for its employees.

The goals, though, had changed. Assessment was at the business level rather than on an operation level. The CEO of the business would chair the steering committee. It had several smaller groups such as the Customer Focus Group, People Focus Group, Operations and Finance, Projects Finance and Strategic Finance to measure the parameters of excellence. The scenario had changed over the years with changing demands of the consumers. The Corporate Business Excellence Cell was set up to cover the end to end processes of every business. As

Ramaswamy aptly puts it, 'It wasn't about customer satisfaction any more. It was about customer experience."

An excellence framework pushes for commitment and a drive to perform better. What transpires in the attempt to achieve this feat is an enormous commitment to quality. Birla Cellulose, Aditya Birla Insulators, Thai Acrylic Fibre, Essel Mining and Novelis are a few notable examples who keep the flag of CBE flying high by implementing the best manufacturing practices in their daily functions.

The VSF quality parameters at Birla Cellulose are measured on a daily and hourly basis. Besides conducting internal quality checks, they are constantly compared to international benchmarks such as Critical to Quality (CTQ) and Statistical Process Control (SPC). As a result, Birla Cellulose has been recognised for its efforts. The coveted Deming Quality Control Award in 2003 was awarded to the Kharach unit and it continues to weave magic years later.

Novelis' 'One' approach philosophy is practiced internally. Novelis is the world's largest recycler of aluminum beverage cans and recycles approximately 40 billion cans annually which are critical to its operations with recycling being the core element of their manufacturing process. Its rolled aluminium manufacturing process focuses on excellence and sustainability. The commitment is not just an environmental mandate, according to Novelis, "it strikes the very heart of the Group's corporate philosophy."

The CBE Cell constantly looks at innovating according to the shift in the manufacturing scene by regularly attending seminars, talks and staying updated. Every two years the guidelines are upgraded and in doing so, pushing the businesses to raise the bar.

While the excellence model forms a guideline for the businesses, there are other key initiatives that the Group as a whole undertakes to promote the use of best practices.

Knowledge Acquisition Process or KAP: It is one of the several mediums where best practices by units are captured. To be judged as a possible best practice the teams need to go through a rigorous process. A set of Subject Matter Experts (SMEs) scrutinise the entries and only after major consultation do they give their verdict. Every detail is shared on the KAP portal so that other units can implement as per their requirements. Currently, there are 160 best practices in the Group. When asked about which businesses stand out in contribution, promptly comes the reply from Ramaswamy: "Idea and UltraTech."

Idea's Quality Check for Signage Flex is a practice that was well-received. The problem was that the flex that was being procured for Idea branding for its outdoor banners was as per pre-decided specifications and was not up to the mark. There was no way of checking the same beforehand. Idea came up with the solution of having the quality check done at the flex manufacturers, which involved no additional cost and also ensured 100 percent quality check before installation.

Group Wide Team Competition (GWTC): GWTC is an initiative where units form teams to tackle their manufacturing and business problems. A particular business is asked to submit its top 10 priority areas and problems. Thereafter, teams are formed. These teams are asked to choose one problem and solve it by using any quality model. Simultaneously they make presentations with step by step detailed analysis of the problem solving process.

Every year 80 submissions are received, of which 15 are selected and present their case studies to the Chairman and finally are selected as winners. They are judged on the problem selected, composition of their team, quality of data analysis, logically analysing the cause, quality of analysis, and the solution reached through a particular practice/quality model. It is also important that they implement it for a minimum of three months and make it a part of their daily practice. Novelis Pindamonhangaba was awarded for stabilising their aluminium sheet rolling process in the fastest possible time.

A Model Plant: In order to motivate the plants to accelerate their journey towards world class, the Corporate Business Excellence team started the Model Plant initiative. A Model plant under this scheme has the basics of WCM well embedded and integrated into the operations (BCE Green), the WCM practices should be a part of the daily process and its operational excellence projects should be aligned to the top 10 issues of the plant. They should also be able to justify that they have two best practices in the Aditya Birla Group and two performance areas that are their best.Kotputli Cement Works, Star Cement Dubai, Birla Carbon Patalganga, Madura Lifestyle and Fashion - Bangalore, and Hindalco Taloja have been adjudged as Model Plants. The aim for 2016 is to have at least 10 more model plants.

"We extracted best practices from Deming of Japan, MBQNA for US and EQFM for Europe, and customised them to our needs and functions."

Jagdish Ramaswamy,
President, Corporate Business Excellence – Aditya Birla Group

Business Excellence Awards: In order to rate and reward and set new benchmarks, the Business Excellence Awards take place every two years. The businesses are rated for their implementation and their adherence to the framework while innovating in their own spheres of work by an eminent jury comprising of experts in their respective fields. During gap years businesses themselves check their progress and make amendments accordingly.

Corporate Business Excellence looks critically at the various businesses and encourages them to give their best while they make an impact with their manufacturing practices and as a result the Aditya Birla Group has been repeatedly honoured for its quality and efficiency.

EVENT

Readying for **Industry 4.0**

MDA 2015 – part of Hannover Messe 2015 – promises to inform manufacturers and equip them with the tools and technology required for the next industrial revolution.

Around 1,100 world-leading manufacturers of power transmission and control components and systems will be at the show.

Is the fourth industrial revolution (Industry 4.0) just around the corner? And if so, what sorts of changes and adjustments will it require on the part of manufacturers? If you're asking yourself these sorts of questions, you'll find the answers you're looking for – and much more – at MDA (Motion, Drive & Automation) 2015. MDA is one of the ten flagship fairs at Hannover Messe 2015. Around 1,100 world-leading manufacturers of power transmission and control components and systems will be there. They will be presenting a wide range of market ready ideas and building blocks for next-generation production systems.

Power transmission and control technology is integral to next-generation production systems because combining drives, actuators, sensors and control units into integrated systems is the key to realising manufacturing plants and machines that can do things like share information, monitor themselves, detect when tools are wearing out, and even self-optimise on the fly. The other part of the Industry 4.0 equation involves integrating machine components, tools and even the products they produce into overarching communication networks to create the Internet of Things.

An example of all of these things in action is Argo-Hytos GmbH, a market-leading provider of tailored, high-reliability online condition monitoring systems. Online condition monitoring involves the continuous determination and analysis of information on the status of machines, systems and system components. "The advantage of online monitoring is that it's seamless – it doesn't miss anything. The data generated by online monitoring do not represent a snapshot at some random point in time; they plot changes over time and are thus the key to condition-based predictive maintenance," says Christian H. Kienzle, Argo-Hytos's CEO and the Chairman of the Power Association within the German Engineering Federation (VDMA).

> "Although views and perspectives on Industry 4.0 vary widely, the one thing pretty much everyone agrees on is that the convergence of Internet-based data systems and smart machines will yield productivity and efficiency gains."

In terms of Industry 4.0, there is still uncertainty – and a great deal of debate – as to the exact form that the anticipated digital transformation might take and the effects that it might have on production, products and the overall product development process. But whatever happens, power transmission and control will have a major role in it. That's according to the German Engineering Federation (VDMA), an organisation that is undoubtedly at the forefront of the Industry 4.0 trend in Germany. Hartmut Rauen, a member of the VDMA Executive Directorate, explains: "As enablers of smart, efficient production processes, power transmission control technologies have an integral part to play in Industry 4.0. The power transmission and control industry is also a user of Industry 4.0. Its intelligent components are important sources of the big data that will be mined and analysed in the connected world of Industry 4.0."

Further examples of Industry 4.0 technology will be on show at the Bosch Rexroth stand at MDA. The company will be showcasing intelligent hydraulic and electromechanical drive and control systems that feature its new Open Core Interface technology. With the Open Core Interface, users and manufacturers have enhanced access to the control core and thus have the freedom to program their own individual control functions. Says Dr. Karl Tragl, the Executive Board Chairman of Bosch Rexroth AG: "Multiple OEMS are currently using our interface to achieve things such

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as integration of smartphones and tablets into their solutions for greater ease of operation and diagnosis."

Bosch Rexroth is also one of the first industrial companies to implement Industry 4.0 projects in its own production operations. It is currently running two pilot projects. "The experience and insights we gain from these projects are also flowing through into the development of new Rexroth products and integration solutions for industrial automation," Dr. Tragl says.

Ideas, food for discussion, and fully developed, market-ready products and drive systems will also be on offer at the MDA display stand of Parker Hannifin GmbH. Its Managing Director, Günter Schrank, explains: "Our solutions can be used both to develop complex, self-controlling production plants from scratch and to retrofit existing plants with intelligent components to make them Industry 4.0-ready."

Parker will be showcasing a number of new developments at MDA, including a new PSD servo-controller that has an Ethernet-based interface real-time drive data transmission. Used in combination with servo drives, such as Parker's single-cable servo motors, the controller enables high-precision process control. Then there's Parker's new PAC motion control unit. Used as a central hub, it can collect all process data from a given machine and display that data on a smartphone or tablet via integrated Web publishing.

PM Modi at Hannover Messe

Indian Prime Minister Narendra Modi is scheduled to make his first visit to Germany for the Hannover Messe 2015. This was confirmed recently by Marc Siemering, Hannover Messe Senior Vice President, at a press conference in New Delhi. The next Hannover Messe will run from April 13 to 17, 2015 and feature India as its official Partner Country. Together with German Chancellor Angela Merkel, Prime Minister Narendra Modi will officially open Hannover Messe 2015 on the evening of 12 April, then take part in the traditional opening day tour on 13 April.

India's role as the Partner Country at Hannover Messe underscores the new Indian Prime Minister's ambitious economic course. Under the slogan of "Make in India", PM Modi is promoting the modernisation of India's factories and infrastructure and greater foreign investment in local production. Modi is convinced that production industries form the backbone of the Indian economy, and to develop that backbone, the emerging Indian economy has an active interest in German infrastructure, research and technology.

In Siemering's opinion, "Partner Country India is coming at exactly the right moment. India will be showcasing itself to the world as a modern, upwardly mobile economic power, while it simultaneously takes advantage of the opportunities offered by Hannover Messe to invest in modern technology to strengthen its domestic economy."

There will be plenty of specialists and niche providers at MDA.

"The key is to be prepared for this in order to remain competitive – an imperative that applies perhaps more importantly, to users of industrial plant and machinery, who need to act early to ensure that their production systems are Industry 4.0-ready."

In other words, it's a real-life embodiment of Industry 4.0.

Schaeffler Technologies, a major international manufacturer of bearing and linear drive products, will also be part of the Industry 4.0 narrative at MDA 2015. Dirk Spindler, Senior Vice President R&D Schaeffler Industrial and Member of the Management Board Schaeffler Industrial, talks about the Industry 4.0 solutions his company will be exhibiting: "One of our main focuses is on developing drive components with integrated miniaturized sensors, and we're pleased to say our first sensor bearings are ready to go into production. Another focus is on networking plant and machinery with central information systems so that large amounts of data can be shared and transferred. It's all about using intelligent networking to deliver added value to our customers".

There will be plenty of specialists and niche providers at MDA – and indeed at the closely allied Industrial Automation show. They will be presenting innovative solutions and ideas for tomorrow's flexible, intelligent production systems.

Although views on Industry 4.0 vary widely, the one thing pretty much everyone agrees on is that the convergence of Internet-based data systems and smart machines will yield productivity and efficiency gains. The key is to be prepared for this in order to remain competitive – an imperative that applies both to manufacturers of industrial plant and machinery and, perhaps more importantly, to users of industrial plant and machinery, who need to act early to ensure that their production systems are Industry 4.0-ready. Visiting MDA could be a great way for both providers and users of capital equipment to gain valuable insights into the future of industrial production and gather ideas on the first steps towards that future.

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TM Star List 2015

They have been described as leaders and they have even been called giants. But for the first time, we at 'The Machinist' have decided to recognise some of our finest icons by calling them 'Stars'. So welcome to the first ever Star List for the manufacturing industry. We truly believe that this industry's leaders deserve stardom. Pages have been dedicated to highlight the importance of the manufacturing industry in the nation's scheme of things – both economical and social. It is high time that we also start recognising the leaders of this industry who have been shaping its fortunes, and will continue to do so. It is with this thought that we decided to create 'The Machinist Star List 2015'.

By Niranjan Mudholkar

Prasan Firodia
Managing Director, Force Motors Ltd

Mahesh Kodumudi
Chief Representative, Volkswagen Group India President and MD, Volkswagen India Private Limited

Dr Pawan Goenka
Executive Director & President Automotive, Farm Equipment & Two Wheeler Sectors, Mahindra & Mahindra Ltd

Siddhartha Lal
CEO of Royal Enfield, MD & CEO of Eicher Motors Ltd, Chairman of VE Commercial Vehicles (VECV) and Chairman of EicherPolaris Private Limited (EPPL)

Nigel Harris
President, Ford India

Nikhil Nanda
Managing Director, Escorts Limited

Baba Kalyani
Chairman & Managing Director, Bharat Forge Limited

Bo Shin Seo
MD & CEO, Hyundai Motor India Ltd

Sanjay Kirloskar
Chairman and Managing Director, Kirloskar Brothers Limited

Ajay S. Shriram
President, Confederation of Indian Industry (CII) & Chairman & Senior Managing Director, DCM Shriram Limited

Ten is a special number in many ways; it also implies breaking away from the threshold into something bigger. And since we are also celebrating our Tenth Anniversary, we decided to keep the number of Stars in our first list limited to just ten. It includes leaders from a wide range of industries from automotive to pumps and from farm equipment to construction equipment. Of course, we do not claim this to be comprehensive or exhaustive. But it is certainly definitive in terms of the impact these chosen few are likely to have on Indian manufacturing in the time to come – particularly in 2015. While this Star List has also taken into consideration the efforts and endeavours of these Stars in 2014, the key reason for their selection is their untiring pursuit of excellence and their own extraordinary visions. Surely, there are others out there. But this is our list!

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Prasan Firodia

Managing Director, Force Motors Ltd

While the automotive manufacturing scenario in India is fairly evolved, very few OEMs have the capability or the inclination to get into the making of rally cars. It is quite a specialised job; one that requires not just the capabilities but also the attitude to go with it. While the Gurkha Extreme Off-roading Vehicle (EOV) is physically capable of running through really difficult terrain, Prasan Firodia has forayed with it into a new and unexplored territory in terms of automotive manufacturing in India. And he has done it with both style and substance; the first two positions at the tough Rain Forest Challenge 2014 were bagged by two Force Gurkhas. Now as he launches the vehicle at pan India level, his vision of catering to the personal vehicles segment acquires a new dimension.

Of course, this in no way takes away the focus from his core business of utility commercial vehicles where he continues to dominate in his selected sectors. Both the Traveller and Trax brands enjoy clear market leadership in their respective segments.

And Prasan Firodia remains equally committed to the aluminium die casting business with Jaya Hind Industries (JHI), the first company where he actually started working at after completing his education. While JHI regularly wins the Best Foundry award as well as new businesses, it is even extending its manufacturing footprints across Asia tapping into new markets. It is this dual commitment to quality management and manufacturing excellence that has also seen him grow the engine business with Mercedes. And that is what makes Prasan Firodia a force to reckon with in this industry.

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Dr Pawan Goenka

Executive Director & President
Automotive, Farm Equipment & Two Wheeler Sectors, Mahindra & Mahindra Ltd

His two decade journey at the Mahindra Group so far can be considered as one of the brightest chapters of Indian manufacturing. Of course, the journey goes on and it will continue to have a huge positive impact on both the Group as well as the industry as Dr Pawan Goenka continues to find a fine balance between Group businesses that are as small as Rs20 crore and are as large as Rs30,000 crore.

The next phase will add a new dimension to his career as he is keen to focus on the smaller businesses. "In terms of the entire AFS (Automotive, Farm Equipment & Two Wheeler Sectors) P&L, what the 20 crore business does should make no difference even if it makes 100 percent profit or 100 percent loss. But then, that business is our future growth."

"Our focus is now on the compact SUV segment because we are the UV player. We are 'the UV brand' in India and we need to ensure that we remain at top of the UV segment."

Of course, reasserting the Group's dominating position in the overall UV segment is something that continues to drive him. That's why Mahindra will have two compact SUVs launched in the 2015 calendar year. "Our focus is now on the compact SUV segment because we are the UV player. We are 'the UV brand' in India and we need to ensure that we remain at top of the UV segment," he says.

Endearingly called the father of the Scorpio – the game changing SUV – Goenka is also leading the AFS's evolution through an initiative called Crusade to create a consistent delightful customer experience.

While this alumnus of IIT-Kanpur, Cornell University and the Harvard Business School is considered as one of the finest global scientist-managers, don't be surprised if you find him sitting next to you enjoying a Bollywood movie at a multiplex.

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"We are on track with our expansion plans to elevate India as the center of excellence for small cars and low displacement engines, both for domestic and export markets."

Nigel Harris

President, Ford India

It has been just about 11 months since he has taken charge at Ford India but Nigel Harris is already in the driver's seat. Of course, he has worked with Ford India about 15 years back in a different role but he knows that both India and Ford in India have come a long way over the last decade and a half. "More than 60 percent of Ford's global growth will come from the Asia Pacific region, with India playing a significant role." So Nigel Harris has his job cut out for him.

While 2014 hasn't exactly been a fantastic year for Ford India, it shouldn't worry Harris to a great extent. Today, Ford products find greater acceptance from customers in India with the EcoSport retaining its charm. "We have a robust strategy in place to tap the domestic potential in this market as well as to use it as a sourcing hub. As the hinterlands of India fuel its automotive growth, Ford is going for the heart of the market and plans to strengthen its presence in the B segment," he says.

A couple of months back, in October, Ford India commenced a third-shift of production at Chennai Vehicle Assembly and Engine Plant to further improve supplies. So Harris is on track with the plans to position India as a center of excellence for small cars and low displacement engines for both domestic and export markets. "We have a long-term strategic plan for India, anchored in viable product programs and engine manufacturing capability, both representing significant volume and profitable growth."

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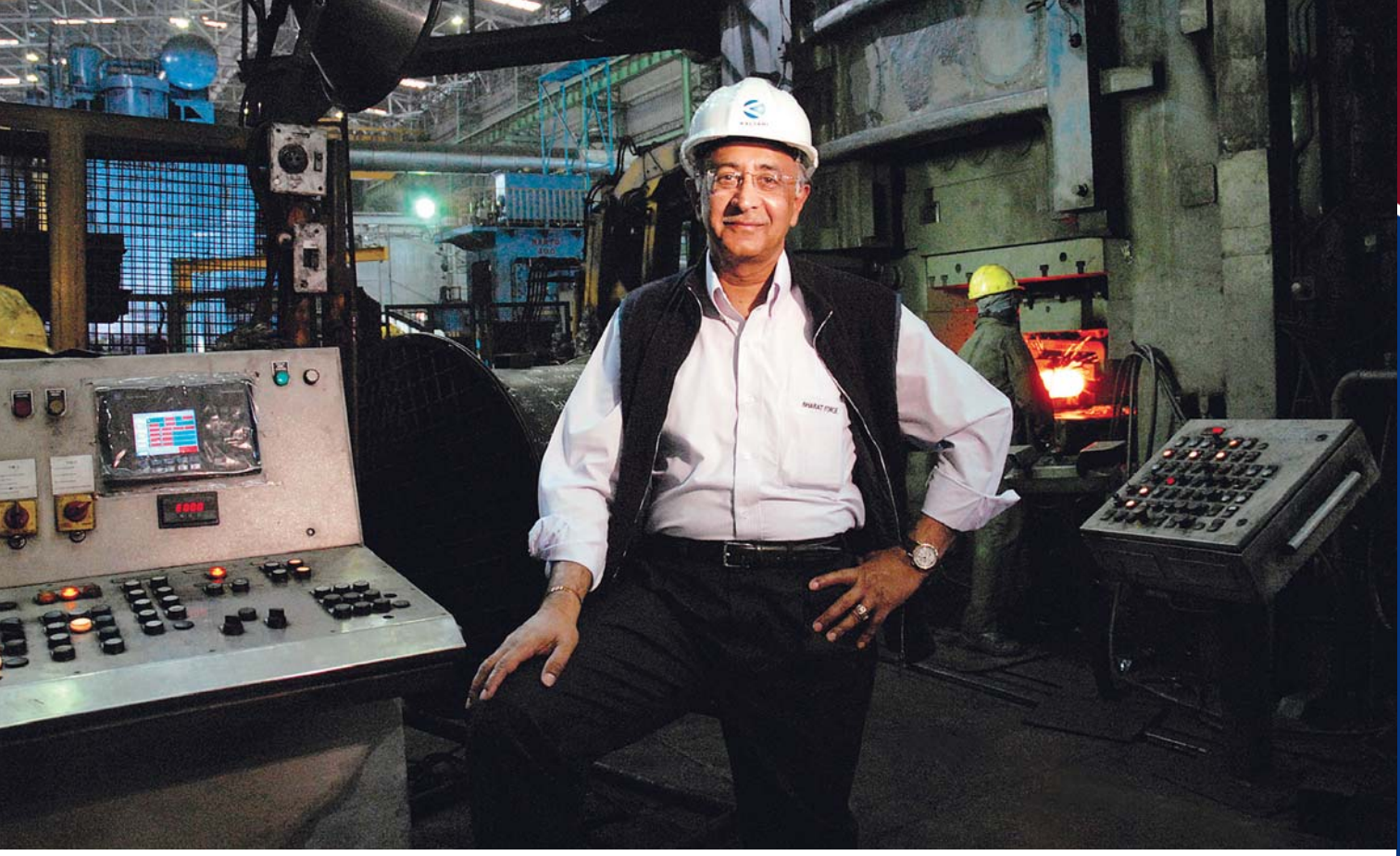

Baba Kalyani

Chairman & Managing Director, Bharat Forge Limited

It would not be an exaggeration to say that Baba Kalyani brought glory - and even a certain glamour - to Indian manufacturing. There was a time when engineering goods manufactured in India were not considered on par with those produced in the developed countries. Kalyani not only changed that perception with his endeavours but also brought respectability to the 'Made in India' brand.

The huge dip in domestic demands was taking a heavy toll on most of his rivals in the early 1990s but Kalyani was unwavering in his pursuit of manufacturing excellence in terms of scale, reach and variety. He saw what no one else did – an upcoming global demand and the bold move of multiplying production levels was more than justified. It helped him grow both rapidly and geographically. It is this uncanny ability to understand the market dynamics that keeps him undeterred in the face of any downturn. He says: "Every automotive supplier is dealing with this cyclical downturn. Our strategy is to diversify into the non- automotive business and expand into supplying for large infrastructure projects in the field of railways, shipping and aircraft."

"Our strategy is to diversify into the non-automotive business and expand into supplying for large infrastructure projects in the field of railways, shipping and aircraft."

Don't be surprised if you find Bharat Forge creating new milestones in the emerging fields like defence manufacturing in the years to come - starting with 2015. This young at heart visionary has already done the ground work for this segment and is all set to reap the benefits.

And while he is a business strategist par excellence, a key aspect of Kalyani's leadership is the people-focused approach to his work. And he has proved that as long as you get the people side of the operations right, the business side would naturally fall into place.

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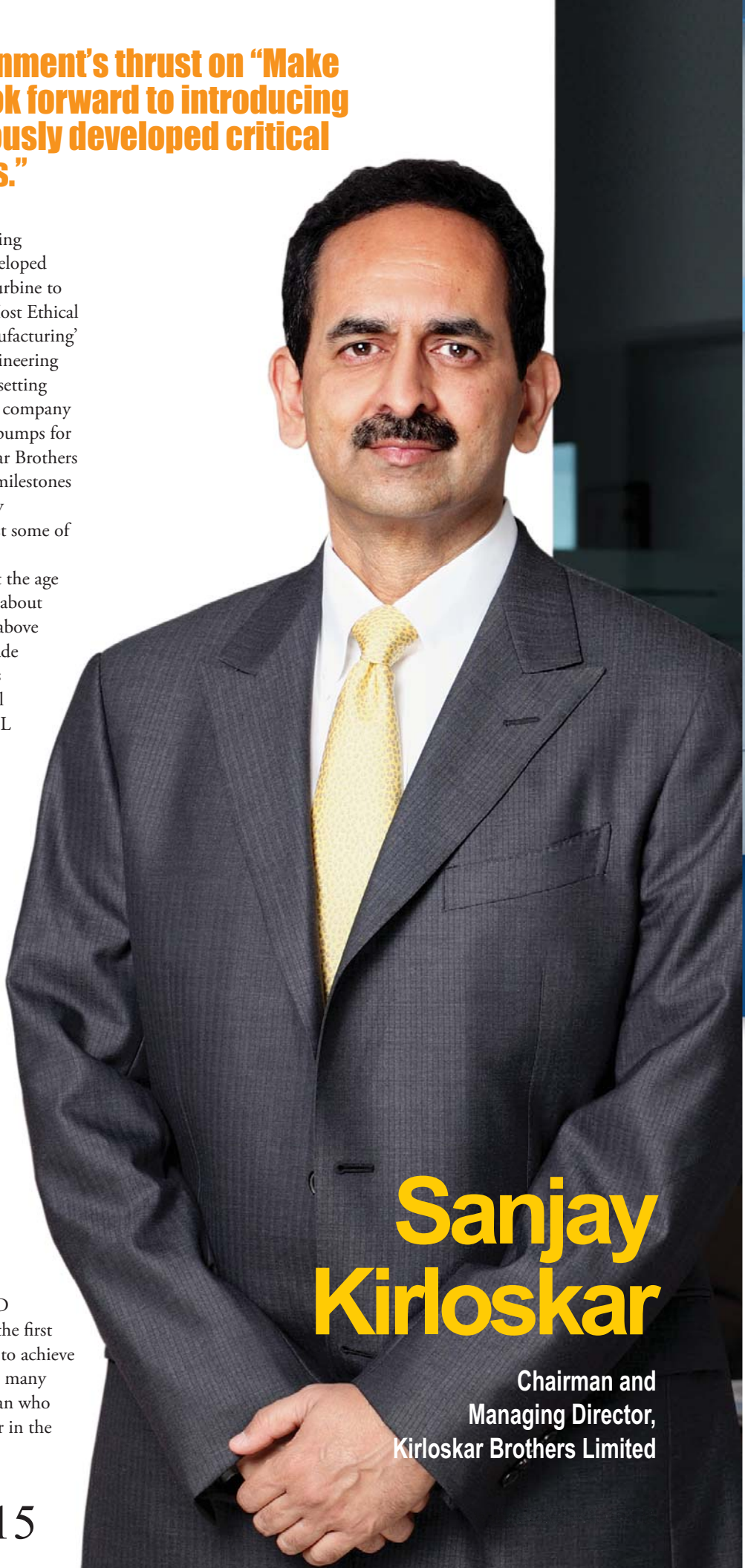
"With the new government's thrust on "Make in India" path, we look forward to introducing many more indigenously developed critical application products."



Sanjay Kirloskar

Chairman and Managing Director, Kirloskar Brothers Limited

From successfully manufacturing India's first indigenously-developed next generation API steam turbine to getting awarded as 'India's Most Ethical Company in Industrial Manufacturing' and from being the only engineering company to have an all women record setting shopfloor to becoming the only Indian company to develop critical application sodium pumps for Fast Breeder Nuclear Reactors, Kirloskar Brothers Limited (KBL) has been creating new milestones regularly under the leadership of Sanjay Kirloskar. And by the way, these are just some of the recent accomplishments.

When he took charge as the MD at the age of 28 in 1985, KBL's turnover was just about Rs70 crore. Today the turnover is well above the Rs2500 crore mark. And he has made this possible by bringing the company's focus to core engineering and industrial segments. As Sanjay Kirloskar built KBL into India's largest manufacturer and exporter of pumps he also ensured that the company became more than just a product manufacturer. "We evolved KBL into a total fluid handling solutions company," he says. In the meanwhile, he has also been acquiring and turning around companies in different continents while taking the KBL brand to more than 80 countries.

With India getting ready for the next phase of growth, Sanjay Kirloskar has already got KBL in the sweet spot by catering to all the key sectors that will transform India into an economic powerhouse.

At the same time, Kirloskar remains equally committed to both the society as well as the environment. So whether it is working in the field of education or empowering women, he ensures that KBL is at the forefront. Operating from a Platinum rated LEED certified headquarters to making KBL the first Indian pump manufacturing company to achieve the 'GreenCo' rating are just few of the many Green initiatives undertaken by this man who also happens to be the highest tax payer in the city of Pune.

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"We will bring in new investments and create high value manufacturing jobs not only to cater to the Indian market but to also to export in larger numbers from India."

Mahesh Kodumudi

Chief Representative, Volkswagen Group India
President and MD, Volkswagen India Private Limited

Just before taking up his current responsibility, Mahesh Kodumudi used to head the company's strategic sourcing and supply chain management in India. In that role, not only did he build his company's vendor base from grounds up but he also laid the foundation of what he calls 'German Engineering made by Volkswagen in India'. In fact, this concept encompasses his leadership vision in transforming Volkswagen into an exports giant while at the same time consolidating its position in the domestic market. A perfect fit for Prime Minister Narendra Modi's 'Make in India' campaign!

While Kodumudi surely knows a thing or two about managing costs, he just refuses to sacrifice quality or features at the altar of cost – even if that means his cars come with a slightly higher price tag. But he is absolutely fine with it and holds pride in the fact that a Volkswagen model built anywhere in the world comes with the same specs and excellence. "We build the same quality of cars in Pune as around the world with equally robust construction. For example, the Polo built in India has achieved a 4-star Global NCAP rating which is a strength when it comes to exporting to global markets," he says. Not surprising then that Volkswagen India's Pune Plant is on its way to becoming an exports hub while selling cars to more than 30 countries, and the number is steadily rising.

Kodumudi and Volkswagen India are equally committed to the environment and that's the reason the Pune Plant is one of the 27 Volkswagen production facilities worldwide adopting the 'Think Blue. Factory.' program. "By 2018 we want to lower the environmental impact of our production processes by 25 percent," he says. After being part of this program for two and half years, the Plant has achieved more than half the target in the key areas of energy consumption, CO_2 emissions and waste generation.

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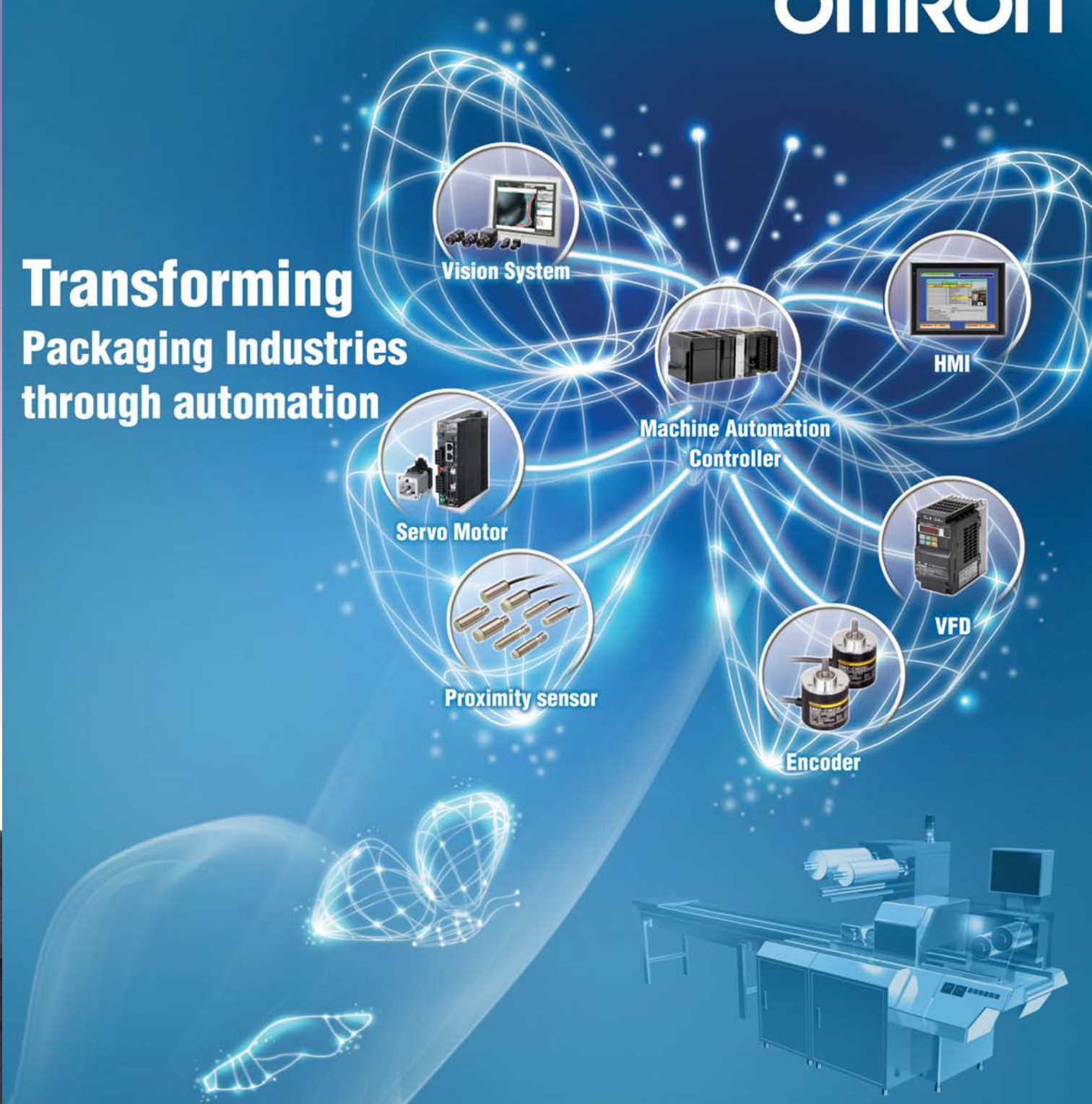

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Siddhartha Lal

**CEO of Royal Enfield, MD & CEO of Eicher Motors Ltd,
Chairman of VE Commercial Vehicles and Chairman of EicherPolaris Private Limited**

"At Royal Enfield, we have set our sights on becoming the leaders in global mid-sized motorcycling segment and we are working towards it persistently."

It seemed that Royal Enfield would see the end of its road in 2000 - one year short of completing its hundred years (it was started in 1901). But Siddhartha Lal had different plans and a different vision. And in the next fourteen years, he has worked meticulously and diligently to translate that vision into a reality. The way he has turned around the Royal Enfield brand is the stuff legends are made of.

With the surge in demand for Royal Enfield motorcycles in recent years, the overall production capacity has been increased to 175,000 motorcycles for 2013 and 250,000 motorcycles in 2014. Of course, if you ask him, Siddhartha Lal would say that this is just the beginning: "We have set our sights on becoming the leaders in global mid-sized motorcycling segment and we are working towards it persistently."

And he is equally attentive to the other Group businesses. In fact, he's been more than attentive. VECV is today the third largest Commercial Vehicles' (CV) player in India. Siddhartha has been steering this Company's growth first as a CEO and now as the Chairman. VECV has been growing steadily; in this quarter, it has again outpaced the industry in both LMD and Buses segment.

At the same time, the Eicher-Polaris JV is on course for a launch in 2015.

For his vision, Siddhartha is also a young global leader at WEF co-championing the initiative 'Transforming Urban Mobility' and is also a part of the newly formed Next Generation Leaders Board at ISB.

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"The continued thrust on lean management and consolidation of manufacturing facilities has long term implications for profitability. We have also created a roadmap for launch of a series of new products that are pathbreakers."

Nikhil Nanda

Managing Director, Escorts Limited

At the beginning of the current millennium, he was selected as one of the five 'Indians who are global leaders of tomorrow' by the World Economic Forum (WEF). While it may seem like a 'nice' tag to have, it also came with huge expectations and responsibilities. But for Nikhil Nanda it has only being the way of life. Being the third generation scion of the Escorts Group, he already knew what it felt like. But then, expectations come only when there is potential and if you analyse his professional journey in the last fourteen years or so, you would surely end up agreeing with WEF's forecast.

Nikhil has been the driving force behind the Group's robust and diversified presence in sectors from construction to agricultural machinery. He has been at the forefront in creating new market segments and tapping into a wider range of customers. His contribution lies in steering the Group's performance and taking it to the next level.

It has been just about 16 months or so since he became the sole MD (since September 2013), but he is already leading a huge transformation at the organisational level towards efficiency and aggressive growth. By blending the finest of contemporary management techniques with the best practices in engineering and topping it up with innovative ideas on the go, this alumnus of Wharton Business School is now working towards giving a definitive global edge to the Escorts Group. And all this while ensuring that the numbers sing a happy tune even in the most difficult of times.

Personally, this son of industrialist Rajan Nanda (Chairman, Escorts Group) and Ritu Nanda is driven by the power of thoughts as one of the posts on his official blog says: "Think of yourself as a winner cause if you don't, you are insulting your God, because he sent us all here to win and become champions in whatever we choose to do down here…….". Well, Nikhil Nanda seems to be practicing what he preaches.

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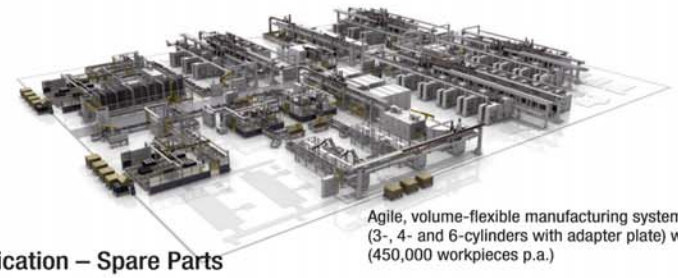

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"2014 has been an excellent year for Hyundai Motor India. We intend to continue our growth in 2015 and with new products coming, we will create the right conditions to reinforce our claim to leadership over the long term."

Bo Shin Seo

MD & CEO, Hyundai Motor India Ltd

Hyundai Motor India Ltd (HMIL) proudly wears the tag of being the largest exporter of cars in India but that doesn't mean that the Company is not doing anything in the domestic market. In fact, it surpassed its targets of selling four lakh vehicles in the domestic market by adding new products like Xcent, Elite i20 and Santa Fe to its robust product portfolio. And the dyanamic leadership of Bo Shin Seo, MD & CEO, HMIL, has played a decisive role in this success.

"All our products have witnessed a stunning success in the respective segments, setting modern style and technology leadership benchmarks. We intend to continue our growth in 2015 and with new products coming, we will create the right conditions to reinforce our claim to leadership over the long term."

A key proponent of the customer oriented design and development, Seo emphasises on continuously taking inputs from the market and working on them. He has always been doing that. In fact, with his stint in India, Seo certainly seems to be putting the icing on his illustrious career spanning 32 years with the Hyundai Motor Company. Of course, he has worked his way up acquiring not just top management skills but also the expertise that comes from the shopfloor. In fact, even in India, prior to becoming the MD & CEO, he was the Executive Director, Production.

Perhaps, it is this dual experience and expertise at the board room and the shopfloor that has made him a stickler for safety and cleanliness. "Quality and excellence stem from the pursuit of safety and cleanliness," he believes. Of course, he is equally known for his warmth and easy-to-get-along-with work style. He naturally blends with his employees and inspires them to go for the next level of excellence in everything they do.

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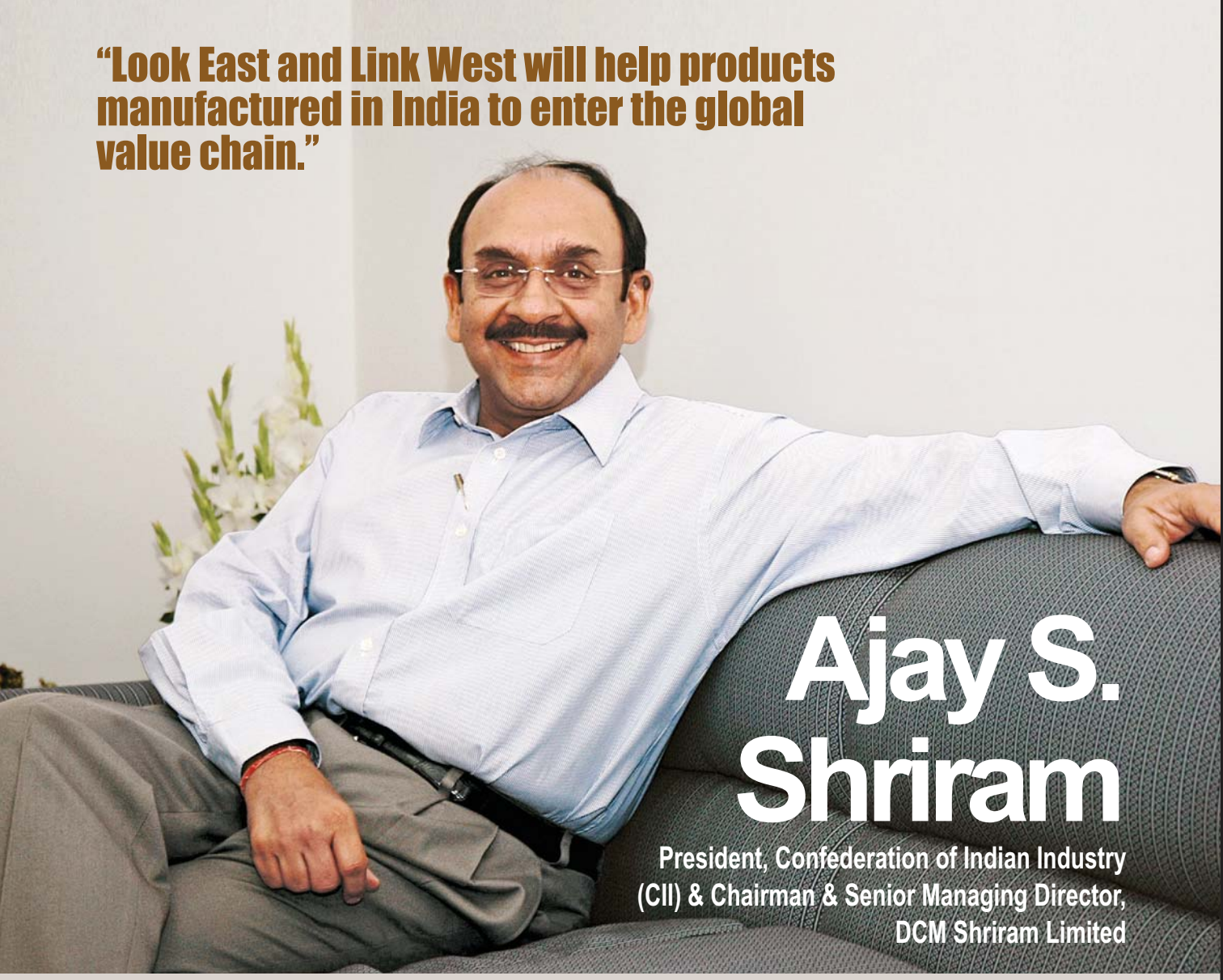
"Look East and Link West will help products manufactured in India to enter the global value chain."



Ajay S. Shriram

President, Confederation of Indian Industry (CII) & Chairman & Senior Managing Director, DCM Shriram Limited

When the family business was split about 25 years ago, nobody would have expected him to be successful as he is today. In fact, he has built the biggest empire when compared to the other beneficiaries at that time. His entrepreneurial acumen and leadership skills have seen him grow the company's turnover exponentially since the split. Today DCM Shriram is a leading business conglomerate having a group turnover in excess of Rs6,400 crore and with significant presence in diverse fields like PVC, fertilisers, sugar, cement and even building systems.

Ajay Shriram passionately follows the principles established by the founding father of the business. "Our Company has always believed in doing business which will ensure accountability and transparency in all its activities. Hence, it has always been focused on maintaining the highest standards of corporate governance," he says. He continues to chart a new growth course for his business; that is reason enough to include him in this feature. But it is his stint as the CII President that fully seals his presence in this elite list. In this role, he has continuously strived for the growth and progress of the manufacturing sector at all industry forums and through his interaction with the government.

"Bringing the economy back on growth path requires that the Government urgently addresses the pressing policy and implementation issues, brings about systemic reforms and create a market-friendly environment to promote investments, business and entrepreneurship." He has not only said this but also has been at the forefront in effectively taking the message to the government.

A strong supporter of the Make in India campaign, Shriram is impressed by the idea that India is ideally placed to Look East and Link West. "This will help products manufactured in India to enter the global value chain." While his tenure as CII President may come to end in 2015, his efforts and endeavours while in office will continue to have a much longer impact.

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Ploughing down **the cost**

As raw materials constitute about 70 percent of the tractor's cost, this article analyses the material cost reduction programmes adopted by some of the companies.

*By **K Jayaraman,** Partner - Management Consulting, KPMG in India*

A cross functional team is formed for each technology, comprising of representatives from Design, Manufacturing, Procurement, Quality and Costing. The team members sit together and analyse each and every element of cost under each technology.

The Indian tractor industry is one of the major producers of tractors in the world. There are currently 13 national and few regional players in tractor manufacturing, Mahindra & Mahindra (M&M) being the leading manufacturer. Other major players are TAFE (Massey Ferguson and Eicher), ITL (Sonalika), Punjab Tractors Ltd., Escorts, John Deere, New Holland India, etc. The industry has grown at a CAGR of around 12 percent in the past ten years and increased mechanisation of farming will see this trend continuing for the next few years.

Cost control

Cost competitiveness has always been one of the key focus areas of the industry since the customer segment is highly price sensitive. Over the past few years some of the tractor manufacturers have embarked on highly ambitious cost reduction programmes which have boosted their profitability and have helped them to grow.

One of the advantages the tractor industry has over other farm equipment industry is its similarity with the automobile industry. The automotive industry has always been in the cutting edge of adopting leading practices by adopting practices such as Just-in-time manufacturing, six-sigma quality improvement programs or concepts such as TPM. Hence the tractor industry has also been able to adopt some of these practices as far as manufacturing and in-bound supply chain is concerned.

The cost reduction program is also a rub off from some of the experiences of automotive industry and other discrete manufacturing companies that have adopted similar focused cost reduction programs with good uccess.

Typically raw materials constitute roughly 70 percent of the cost of a tractor and so the focus has been mainly to reduce the raw materials cost while some of the players have also gone further to look at all the cost heads. We will focus on the material cost reduction programme adopted by some of the companies.

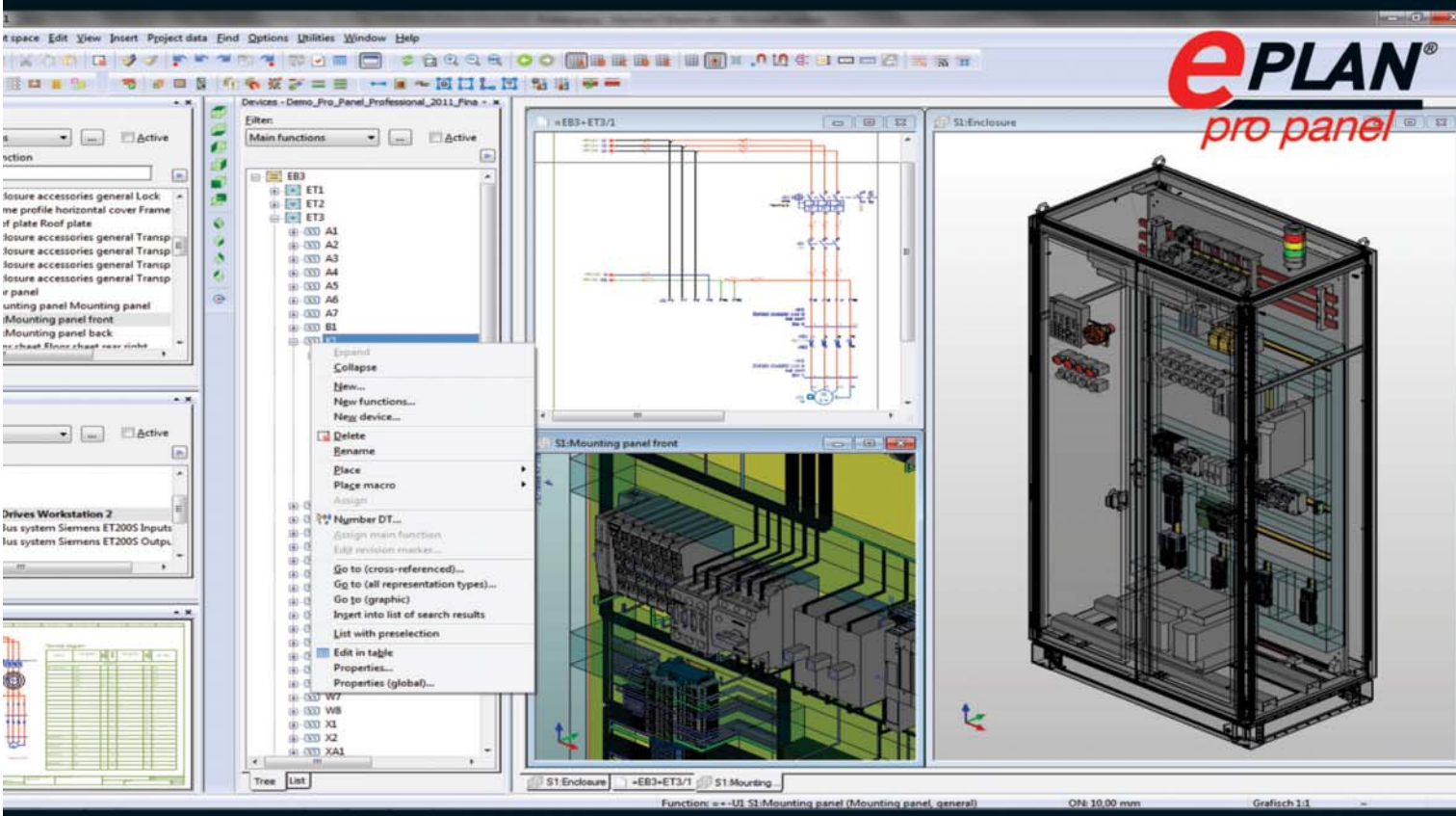
Material Matters

The approach involves looking at the key cost drivers. A cost reduction team looks at every cost element in great detail and segregates the cost in various ways to look at opportunities for reduction. One of the approaches is to tear down the tractors to component level and classify them under the technology used to manufacture the components such as Castings, Forgings, Sheet metal, Mouldings- Plastics, Rubber, and Proprietary parts (Parts that are made through Proprietary design or technology by specialist component companies).

A cross functional team is formed for each technology, comprising of representatives from Design, Manufacturing, Procurement, Quality and Costing. The team members sit together and analyse each and every element of cost under each technology. There are no holy cows and every assumption is questioned. This is a very intense process and takes few months to come out with all the various opportunities for cost reduction.

Design cost: About 70 percent to 80

Mahindra & Mahindra's new Arjun Novo. The Company continues to dominate the tractor segment in India. *Courtesy: M&M*



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percent of the cost of the tractor is decided at the design stage. Hence one of the key areas of focus is to look for avenues for cutting cost by redesigning components and assemblies. While looking at the design the various approaches that have been used include Value Engineering, Functional Analysis, part count reduction and product and features rationalisation and standardisation.

Zero based costing: A detailed costing for each component from the first principle cost is arrived at. This requires in depth knowledge of each of the technologies and the constituent costs associated with that technology. This forms a basis for the cost build up as a bottom up approach and the current costs are compared with the first principle costing. Opportunities of cost reduction are identified wherever the current costs are more than the first principle cost.

Total cost of ownership: The cost of any component consists of several costs apart from the pure material cost as arrived at by zero based costing. It is important to understand these costs and arrive at the cost that is actually incurred in owning that component. These include handling and transportation, quality rejections and rework, etc.

Sustained efforts on the shopfloor can lead to cost savings. *Courtesy: Sonalika Group*

Reasons for continued growth in the tractor industry

Increased availability of rural cash because of higher support price for crops, and government programmes such as Rashtriya Kisan Vikas Yojana.

Increased use of tractors for haulage both in agri and non-agri industry. It has become one of the modes of transporting agri produce to short haul distances such as sugar cane, wheat straw, rice husk as well as rice and wheat produces from farms to Godowns / mandi.

There is also a good replacement market demand since several tractors come up for replacement every year.

Increasing growth in export markets.

Mechanised farming is still at a low level in the country as compared to global levels and increased thrust on increasing farm productivity which is still at low levels.

Alternate sourcing: Historical sourcing and costing as well as year on year price increases may sometimes lead to the current sourcing being more expensive than an alternate less expensive source. Also a newer alternate source may adopt better technology and hence may be able to provide consistent quality at lower price. This is also another way by which cost reduction is possible in the tractor industry.

Weight reduction: Looking at actual component weight vis-à-vis design weight as well as looking at machining allowances can result in possible reduction in weight and thus in cost especially in the large castings. There are five to six large castings in a tractor and hence having a close look at these castings can yield good opportunities for weight reduction. Most of these castings are sourced from more than one foundry and one finds that there are variations in weights of castings sourced from different suppliers and there could be opportunities for increasing the share of business for the lowest weight supplier.

Proprietary parts: These are procured from manufacturers who specialise in design and manufacture of these parts. The approach for cost reduction for these parts are slightly different since the design and the technology is proprietary and also some of the suppliers can be much bigger in size than some of the OEMs and so they may not have much negotiating power.

It is important to take these suppliers into confidence and build a partnership to save costs and then share the savings. It is also important to know the actual cost of the part. For this, the OEM would have to strip open the part and build up the cost to know the extent of opportunity available. Standardisation and variety reduction will also help in reducing the cost.

Conversion costs: There could be several opportunities to reduce conversion costs. For example, opportunities exist in the painting division through paint consumptions, cycle times in machining, reducing diesel and oil consumptions, power and compressed air consumptions, reducing quality defects, rejections and rework through six-sigma problem solving.; all of these together can provide a significant cost reduction.

Conclusion

Sustained and focused efforts can lead to significant cost savings and a few tractor manufacturers have adopted methodologies as mentioned in this article and have obtained significant benefits. One tractor manufacturer had got upwards of eight percent of cost savings. Normally there can be a reduction of anywhere from five percent to eight percent of costs, depending on the procurement maturity of the firm.

This would also need the top management to closely monitor and review the implementation process and create a benefit tracker and make sure that all agreed benefits are tracked for actual realisation which can then reflect in the bottom-line of the financial statement.

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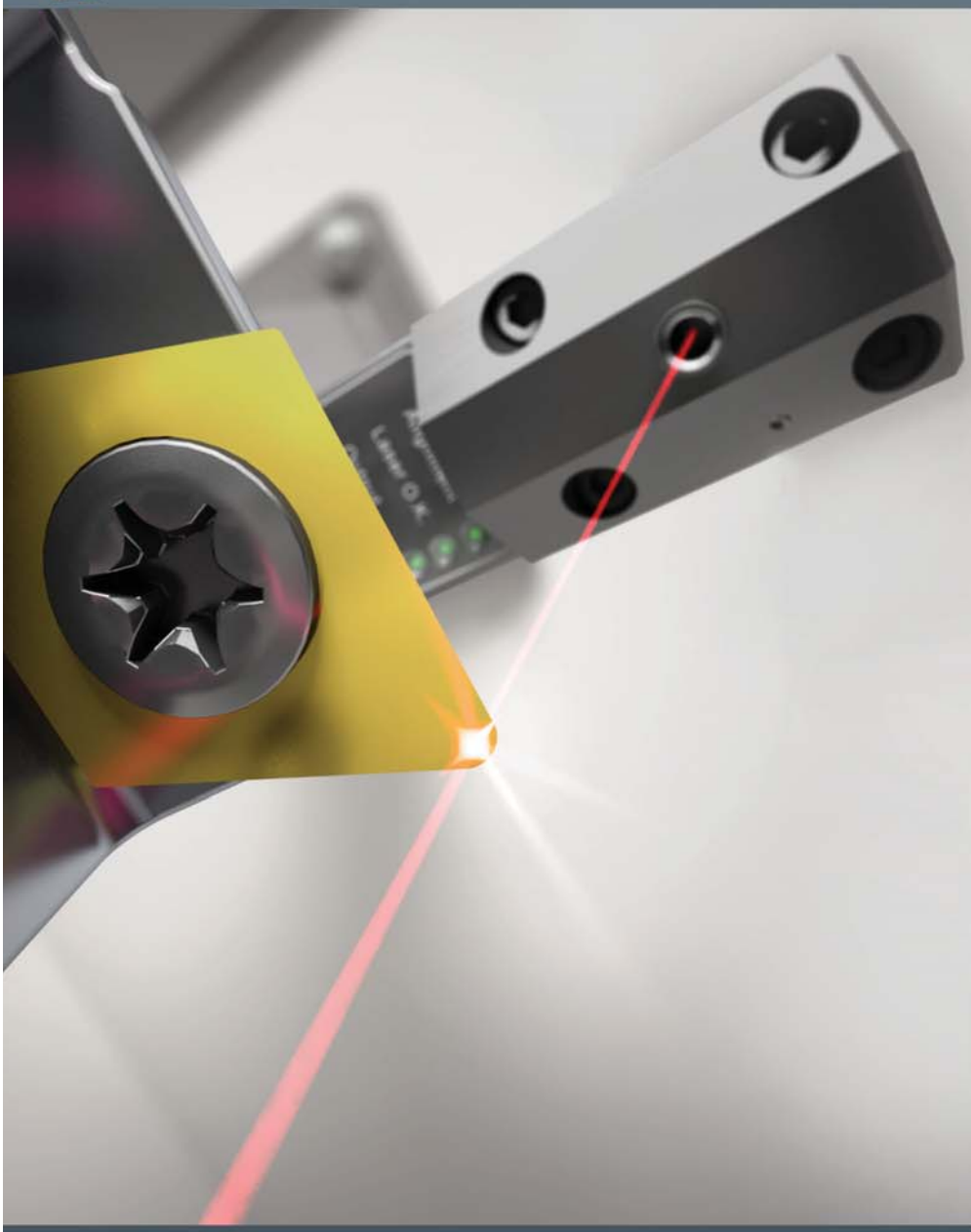

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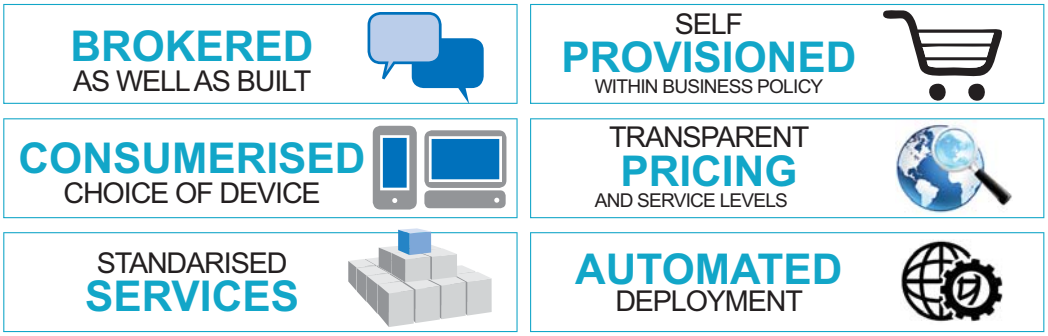
The well Run **Hybrid Cloud**

A hybrid cloud incorporates public clouds for access to a variety of applications and services, and private clouds for reliable performance and security for critical applications.



For the past few years, enterprises have been supplementing their IT with cloud computing resources—applications, raw compute power, storage, etc, purchased on a pay-per-use basis from cloud service providers. While such cloud services found favour with start-ups that did not want to invest upfront in infrastructure, for most large enterprises that had their own legacy infrastructure. So the cloud remained at experimental stages or confined to non-critical applications and workloads.

For one, enterprises couldn't simply throw away the in-house infrastructure and move to the public cloud. Also, there were issues related to security, conformance to laws related to data hosting, internal IT policies, etc, that prevented a full embrace of the public cloud.

The entry of hybrid clouds - which offer the best of public as well as private clouds has changed that. A hybrid cloud incorporates public clouds for access to a variety of applications and services, and private clouds for reliable performance and security for critical applications.

Hybrid cloud in manufacturing

Because highly matured processes and practices are already a given for most large manufacturers, the majority of their products are getting commoditised. Most companies are under increasing competitive pressure to increase accuracy, quicken go-to-market and make intelligent use of all the resources at their disposal—including IT resources.

*By **Abhijit Potnis,** Director – Technology Solution, India & SAARC, EMC*

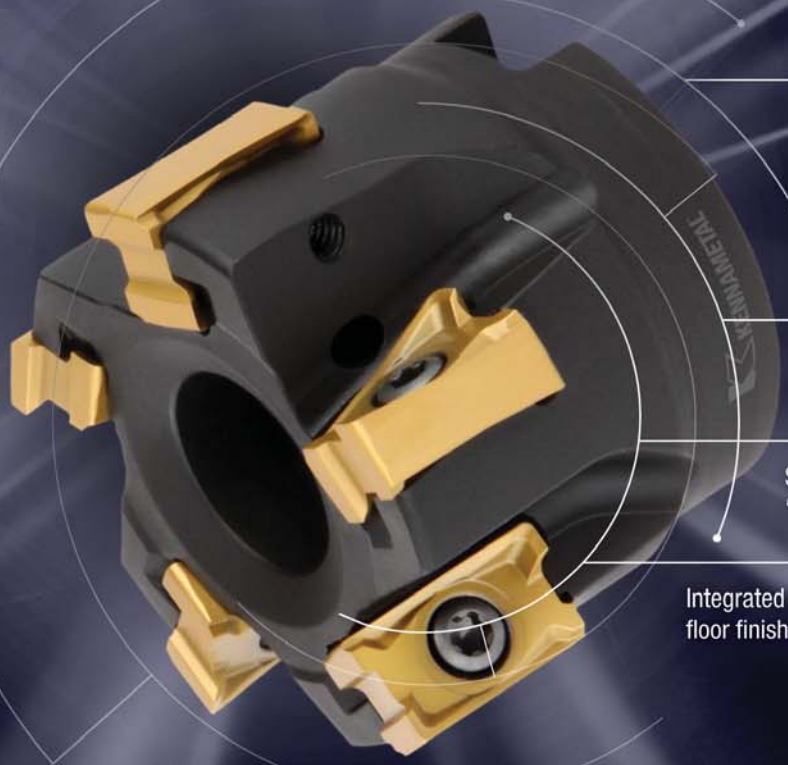
"Many manufacturing companies are increasingly using two-tier ERP strategies for better efficiencies in managing suppliers, doing material planning and bringing down logistics costs.. For the second ERP, they are inclined to go for a cloud-based solution to reduce operational expenditure and roll out applications quickly."

For them, hybrid clouds make the most business sense as and when they want to expand their existing IT infrastructure, embrace new technologies, or incorporate customer feedback quickly and effectively.

Consider a car maker that wants to relaunch a car model that has been widely successful in the past but needs a boost in view of more competitors coming in. This would require more collaboration in the design phase, faster integration of market intelligence into the manufacturing processes and rapid prototyping. Doing all this with legacy systems will be much more time consuming compared to the scenario in a hybrid cloud model. Through the quick-scaling and self-service capabilities of the hybrid cloud, the car maker can quickly provision the IT resources required to build, test and launch the new car.

Manufacturers are also looking at hybrid cloud to reduce dependence on a single, monolithic ERP vendor. They are increasingly using two-tier ERP strategies for better efficiencies in managing suppliers, doing material planning and bringing down logistics costs. For the second ERP, they are inclined to go for a cloud-based solution to reduce operational expenditure and roll out applications quickly. This approach involves a hybrid cloud model—which can build a bridge between the two ERP systems.

Even heavy applications such as PLM are moving to a hybrid cloud environment for better and faster collaboration. The hybrid cloud model is set to become the preferred choice for most manufacturers.



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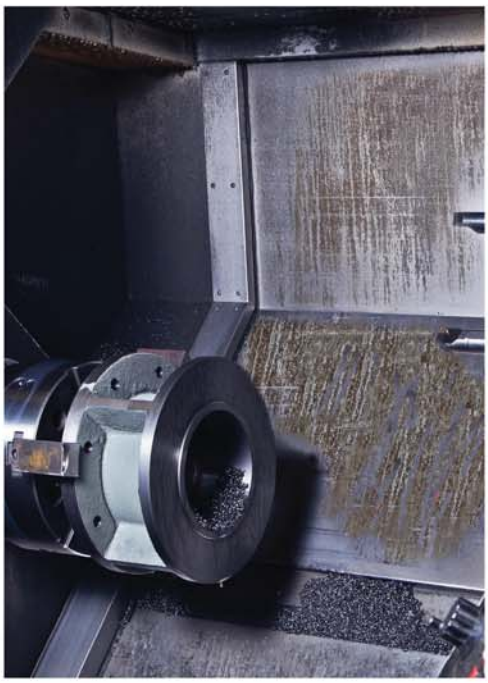
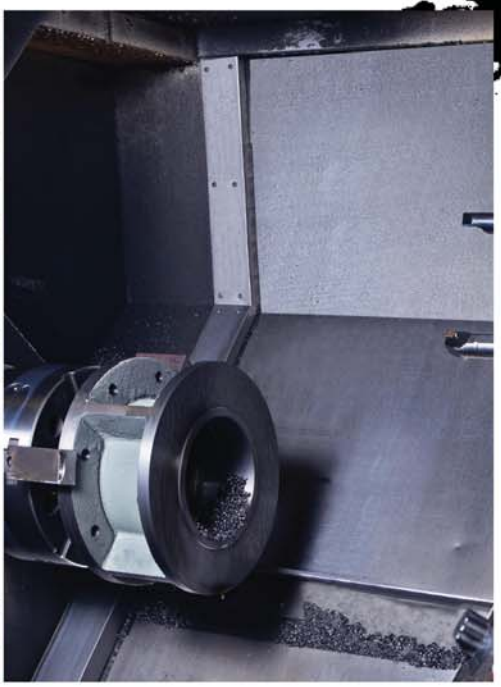


Scale formation with ordinary cutting fluid



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The 3D adventure

A US based cycle manufacturer created the world's first 3D printed metal bike frame with the help of additive manufacturing technology.

The entire bike frame was arranged in sections with the seat post bracket on one build plate and fabricated in one go

Renishaw, the UK's only manufacturer of a metal-based additive manufacturing machine that prints metal parts, has collaborated with a leading British bicycle design and manufacturing company to create the world's first 3D printed metal bike frame. Empire Cycles designed the mountain bike to take advantage of Renishaw's additive manufacturing technology, allowing them to create a titanium frame that would be both strong and light using topological optimisation - the new frame is some 33 percent lighter than the original. The frame* has been additively manufactured in titanium alloy in sections and bonded together.

> "Titanium alloys have a high Ultimate Tensile Strength (UTS) of more than 900 MPa when processed using additive manufacturing and near perfect densities of greater than 99.7 percent are achieved."

Empire Cycles

Empire Cycles is a unique British bike designing and manufacturing company in the North-West of England. Passionate about using great British engineering to create elite products, the Company offers innovative designs to the world's mountain bikers and downhillers.

By working together, Renishaw and Empire Cycles optimised the bicycle design for additive manufacture, eliminating many of the downward facing surfaces that would otherwise have needed wasteful support structures.

How strong is it?

Titanium alloys have a high Ultimate Tensile Strength (UTS) of more than 900 MPa when processed using additive manufacturing and near perfect densities of greater than 99.7 percent are achieved; this is better than casting and, as any porosity is both small and spherical, it has little effect on strength.

The project's aim is to produce a fully functioning bicycle, so the seat post bracket was tested using the mountain bike standard EN 14766; it withstood 50,000 cycles of 1,200 N. Testing continued to 6 times the standard without failure.

Testing of the completed bicycle frame will continue, both in the laboratory using Bureau Veritas UK, and on the mountainside using portable sensors in partnership with Swansea University.

What is topological optimisation?

From the Greek word for place, 'topo', topological optimisation software is the term given to programs that are used to determine the 'logical place' for material – normally using iterative steps and finite element analysis. Material is removed from areas of low stress until a design optimised for load bearing is evolved. The resulting model is both light (due to the low volume) and strong. The historical challenge in manufacturing these shapes can now be overcome with additive manufacturing, enabling physical 3D models to be realised.

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How light is it?

Titanium alloys are more dense than aluminium alloys, with relative densities of around 4 g/cm3 and 3 g/cm3 respectively. Therefore, the only way to make a titanium alloy version of a part lighter than its aluminium alloy counterpart is to significantly alter the design to remove any material not contributing to the overall strength of the part.

The original aluminium alloy seat post bracket is 360 g and the hollow titanium version is 200 g, a weight saving of 44 percent. This is just the first iteration; with further analysis and testing it could be reduced further.

The original bike frame weighs in at 2100 g. Redesigned to make use of additive manufacturing, the weight drops to 1400 g, a 33 percent weight saving. There are lighter carbon fibre bikes available, but Chris Williams, Managing Director at Empire Cycles, has researched this already and says, "The durability of carbon fibre can't compare to a metal bike, they are great for road bikes, but when you start chucking yourself down a mountain you risk damaging the frame. I over-engineer my bikes to ensure there are no warranty claims".

How was the project managed?

Chris had already produced a full size 3D printed replica of his current bike before he approached Renishaw, so had a good idea of what he wanted to achieve.

Renishaw originally agreed to optimise and manufacture the seat post bracket only, but after this proved successful, decided the whole frame was a practical goal. Chris updated his design with guidance from Renishaw's applications team on what would build well, and the frame was sectioned so that it would fully utilise the AM250's 300 mm build height.

Development process of the Empire Cycles 3D printed seat post

The key benefit for Empire Cycles is the performance advantages that this construction method bestows. The design has all of the advantages of a pressed steel 'monocoque' construction used in motorbikes and cars, without the investment in tooling that would be prohibitive for a small manufacturer.

The potential performance has not been completely explored yet, but we hope to continue to develop the project. As no tooling is required, continual design improvements can be made easily; and as the component cost is based on volume and not complexity, some very light parts will be possible at minimal costs.

Research into bonding methods resulted in Mouldlife providing the adhesive, and technical specialists 3M providing test facilities. Renishaw will develop this further in partnership to look at iterative improvements in bonding methods, such as specific surface finishes. The wheels, drive train and components required to finish the bike were provided by Hope Technology Ltd.

This project has highlighted that excellent results can be achieved by working closely with the customer. If you have a component that would benefit from additive manufacture please contact your local Renishaw office for further information.

Source and copyright: Renishaw

Advantages of the additively manufactured frame*

Design freedom	Construction	Performance
Rapid iterations; flexibility to make design improvements right up to production	Complex shape with internal strengthening features	Seat post bracket 44 percent lighter than aluminium alloy version
Ability to make shapes derived by topological optimisation (see over)	Hollow structures	Extremely strong - tested to EN 14766
Ultimate customisation and tailoring - make one-offs as easily as production batches.	Built in features, such as the rider's name.	Corrosion resistant and long lasting.

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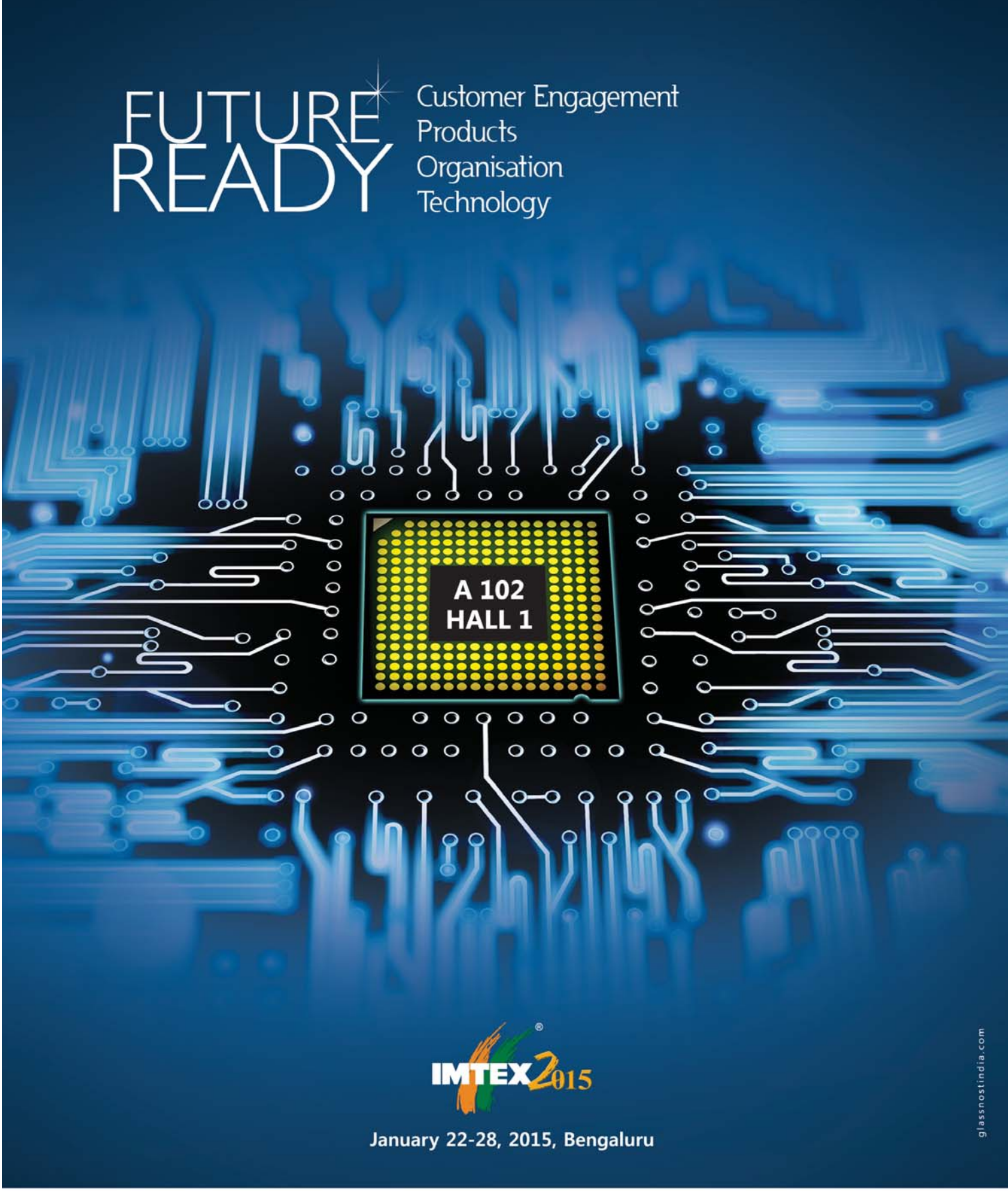

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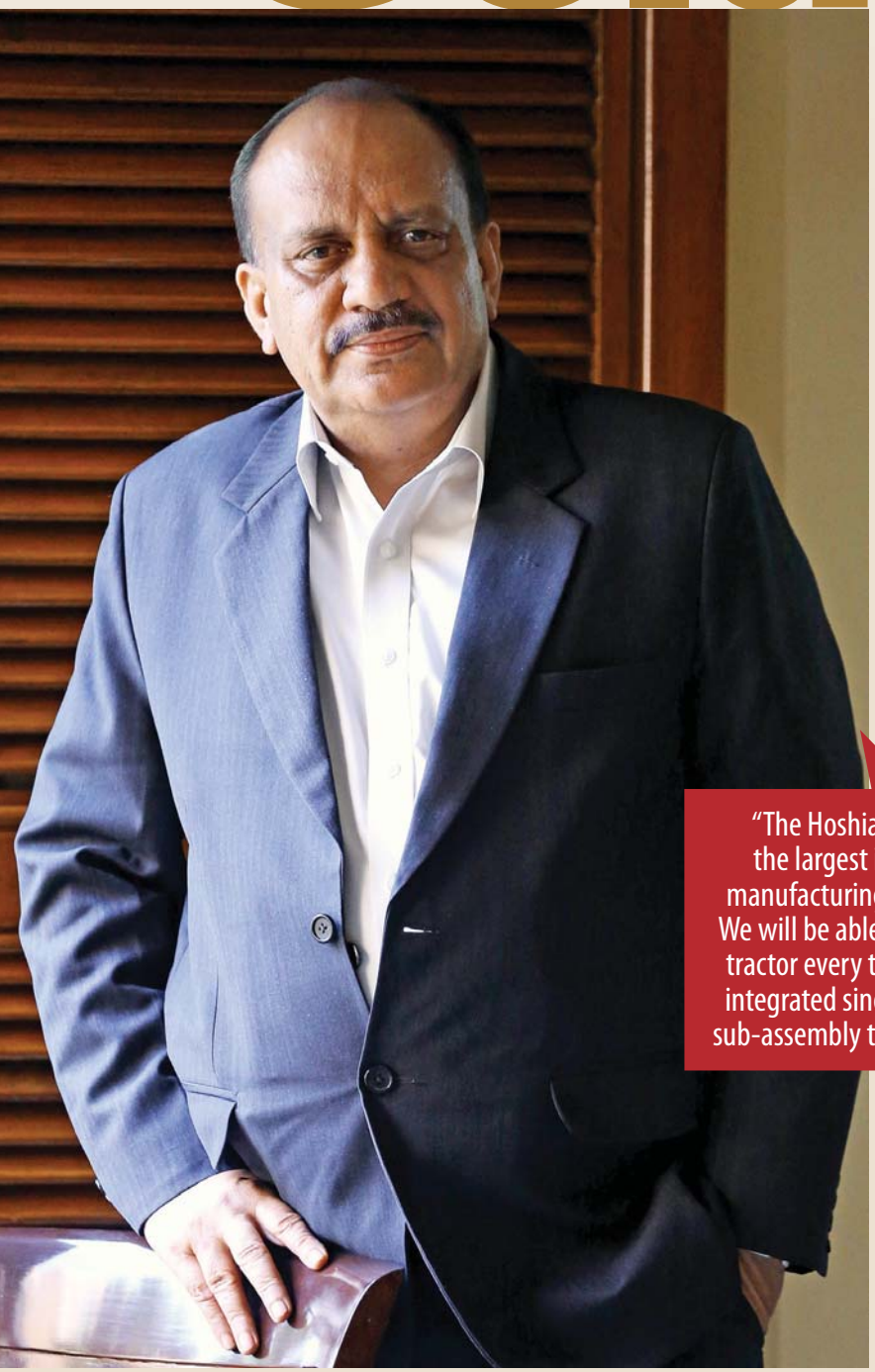
Lines of Gold

While strengthening its position in the domestic market, the Sonalika Group is also aiming to grab a bigger share in the global pie, says AS Mittal, the Vice Chairman of the Group.

By Niranjan Mudholkar



"The Hoshiarpur plant will be the largest integrated tractor manufacturing plant in the world. We will be able to manufacture one tractor every two minutes with an integrated single line from start of sub-assembly to roll out of a tractor."

Sonalika started its journey in 1969 with the objective of facilitating the Green Revolution in the country. It was quite a small beginning but it had the seeds of a big dream. AS Mittal, the Vice Chairman of the Sonalika Group Companies, recalls the modest start by calling it 'A journey of humble beginning, sheer hard work, perseverance and God's mercy'. Remarkably, Sonalika Agro Industries Corporation, the maiden venture of the Group, which was created to address the requirements of Indian farmers, has now evolved into a manufacturer of advanced agricultural implements taking care of the needs of global farmers. Today, the Company is amongst the top three tractor manufacturers in the country and has a substantial overseas presence.

The year 1995 proved to be a turning point for the Group when 'International Tractors Limited (ITL)' was incorporated with an aim to render top-quality services to the famers. "Our focus has always been on helping the farmer grow. That's the reason our tractors bear testimony to great performance, unmatched quality and higher reliability in the market because of their better pulling power, minimal fuel consumption, highest back up

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"World's largest Private equity player Blackstone picked up 12.5 percent stake in International Tractors Limited (ITL). This strategic investment has put us on the world map for tractors."

torque, heavy duty components and low emission levels," Mittal says. Today ITL manufactures one of the widest ranges of tractors in the world - between 18 HP to 120 HP.

Many milestones have marked this incredible journey to success including an approximately one billion dollar turnover. Other highlights of the journey include a joint venture with Renault Agriculture in 2000 and a joint venture with Yanmar of Japan for manufacturing of tractors in India in 2005. The Company also developed four wheel drive front axles as well as transmissions of tractors for Yanmar in 2006 and launched the technically advanced worldtrac tractor series in 2009. It later launched the Gardentrac tractors. The Company also started a new plant in Bihar for manufacturing of rotavators and other ag-

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Financial figures	
Financial Year	**Turnover (Rs Crore)**
2013-14	Rs3822 crore
2012-13	Rs2957 crore
2011-12	Rs2291 crore
2010-11	Rs1949 crore

PLant capacity	
Location	**Capacity**
Hoshiarpur Plant	1,00,000 tractors per annum
Amb (ICML)	12,000 tractors per annum

ricultural implements.

"Strategic investments into the Group by leading international brands like Yanmar of Japan and JM Financials only reinforce the global recognition achieved by the Group. World's largest Private equity player Blackstone picked up 12.5 percent stake in International Tractors Limited (ITL) in 2012. This strategic investment has put us on the world map for tractors," Mittal believes. "Today, the Group's worth is more than Rs10,000 crore with an average growth of 30 per cent," he adds. Exports, obviously has been a big focus for the Sonalika Group. "We have presence in 75 countries and export is contributing 20 percent to our revenue," Mittal shares.

A few years back, the Sonalika Group had also forayed into the automotive segment with International Cars and Motors Ltd. (ICML). However, it has not been able to make any significant progress in that segment and hence has decided to shelve it. "We are converting the resources at ICML for developing new generation tractors for export at the ICML plant now," he says. Tractors remain its mainstay but Sonalika is also pursuing diversification into other segments like auto components and diesel generators.

Strong focus on manufacturing

Manufacturing has been a key strength for the Sonalika Group and has been instrumental in its successful journey. The ITL's integrated manufacturing facility consists of Production, Quality, Supplier Development, Finance, Marketing, and Human Resources under one roof. The manufacturing unit works closely with all functions including forecasting, Supplier development, quality, R&D and customer care functions to meet customer demands. The facility has been divided into what the Company calls as Production Excellence centres. These include Tractor assembly division, Engine division, Transmission and Gear division, Hydraulic assembly division, Industrial engineering division and Tooling manufacturing division.

The tractor assembly division sees seamless manufacturing of tractor from engine marriage to final tractor PDI and dispatch. The assembly line is equipped with stage wise quality gates to ensure that only quality products come out. "We have surface paint booth with CED technology process to give durable products to sustain in various atmospheres."

The engine division is built to have a dust free ambience to build powerful heavy duty and reliable engines. Its production units consist of high end German and Japanese machining centres is also equipped to produce TREM-III, Stage-IIIB and Stage IIIA compliant products with emission validation centres.

The transmission and gear division manufactures gears, shafts and power transmission 4WD axles. It has also heat treatment with controlled temperatures to meet desired hardness to bring reliability in the products. The hydraulic assembly division has facility for internal validation tests. Industrial engineering division implements latest manufacturing trends to ensure quality. It also ensures efficiency of the assembly line process through PokaYoke and TPM practices around the manufacturing cycle. The ITL manufacturing facility is certified with ISO-9001, ISO-14001, and TS 16949 certifications accredited by TUVNORD.

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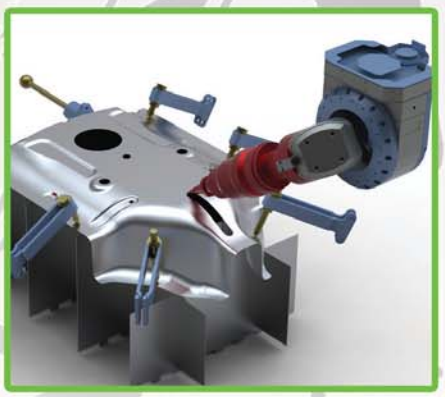

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Eye on the global pie

About three months back, Sonalika announced investments of Rs500 crore to more than double production capacity of its plant at Hoshiarpur in Punjab to two lakh units annually. "The plant* will be the largest integrated tractor manufacturing plant in the world. We will be able to manufacture one tractor every two minutes with an integrated single line from start of sub-assembly to roll out of a tractor. The plant will be ready by June 2015. The strategy is to grab a bigger share in the global pie. We target a revenue of Rs1500 crore from exports with the installation of this state-of-the-art facility."

Minding the gap

While Sonalika has been progressing quite well, there is a fair bit of gap between it and the number two and number one players in India in terms of market share in the tractors segment. But Mittal is undeterred by this gap. He says: "The gap appears high since both the number one and the number two players each have two different companies with them and they are reflecting the combined market share. Any way we shall bridge the gap in the time to come."

Mittal's confidence stems from the fact that Sonalika has a lot of things working in its favour. The annual average growth of 30 percent makes it one of the fastest growing companies in India. Moreover, it is also one of the few debt free corporates.

The word Sonalika is actually derived from the name of a special variety of wheat seeds that played a big role in the success of the Green revolution in India. Interestingly, Sonalika means 'Lines of Gold' in Hindi (*Sone ki Lakeerein*). According to AS Mittal, the top management at Sonalika believes that these 'Lines of Gold' represent a spirit of prosperity and success. "We have taken the same spirit forward not only in India but to over 70 countries across the world. Today, we continue to spread this spirit with the same fervour and optimism and climb new horizons of success that are still untouched and unexplored," he says.

Robust R&D

The integrated R&D centre at the TTL plant has developed more than 30 products in five product platforms ranging from 18 hp to 120 hp tractors (Garden, Utility and Agriculture tractors) catering to more than 75 markets around the world.

It works in complete collaboration with production and sales, monitoring the day to day demand function of the market by developing products catering to it effectively. The centre integrates seven Centres of Excellence (CoE) under one roof: Product Development, Prototype build centre, Vendor (Supplier) Development, Design Implementation cell (ERN cell), Product Design & CAE Simulation centre, Product validation (Testing) centre, and Supplier Quality Control.

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By **Alagu Balaraman,**
Partner & Managing Director – Indian Operations
CGN & Associates India Pvt Ltd

"While demand will grow, so will competition. Supply chains will be expected to meet the twin expectations of fast response to customer demand and highly efficient cost structures."

Macroeconomic changes and action by the Government can have a big impact on the supply chains of manufacturing companies. What are the challenges CEOs and operations heads can expect in 2015 and how they can be addressed?

In December, the Thomson Reuters / INSEAD Asian Business Sentiment Index rebounded. The country giving the biggest boost to the index was India, with companies reporting a maximum score of 100 for the 3rd consecutive quarter. Business expectation from the Modi government continues to be high. So, is this the time when we will collectively exhale? Will expectations move to reality? Whether or not they do, there are some macroeconomic changes that have taken place already and others like action by the Government that are expected, which can have a big impact on the supply chains of manufacturing companies. What are the challenges CEOs and operations heads can expect in 2015 and how they can be addressed?

Critical to focus on efficiency

The biggest event that has already happened is the reduction in oil prices globally. On the surface, this will lead to lowered logistics costs for companies. However, the cause for the price drop is over supply and that is because the Middle East countries seek to bankrupt fracking companies in North America and drive them out of business. If tomorrow, these countries change their strategy, supply can change abruptly and so will the consequent pricing. So, it would be best to reap the benefit of lower fuel costs while we enjoy it and not bank on it over the long term.

A continued focus on efficiency would be wise. Companies should keep a tight focus on their manufacturing footprint, transport network optimisation for incoming and outgoing material, and truck utilisation. They can pick up additional benefits now and still be in good shape if the situation changes.

Time to invest in productivity gains

Another event that has happened is the steady a moderation of inflation and an expectation of continued moderation. The high consumer inflation of the past few years has placed a substantial pressure on labour costs in manufacturing. After all, inflation impact is always felt the most at lower income levels where food takes up the biggest share of wallet. Companies increased their reliance on contract labour and this led to greater attrition and uncertainty on the shop floor and in warehouses. But the low-cost, contractual labour model will be difficult to sustain in an increasingly competitive market. As a result, we can expect a greater focus on building capabilities and driving productivity. This will help bring about greater stability in operations. The increased cost gains will far outstrip the additional labour cost.

Expect increased competition

The reining in of inflation has another large impact on manufacturing. Lower inflation will result in long-term

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secular growth trends in disposable income. Our population of 1 billion plus has been enjoying a CAGR of over 10 percent in disposable income over a 10-year period from 2001, even as GDP growth rates have been a bit more than half that number. This resulted in huge demand generation. As inflation slows down and salaries rise, consumers will continue to buy.

Private consumption has been a mainstay of GDP growth in India for the past 10 years. So, anything that can help drive up private consumption (spending by consumers) will have a huge impact on manufacturing. Someone has to make the stuff people buy. Others have to make the equipment that is used to make the stuff that people buy. So, we are likely to see a continued surge in demand.

This sounds like a good thing: more customers demanding our products. However, such a growing market will be a lodestone attracting competition. So supply chains will be expected to meet the twin expectations of fast response to customer demand and highly efficient cost structures. They will also need to deal with rapid new product launches.

Sweat your assets & implement projects fast

The Cabinet has cleared the bill on GST to take to Parliament; the PM has announced he will directly oversee clearance of large projects and the e-SamikSha initiative is expected to accelerate the working of the bureaucracy. These initiatives, if pushed through will suddenly provide a large fillip to economic activity.

Across industries, there has been a lot of work done by companies to increase productivity and to cut out excess costs. Now, the growth agenda will kick in again. At that time, the ability to sweat assets and stay lean during growth will be very valuable. This will involve plant automation, de-bottlenecking capacity, multi-skilling of workers and the application of better planning methods to get more out of existing assets. Increasing in-house capacity is the fastest and least risky way of creating additional capacity.

There is, however, a limit to how much capacity can be squeezed out of existing facilities, so brown field and green field initiatives are likely to mushroom. Delivering these projects, often based on newer technology, on time, will be a crucial skill. This needs faster planning, faster decision making and tight execution.

> "We can expect a greater focus on building capabilities and driving productivity. This will help bring about greater stability in operations. The increased cost gains will far outstrip the additional labour cost."

Relook at management methods

The Indian economy is growing, competition is increasing, customers are getting more demanding and simultaneously we are integrating more with the global economy. We can expect that volatility, uncertainty, complexity and ambiguity (VUCA) will increase.

This is going to require a new emphasis in operations management mindsets. There has to be a shift from focusing primarily on cost and quality to becoming more responsive. Different industries have complained about how forecasts are less reliable and customers tend to change schedules within a single week. Factories are operating on daily updates of customer orders, not by design but as a fire fighting response to unpredictable demand. This kind of responsiveness can be called meeting the customers' requirements at any cost. No business can support that. So if the nature of demand of the customer has changed, we cannot expect to meet it with the same methods that were used earlier. We need new methods that will meet the customers' requirements at a reasonable cost.

Greater sophistication in planning and greater rigour in reviews are both essential at all levels and across all functions. This would include order booking, capacity planning, logistics, material planning and new product launches and product upgrades. Most industries are still operating on a slow monthly model of planning, with reviews that are post mortems giving marginal direction for an uncertain future. There is a serious need to up-skill managers, just as there is to up-skill labour. Managerial productivity can have a bigger impact than labour productivity does in future.

In summary: we are going to live in exciting times

The year ahead looks like it will be quite a challenge for any operations chief. After years of tightening, it looks like the growth agenda will start again. If so, will we build on the learning of the past few years and grow differently? Or will we fall back on sloppy growth at any cost and create a high cost structure for the future? Whichever route a company takes, we are likely to see exciting times in manufacturing going forward – the signs are all there. It will be a time for people who like to take on challenges and risks. Others who might prefer to have things stay as they were, it will seem like a visitation of the old, and probably apocryphal, Chinese curse – may you live in interesting times.

Companies should keep a tight focus on their manufacturing footprint, transport network optimisation for incoming and outgoing material, and truck utilisation.

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Volkswagen India achieves new production milestone

Volkswagen India recorded a total production of 111,444 cars in the calendar year 2014 – the highest so far since the inauguration of its production facility in Chakan, Pune in 2009. Volkswagen Pune Plant achieved an increase of over 11.4% in production in 2014 as compared to 2013, greatly supported by the rising demand from its export markets.

"The growth was mainly driven by the export volumes that are being produced at our facility, especially for Mexico. Nearly every second car produced from our plant in 2014 was exported to MexicoExports have helped us in creating a strong second leg of our operations in India. However, our main focus still continues to be on the Indian market which has a great potential to grow in the coming years," said Mahesh Kodumudi, Chief Representative, Volkswagen Group India and President and Managing Director Volkswagen India Private Limited.

Daimler India Commercial Vehicles rolls out 20,000th truck

Daimler India Commercial Vehicles Pvt. Ltd. (DICV) the 100 percent wholly-owned subsidiary of Daimler AG has recently crossed the milestone of the 20,000th locally produced trucks from its plant at Oragadam.

Only two and a half years after start of production of the first BharatBenz heavy-duty truck, the 20,000th locally produced truck, a BharatBenz 2523C tipper, has rolled off the production lines at DICVs plant in Oragadam. About half of these 20,000 trucks have been manufactured just within 2014, highlighting the rapid growth that the production site has recently experienced.

"By crossing the production mark of 20,000 trucks, we achieved the next milestone of our DICV success story", stated Erich Nesselhauf, CEO and MD, DICV. "We have transformed the Indian truck industry with our modern trucks. That's confirmed by our customers and proven by a high acceptance in the market due to excellent Quality of our products as well as best Sales and After Sales experiences."

NS Instruments India starts operations at Sri City

NS Instruments India Private Ltd., (NSIP) a wholly owned subsidiary of Nippon Seiki Ltd., of Japan has inaugurated its production unit at Sri City. Addressing the gathering, Mamoru Kawada, Director, Nippon Seiki, said, "I am thankful to the management of Sri City and the state government for extending excellent cooperation in building this state of the art plant on time. Besides meeting the demand from the Indian market, in future we wish to export to other countries from the Sri City plant, as it is located close by to sea ports. I solicit the support from all our customers."

Speaking at the ceremony, Ravindra Sannareddy, Managing Director, Sri City said, "NSIP is the eighth Japanese company that has become operational in Sri City. When two other auto components makers Kikuwa and Kusakabe, and the three biggies from Japan viz., Isuzu, Unicharm and NHK Spring become operational, a strong ecosystem for Japanese companies gets developed here."

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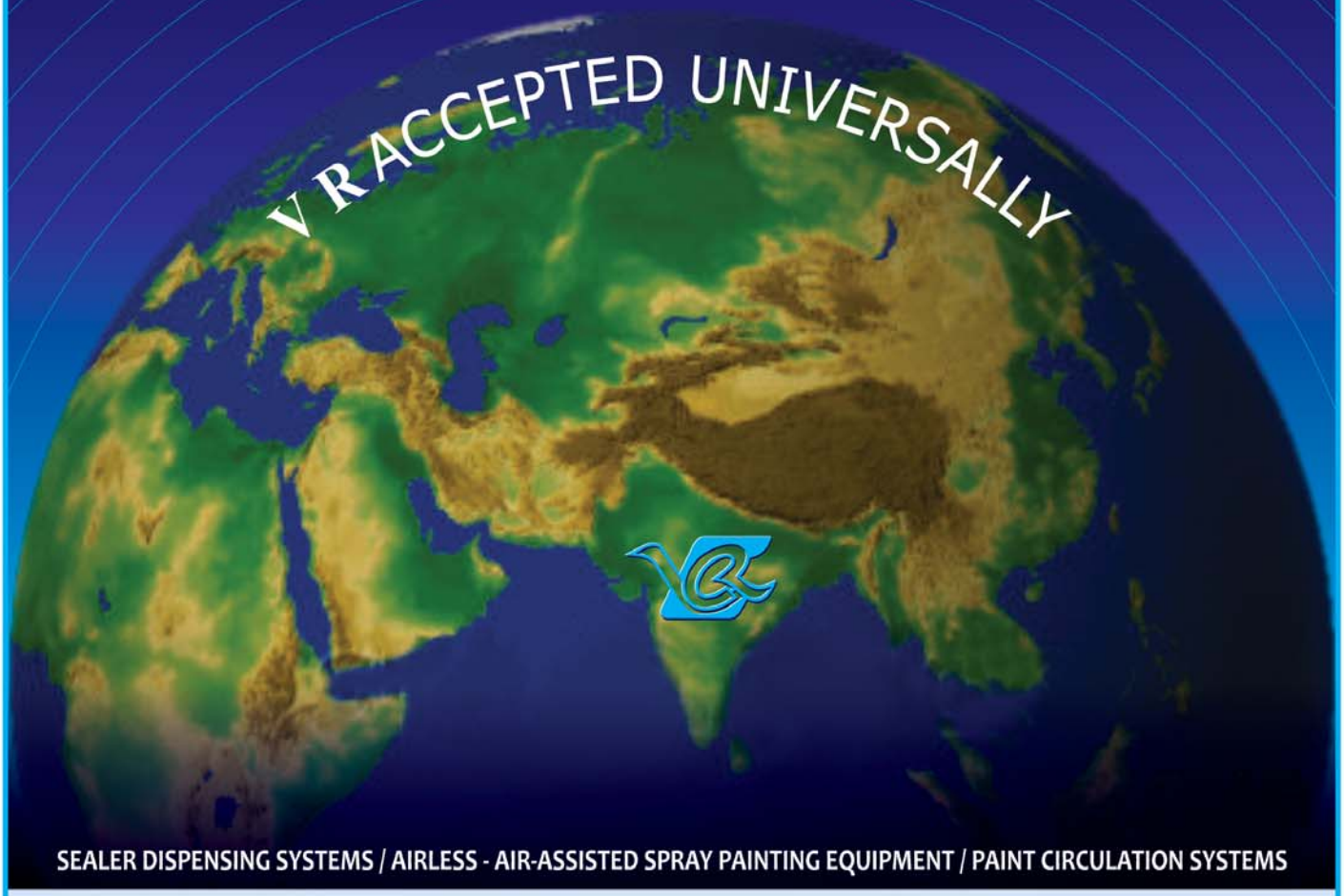

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Ship-launched Dhanush Missile successfully test fired from the Indian Naval Ship INS Suvarna

Platform for Make in India

Many of the equipment and platforms, cleared by the Defence Acquisition Council in 2014, will be manufactured in the country, either by the public or private sector entities, through collaborations and tie-ups with foreign manufacturing companies. The Machinist presents an overview

The year 2014 will go down in the history of the Ministry of Defence as a momentous and memorable year- a year which witnessed the country's security policies being bolstered, new ideas being infused for acquisition and the much needed momentum being provided for the modernisation process of the Armed Forces. Three Defence Ministers - AK Antony, Arun Jaitley and the incumbent, Manohar Parrikar led the Ministry in succession during the year.

'Make in India' became the buzzword in the corridors of MoD. The Defence Acquisition Council, the apex decision-making body of the Ministry, triggered a scorching pace of acquisition by clearing proposals worth over Rs1,50,000 crore for the Services this year alone. Many of the equipment and platforms, cleared by the Defence Acquisition Council, will be manufactured in the country, either by the public or private sector entities, through collaborations and tie-ups with foreign manufacturing companies. Foreign Direct Investment (FDI) in the Defence Sector was encouraged by liberalising some of the policies.

Indigenisation and Modernisation

For speedy indigenisation, the Government increased the Foreign Direct Investment (FDI) limit from 26 percent to 49 percent through approval route. Above 49 percent, the proposal will go to Cabinet Committee on Security on case to case basis. The Government also lifted an earlier three year lock-in period for foreign investment in Defence sector.

Defence products list for the purpose of industrial licensing has been revised and the revised list has been notified vide Press Note no. 3(2014) dated 26/6/14 by DIPP. In the revised list most of the components/parts/raw materials, castings, forgings, production machinery, testing equipment etc. have been taken out of purview of industrial licensing. Besides, dual use items other than those specifically mentioned in the list would not require industrial license from defence angle. This will reduce the license requirement for many items, which were earlier required industrial license for manufacturing.

INS Kolkata, the biggest warship ever to be built in India to date, was commissioned by Prime Minister Narendra Modi on August 16, 2014

In order to give a boost to private sector participation in defence production, the Government has decided to replace the present fleet of 56 AVRO Transport of IAF by reserving the project for the private sector only.

The DAC also decided that all the 384 light-utility

helicopters needed by the Army and Air Force to replace the existing Cheetah/Chetak fleets will be made in India with foreign collaboration.

What is more, in a landmark decision on October 25, 2014, the DAC cleared projects worth over Rs80,000 crore. It was decided to build six submarines in India at a cost of about Rs50,000 crore and to purchase over 8,000 Israeli antitank guided missiles and 12 upgraded Dornier surveillance aircraft. Of the Rs80,000 crore, more than Rs65,000 crore is Make in India or Buy & Make.

For speeding up modernisation programmes, the Government has made a special allocation of Rs5000 crore in the current Union Budget. And to encourage research and development of new Defence systems that enhance cutting-edge technology capability in the country, the Government has allocated Rs100 crore to set up a Technology Development Board.

> "In a landmark decision on October 25, 2014, the DAC cleared projects worth over Rs80,000 crore. Of this Rs80,000 crore, more than Rs65,000 crore is Make in India or Buy & Make."

Acquisitions

The Defence Acquisition Council (DAC) decided that the acquisition of 22 Apache attack helicopters and 15 Chinook heavy-lift helicopters from the US will continue. The DAC cleared the revised offset proposals submitted by US Aviation major, Boeing, in this regard.

The Government approved the Navy's proposal to buy 16 multi-role helicopters, which fly from warships and detect enemy submarines. The Defence Acquisition Council also approved the purchase of Integrated Anti-Submarine Warfare Suites (torpedo decoys and active towed array sonars) to be fitted on seven stealth frigates and four destroyers, which are to be built in India.

The DAC on December 17, 2014 approved proposals for Rs4,444 crore, including the purchase of four survey vessels at Rs2,324 crore. It also cleared the upgradation of the Mobile Integrated Electronic Warfare System, Samyukta, at a cost of Rs1,682 crore. The Government also cleared a Rs900 crore dedicated mobile communications system for army troops deployed in Ladakh and the Eastern Command.

Capacity Building

The year saw capacity building in the existing and new strategic areas which includes beginning of sea-trials of indigenously built nuclear-powered submarine INS Arihant and the much awaited test flying of LCA (Navy) prototype-I.

The LCA programme witnessed yet another milestone on November 8, 2014 when Tejas trainer PV6, the two-seater version of Tejas LCA for Air Force, in its first flight took to the skies and became the 16th Tejas variant to have flown as part of the programme. Having absorbed all the major design modifications undertaken during the flights of earlier aircraft, PV6 is the final prototype leading to series of production of trainer and has the capability to deliver all 'air-to-air' and 'air-to-ground' weapons deliverable by the single seat counterpart.

The Indian Navy has been a leader in the Nation's quest to promote self-reliance and indigenisation. INS Kolkata, an indigenous destroyer built at Mazagaon Dock Limited, Mumbai, the biggest warship ever to be built in India to date, was commissioned by the Prime Minister Narendra Modi on August 16, 2014 which will usher new capability into the Indian Navy. INS Kamorta, an ASW corvette built at Garden Reach Shipbuilders and Engineers Limited, Kolkata, was commissioned on August 23, 2014. In addition, Offshore Patrol Vessel INS Sumitra built by Goa Shipyard Limited (GSL), was commissioned on September 4, 2014.

Other major warship construction programmes include six destroyers of P15A and P15B class and six submarines of P75 class at Mazagaon Dock Limited, Mumbai. Fifteen other ships are under construction at Garden Reach Shipbuilders and Engineers Limited, Kolkata. The third Naval Offshore Patrol Vessel INS Sumedha was commissioned at Goa on March 6, 2014. INS Sumedha is 200th ship indigenously built by GSL. GSL is the only yard which has delivered four classes of OPVs to both Navy and Coast Guard. INS Sumedha is the third of the new 105 meter class of NOPV and the largest ship constructed by GSL for the Indian Navy. This state-of-the-art ship will help meet the increasing requirement of the Indian Navy for undertaking ocean surveillance and surface warfare operations in order to prevent infiltration and transgression of maritime sovereignty.

Chetak Helicopter: All the 384 light-utility helicopters needed to replace the existing Cheetah/Chetak fleets will be made in India with foreign collaboration.

> "The production value of DRDO developed systems inducted or cleared for acquisition (excluding strategic systems) crossed Rs1,70,000 crore."

Induction of the nuclear submarine INS Chakra on lease from Russia has heralded an important chapter in the history of Indian Navy. In addition, INS Vikramaditya, including its Mig 29K integral fighter aircraft has been inducted into the Navy. Maritime Surveillance Capability of the Navy has been bolstered with the recent induction of Long Range Maritime Patrol Aircraft P81.

Indian Navy's ability to communicate with deployed ships and submarines on an uninterrupted basis throughout the year got a shot in the arm when a new state of the art "Very Low Frequency (VLF) Transmitting Station" was inaugurated on 31 July, 2014 at INS Kattaboman, Tirunelvelli, Tamil Nadu. India is among a handful of nations in the world that has such a capability.

Two Advanced Early Warning and Combat (AEW&C) aircraft having fitted with the indigenous radars and other equipment such as data links, mission system controller, data handling and display system have been flying. A wheeled version of Nishant UAV named "Panchi" has been realized and had performed its maiden flight on 24th December 2014 after series of high speed taxi trials. An expandable 450 Kg thrust class Gas Turbine engine 'Manik' was developed for 1000 km class subsonic cruise missile and is undergoing endurance tests.

MBT Arjun MK-1 tank: Phase-IV of user trials of Arjun Mk-II were successfully completed in 2014.

Missiles

Successful test trials of surface-to-air Akash missile and induction of its Air Force version into IAF, successful launching of 5000 Km range Agni-5, long range cruise missile Nirbhay, user trials of Prithvi-II, supersonic BrahMos and beyond visual range missile Astra were the hallmarks of this year's achievement.

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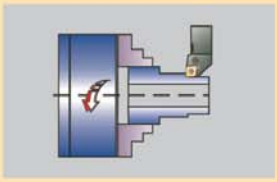
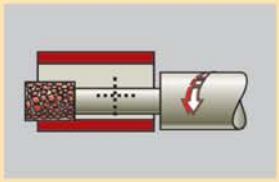


SC-8K
GANTRY LOADER

SC-14
PIPE TURNING

SC-25
CNC HEAVY DUTY LATHES

CNC Internal Grinding

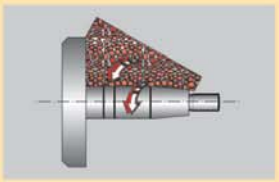


BRIG-450 CNC
BIG BORE GRINDER

FIGT-300 CNC
FOUR STATION TURRET

FIGE-150 CNC
ID / OD GRINDER

CNC Cylindrical Grinding

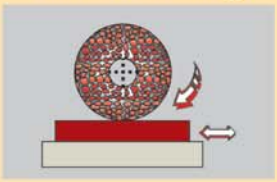


AWH-1500 CNC
LONG SHAFT GRINDER

AWH-2000 CNC
HEAVY DUTY GRINDER

SWH-400 CNC
AUTO LOADING

Surface Grinding



SG-106 CNC
CREEP FEED GRINDER

SGR-60
ROTARY GRINDER

SG-63
HYDRAULIC / PLC

Automats

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TD36

A42/60

Vertical Turning Lathe

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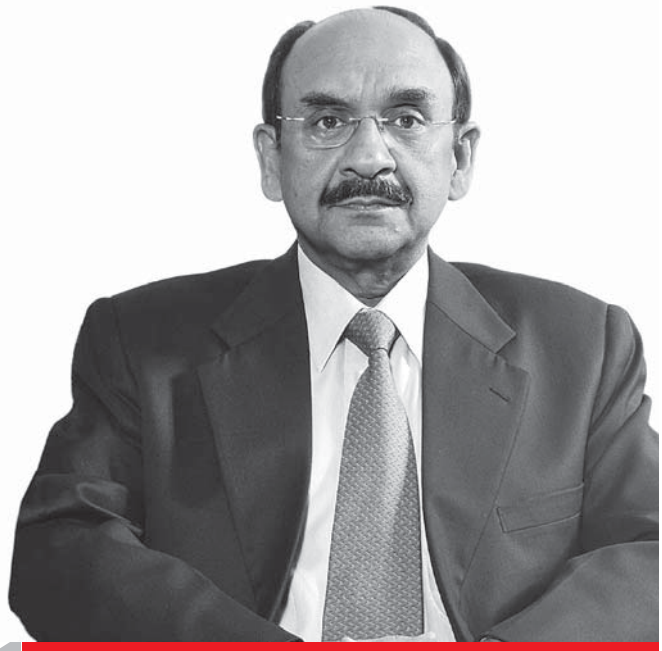


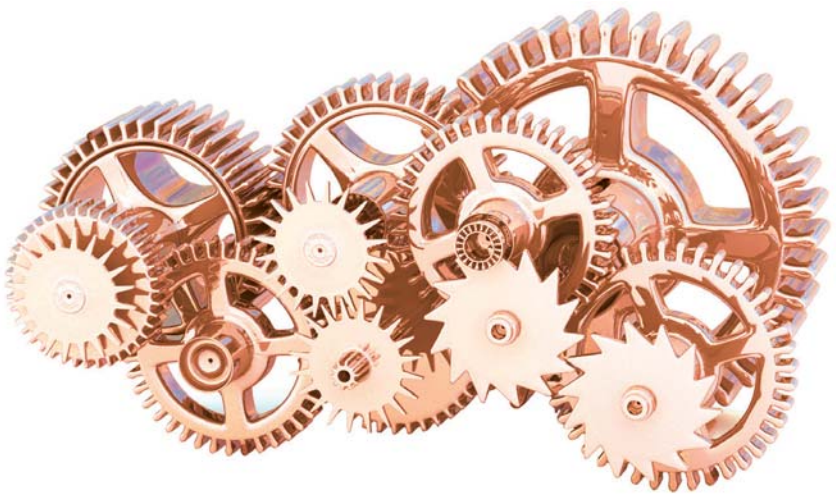
Let's get our act together, let's create employment, let's use our youth and let's get millions out of poverty, the time starts now!

The importance of 'Manufacturing in India' has been discussed, debated and analysed countless number of times. For the sake of recap, the key reasons for its importance are: employment for the younger generation, prevent vulnerability to imports, technology transfer, and so on. India has however always been an outlier, with manufacturing share in GDP hovering at 14 percent to 16 percent of GDP, as compared to 25 percent to 40 percent for most emerging economies. Based on these arguments, the National Manufacturing Policy was prepared and new Industrial Corridors were established. Yet, as a country we just don't seem to manage to grow manufacturing; in fact numbers indicate that the share of manufacturing is stubbornly stuck at around 15 percent of GDP. Manufacturing growth rate has steadily declined from a high of 11.3 percent per annum in 2009-10 to nil in 2013-14. This is indeed worrying.

> "A vibrant MSME sector is an essential element in manufacturing. Establishing a few large industries in each sector will serve as anchors that will provide the market and the technology for MSMEs."

As a country we must address the challenges* one by one if we want to move forward. In addition, infrastructure in terms of roads, rail and ports are comparatively more expensive when compared to China, Singapore etc. Given the time required to start a business, viability often becomes a casualty. In such a scenario, it is not surprising that the Indian manufacturing sector is not responding.

Having painted a somewhat bleak scenario, is it all lost? Definitely not. Can the Indian industry resurrect itself? Certainly yes. Let's start with the highlights of the 2013 Global Manufacturing Competiveness index prepared by Deloitte. Based on responses from 550 senior manufacturing executives around the world, China was ranked number one, but India was not far behind at number 4.



We were ahead of countries such as South Korea, Taiwan, Singapore, Japan, Thailand, Mexico, Malaysia; all of them are countries that are known for their prowess in manufacturing. What is even more encouraging is that when asked what will be the likely ranking after five years, the response was that India will rise to the number two slot. Just behind China, but even ahead of Germany.

The index was based on factors such as talent availability, labour and material cost, Government policies, infrastructure and energy costs. India ranked low on infrastructure and legal systems, but ranked very high in labour cost and talent driven innovation. The study also

shows a strong correlation between growth in manufacturing GDP, and growth in overall GDP. This association was true regardless of whether manufacturing GDP as a percentage of total GDP was high (> 30 percent) or low at (<16 percent). We have seen how in the last two years, India's manufacturing growth and GDP growth has declined in tandem. This reinforces the case for manufacturing, and points to the fact that only services led growth is neither possible nor desirable.

The World Economic Forum prepares an index that ranks the overall competitiveness of an economy. In its latest report it says, "Continuing its downward trend and losing 11 places, India ranks 71st. The country's new government faces the challenge of improving competitiveness and reviving the economy." So we have three sets of rankings for India. Ease of doing business is 142, Overall economy is 71 and Manufacturing competitiveness is 4. Clearly the launch of the "Make in India" campaign by the Prime Minister is both timely and essential.

That brings me to the final section on what is it that we need to do to boost manufacturing. For a start we need to move away from generalisations and become more granular in our approach. We should short list sectors based on national strategic importance, country strengths, etc, and then do whatever it takes to make each sector competitive. This will require both focus and hard decisions.

"For a start we need to move away from generalisations and become more granular in our approach. We should short list sectors based on national strategic importance, country strengths, etc, and then do whatever it takes to make each sector competitive."

The Make in India initiative has already shortlisted some sectors. However, the criterion is largely based on import substitution. In the long run this will not be adequate. We need to be competitive in the international market, so that our products can be exported in the sectors identified. Exports can fundamentally alter the way we look at manufacturing in terms of costs and quality.

The Planning Commission's new avatar (NITI - National Institution for Transforming India - Aayog) should take on the responsibility of championing the cause of the short-listed sectors. The best way to do that would be to create a two member full time team at the all India level for each sector, one representative from the government and one from the industry. The government representative must be at a senior level; at least a Joint Secretary.

A similar structure would be required in each State. So if there are 25 focus sectors, create that many teams who will reach

out to all relevant stakeholders. To understand this better, we can take a few sectors and see how this team could possibly operate. So if the Food Processing industry requires change in Food Laws, repeal of APMC, dilution of Essential Commodities Act, updating warehousing regulation etc, then this team would work with all stakeholders and make it happen. If domestic Defense Production requires large land parcels, quicker decision making by Defense Ministry, further increase in FDI, then that group will make that happen. If Apparel sector requires improving quality of cotton grown, change in labour laws for women, skill training on modern stitching machines, common pollution control facilities at dying locations, then the apparel team will coordinate that effort.

> The Planning Commission's new avatar should take on the responsibility of championing the cause of the short listed sectors. Create a two member full time team for each sector, one representative from the government and one from the industry."

These are examples to highlight the need to work across ministries and functions. Each team must understand and bench mark cost structures, and work towards reducing transaction costs. Sectoral blueprints should be prepared and time lines set for implementation.

There will certainly be some generic requirements such as good infrastructure, power availability that cuts across all sectors. So if high land cost makes a business unviable, then government land should be made available. If energy costs need to be lowered and private distribution can achieve it, allow that to happen.

A vibrant MSME sector is an essential element in manufacturing. Establishing a few large industries in each sector will serve as anchors that will provide the market and the technology for MSMEs.

Let me quote from the concluding remarks of the Deloitte study on manufacturing. "For any nation, advancing their manufacturing capabilities matters because it typically brings together a cadre of human talent with its investments in research and development. This results in innovation, advancements of productivity and also creates demand for high level skills in other sectors that support manufacturing, such as banks, third party logistics, education, call centers, healthcare, etc. It has been seen that nations and companies that fully outsource production, jeopardise their long-run economic well-being. These factors, in part, explain what is often not obvious: namely, how new era manufacturing supports country-level resiliency in turbulent times".

Exports can fundamentally alter the way we look at manufacturing in terms of costs and quality.

> "So if high land cost makes a business unviable, then government land should be made available. If energy costs need to be lowered and private distribution can achieve it, allow that to happen."

Finally continuing with existing norms or just tweaking them will not work. They haven't in the past, and as they say, if you do what you have always done, you will get the same results that you've always got!

Let's get our act together, let's create employment, let's use our youth and let's get millions out of poverty, the time starts now!

The first lead will need to come from the Central Government for agreeing to the suggested framework, and I am confident that that industry will not be found wanting!

*The basic challenges

We must ask ourselves a fundamental question; what is it that is holding back manufacturing and making it uncompetitive. There are five basic factors.

Land: Land has become a major bottleneck as it is either not available or it is too expensive. Further, infrastructure projects essential for industrialisation have got stalled because of challenges in land acquisition.

Labour: Ironically, labour shortage is often quoted as a challenge. This is because unskilled labour has alternatives such as MNREGA and skilled labour supply is limited due to inadequate training.

Capital: Capital costs in India have gone up because of high interest rates, and often it is used unproductively due to need for power backup, etc.

Natural resources: Access to key raw materials such as coal, iron ore, alumina has been blocked because of regulatory bottlenecks.

Regulatory environment: This has become difficult in the last five years, and India's ranking in the Ease of Doing Business, is a reflection of this.

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Optimising the hoist frame

The design-engineers at a leading forklift manufacturer used a chainflex cable to guide energy and signal cables from the mobile hoist frame to the cab of an order picking unit using several guide rollers

How are energy and signal cables guided from the mobile hoist frame to the cab of an order picking unit using several guide rollers? The design-engineers for the Still EK-X vertical order picker found the answer: they used a chainflex cable that was originally developed for use in energy chains. Both igus and Still determined from various tests that this cable is not only ideal for applications in energy chains, but will also perform well with guide rollers.

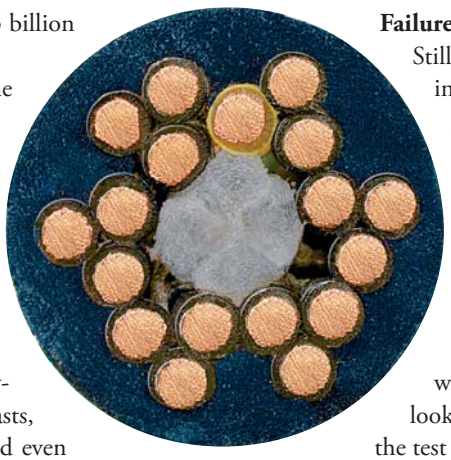
Orange is the colour of choice for many operators of logistics and distribution centers, warehouses, and order picking plants, because they are using forklifts, tugs, and order picking equipment made by Still. The company is headquartered in Hamburg and is part of the Kion Group, which in turn is the world's number two forklift manufacturer with turnover of approximately EUR 4.5 billion (2013).

The vertical order pickers from the EK-X series are particularly impressive systems. Their job is to travel to specific pallets in the narrow aisles of a high-bay warehouse from where the driver picks individual packages. The order pickers reach gripping heights of up to twelve metres. The modular design principle allows them to be adapted to the exact application. For instance, buyers can select from various cabs, liftmasts, operator panels, and battery systems, and even custom designed options can be implemented.

Meticulous design – down to the last detail

The Reutlingen facility of Kion Warehouse Systems GmbH is responsible for developing and manufacturing this equipment. The factory builds approximately 2,000 material handling machines per year, which are designed with extreme care down to the last detail. This is certainly the impression at igus GmbH, which is working together with Still and Kion Warehouse Systems as a supplier to a project.

The reason for the collaboration was to optimise the hoist frame on the EK-X series. This created the need to reduce the overall installation space requirements for the electrical and hydraulic line guides in the liftmast. Achim Schwarz, Product Manager for narrow aisle vehicles at Still GmbH, says: "We originally equipped the deflection points with a polygon element that formed a semi-circle with small rollers. But the limited installation space in the new liftmast called for a solution with a roller."

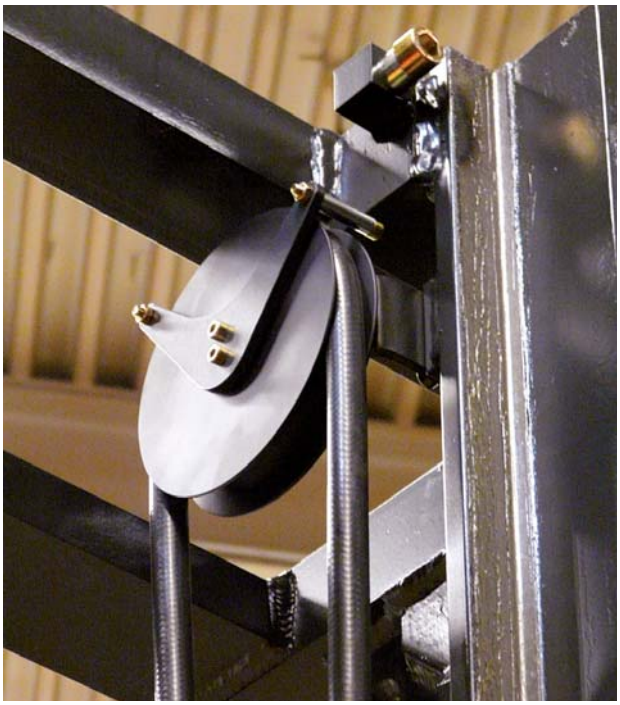


The chainflex cables are braided in bundles and were specifically developed for use in energy chains. The do not develop 'corkscrews' in response to bending motions and are therefore chain compatible without restrictions. *(Source: igus GmbH)*

Failure mode 'Corkscrew'

Still has already used this deflection principle in smaller order picking equipment, where it performed well. Due to the longer cable runs on the EK-X series, the lateral guide of the roller was improved slightly – the initial testing promptly revealed that this solution would unfortunately not work in this case. Volker Haspel, responsible for electrical engineering design at Kion Systems, says: "The cables we normally use started twisting and then looked like a corkscrew. They failed during the test shortly thereafter."

At this point of the development the contact to the cable experts at igus was established. They were already able to assist customers with similar experiences approximately 25 years before. Andreas Muckes, Product Manager chainflex, says: "When we



Energy and signal cables up to 14 metres in length are guided in the hoist frame by guide rollers, and move every time the mast is raised or lowered. *(Source: igus GmbH)*

developed our first energy chains, we found that the chain worked great, but the commercially available cables frequently did not last long. Back then, this was the kickoff for our cable product range."

A look under hood of the cable: Braiding in layers or bundles? igus then developed the chainflex product range, which differs from conventional industrial cables in one significant detail: conventional cables are braided in layers. This means that the cores of a cable are braided with a relatively long pitch in several layers around the centre, and are then equipped with a jacket extruded in the shape of a hose. When the cables move in the energy chain, the cores along the inner radius are compressed, and the cores along the outer radius are stretched. This exerts pronounced push-pull forces on cores. As these forces are distributed in the cable, the braiding structure of the cores is destroyed. This causes the cable to deform, resulting in the so-called 'corkscrew'. This ultimately leads to core failures.

"The cores are first braided in bundles, which are then braided at a small pitch around a centre element. This centre element is not only used as a filler, but also functions as a strain relief element."

After having understood this causal relationship, igus developed cables with a completely different design principle. The cores are first braided in bundles, which are then braided

The Kion Systems design engineers worked closely together with igus during the development phase. The end result showed: chainflex cables are not only chain compatible, but are also a good solution for guide rollers. From left to right: Andreas Muckes, igus Product Manager chainflex, Achim Schwarz, Product Manager Narrow Aisle Vehicles (VNA) at Still GmbH, Matthias Vohrer, Mechanical Engineering Design at Kion Warehouse Systems, igus Sales Consultants Michael Fuchs and Volker Haspel, Electrical Engineering Design at Kion Warehouse Systems in Reutlingen. *(Source: igus GmbH)*

at a small pitch around a centre element. This centre element is not only used as a filler, but also functions as a strain relief element. The result is very similar in appearance to a wire rope. As additional support for this high-strength braiding structure, a jacket is extruded under pressure to additionally guide the cores in length direction. All these measures have the result of minimising the forces created in the cable, and preserve the structure.

Are chain compatible cables also roller compatible?

This design is more complex, and producing these cables requires greater effort. But the expense is worthwhile for motion-controlled cables, since cores and the entire cable are exposed uniformly to the forces generated during bending processes. Muckes says: "We have never seen a corkscrew on a cable braided in bundles, therefore making this one of our most important design principles."

The question now was: are chainflex cables braided in bundles not only chain compatible but also roller compatible? The igus lab conducted appropriate preliminary tests, and Kion also tested the cables extensively. Mechanical engineering designers were also included in the testing. Matthias Fohrer, Design-Engineering + Mechanical Engineering Development, says: "Testing this type of cable is a highly complex task. They perform relative motions in the hoist frame, and pronounced dynamics occur during order picker travel. One must also take into account the tensile forces, which occur in this case in contrast to energy chain cables." The igus staff was pleasantly surprised to learn that the Kion design-engineers were investing this much effort into this topic. Muckes says: "Very few companies take this approach."

New standard for liftmast cables

The tests in the labs of both companies showed: the cable design with braiding in bundles will hold up very well on rollers. The special jacket materials and their processing also contribute greatly toward their durability. Testing showed that the shape of the roller has no direct influence on the service life. The decision for the Still designers was therefore clearcut: the cable was defined as the standard for the EK-X liftmast. The specification calls for a chainflex cable with braiding in bundles and TPE jacket. Instead of the original blue colour, Still receives the custom colour black, which blends well into the environment, since the hoist frame and hydraulic lines are black.

A cable grip ensures that tensile forces are properly transferred to the cable. *(Source: igus GmbH)*

Sophisticated design, thoroughly tested

The cables used in the order picking range in length between 4.50 and 16 metres. There is no doubt that they are exposed to extreme loads. The equipment is used continuously in most applications, with the hoist frame always in motion. The chainflex cables in these environments move as much as they do in many thousands of energy chain applications. Still therefore found a solution for a task that resulted from the modified geometry of the hoist frame and the deflection rollers. The cable specialists at igus also benefited from these findings. They now know that their cables are not only chain compatible but will also perform well in roller guides.

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The New Dimension of Productivity in Machining

It has been demonstrated with the help of numerous tests that it is possible to exploit metal working fluids for productivity in machining successfully.

By ***Punit Gupta,***
Managing Director, Blaser Swisslube India Pvt. Ltd

A right metal working fluid can affect surface finish, geometrical accuracies, tool wear and cutting parameters greatly. Depending upon the design formulation and additivation, it can work on higher productivity, economic efficiency and machining quality improvements."

Manufacturing companies associated with machining are looking at exploiting all the possible aspects in machining process to be more competitive. In a metal working process, there are four important elements - the machine, the cutting tool, the material being machined and the coolant. Metal working fluids (coolants) are often neglected when people discuss the aspect of productivity in machining.

This is a new dimension in machining which is being explored very well by Blaser Swisslube globally by its highly focused efforts in Research & Development and a unique Technology Center. It has been demonstrated with the help of numerous tests done live at the customers' place and in technology center, that it is possible to exploit this new dimension of productivity in machining and execute it successfully.

A project conducted with the Technical University (Technische Hochschule) in Aachen demonstrated this very clearly. The aim of the project was to reduce the machining time required to drill a deep hole in tempered steel, an operation that had taken three minutes, while endeavouring to retain the same standard of quality. Until its collaboration with Blaser Swisslube, the Technical University in Aachen had been using a conventional cutting oil for this machining operation.

To optimise these demanding drilling operations, a process of rigorous testing and adjustment was applied to tool, drilling strategy, machining parameters, metalworking fluid delivery and metalworking fluid. The water-miscible cutting fluid was pumped through the

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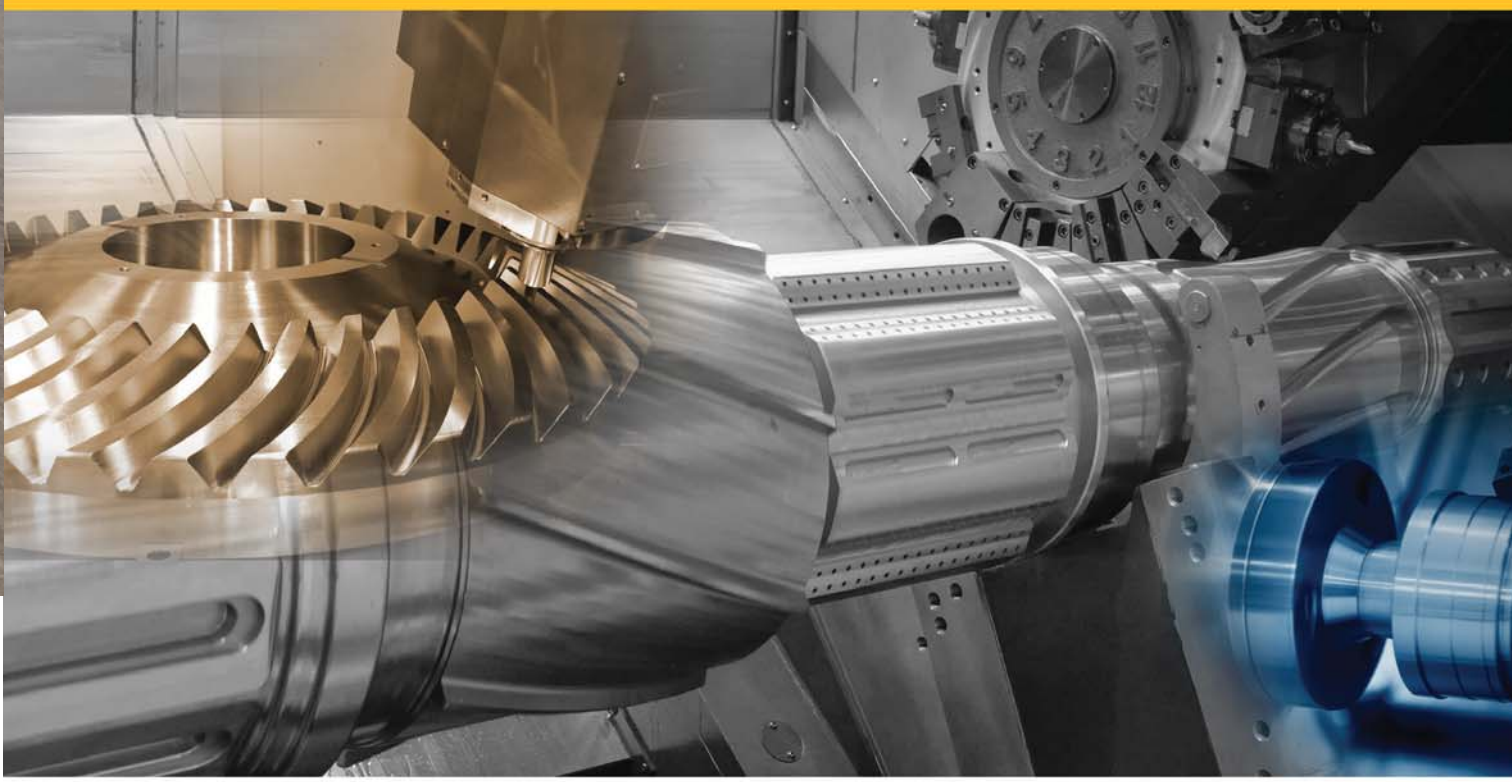

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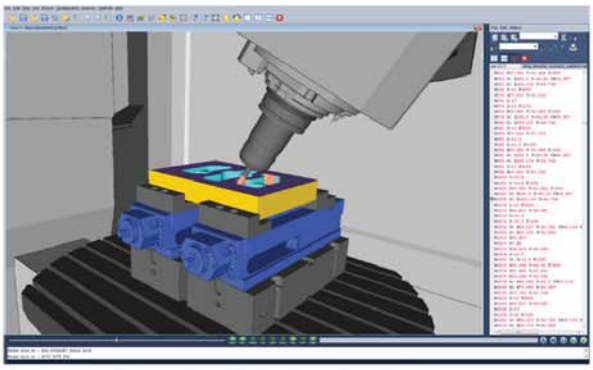

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Deep Hole Drilling test details

Starting position

Operation: Deep hole drilling, diameter 8 to a depth of 200 mm
Pre-machining of pilot hole of same diameter to a depth of 16 mm
Material: 42CrMo4 + QT, tensile strength 1000 MPa
Machine type: Mazak Variaxis 500
Tool: Kennametal and Titex drilling tools
Cutting parameters: Vc 120 m/min, f 0.25 mm/revolution
Result: At the end of this project, the original time required of three minutes per hole was reduced to ten seconds for a depth of 200 mm – an 18-fold improvement in efficiency. A video recording of the deep hole drilling operation is available - watch it and convince yourself!
Webpage: *www.blaser.com/deepholedrilling*

tool at high pressure (60 bar) to evacuate any chips occurring and to prevent the downtime otherwise caused by chip removal.

Another very interesting test

At Blaser Swisslube's Technology Centre on the drilling of Inconel 718, it was possible to increase the cutting tool manufacturer's recommended cutting speed of vc 30m/min to vc 75m/min. This impressive speed was possible by use of the optimal metalworking fluid. Therefore, thanks to these gains, the overall machining cycle time was reduced by more than 50 per cent.

"In terms of tool cost, optimisation of coolant can lead to 20 percent to 40 percent reduction. Choice of technology, raw material and formulation strategy of new generation coolants influence reachable tool life in a machining process and in some cases productivity."

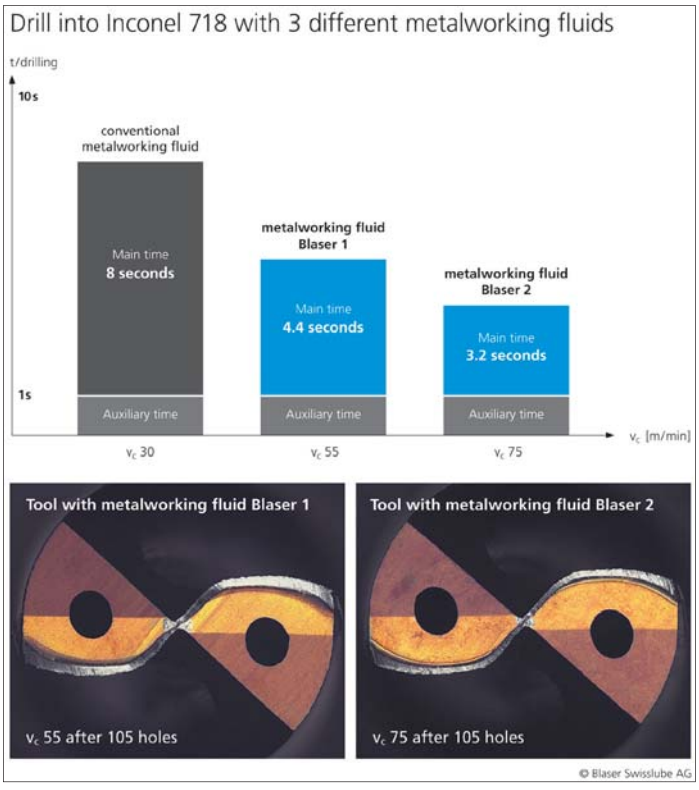
Initially, the customer was drilling the part using a solid carbide 5mm diameter drill at 3x depth with the help of through tool coolant on a vertical machining center. The recommended cutting data for this drill on Inconel 718 was 30m/min at a feed rate of 0.06mm/rev. Following the evaluation by the technicians, the surface speed was increased to 75m/min, with the feed rate remaining the same. The result was a reduction in drilling time from 8 to 3.2 seconds.

With these examples, it becomes clear that a right metal working fluid has a high potential to affect machining to a large extent. It can affect surface finish, geometrical accuracies, tool wear and cutting parameters greatly. Depending upon the design formulation and additivation, it can work on higher productivity, economic efficiency and machining quality improvements.

Leveraging effect

It is fascinating to see the large positive impact which can be brought by little investment in this area of Metal working Fluids. Blaser Swisslube has been able to demonstrate this dimension well.

High performance coolants from Blaser can enhance overall productivity by as much as 10 percent or more. In terms of tool cost, optimisation of coolant can lead to 20percent to 40 percent reduction. Choice of technology, raw material and formulation strategy of new generation coolants influence reachable tool life in a machining process and in some cases productivity. In many closely held studies at customer places, the company has been able to achieve productivity improvements in the range of 8-15 percent by working together with customers. Time is the biggest currency and we need to take a holistic view on overall values, which can be generated from the Liquid Tool to get the best out of machines and tools.



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A new **dimension**

The production aids will be far reaching into the future and flow of information and all other aspects associated with shop floor make their presence through operators performing on the Super Shopfloor.

The Super shopfloor will be more of visuals, communicative, self-directed definite flow, direction and engagement. It has less of dependency and also demonstrates productivity and assuring quality by way of confident actions. The production aids will be far reaching into the future and flow of information and all other aspects associated with shop floor make their presence through operators performing on the Super Shopfloor. The place will be ergonomically designed and will be gender unbiased to work for in safety point of view.

A motivated workforce

People are the backbone of a Super Shopfloor. At Kirloskar Brothers Ltd (KBL), 'People matter the most'. People working with us, around us or associated with us in any way are of utmost importance in setting up a Super Shopfloor. More of ownership, a sense of belongingness, trust and communication are vital tools in keeping our workforce motivated.

Importance of technology

Technology is an essential part of the manufacturing process. The state-of-the-art equipment is really useful in creating a conducive environment for faster and error free communication. For example, instead of preparing a hard copy of the drawing on a machining centre, you can always use a TAB / TABLET with a wireless networking / DNS / DNC system and source the required drawing for reference. Thus, you can avoid paper and ink wastage and at the same time, you will have all the required information in a single click. This also provides protection against IP related issues. Technology saves a lot of time. Each member of the team can contribute effectively with unmatched accuracy.

The Three Pillars

Safety, Quality and Productivity are the three pillars of a modern day's shopfloor. However, the Super Shopfloor should think beyond these essential factors. Emphasis on empowerment, transparency, communication and being agile in responses will give a new dimension to the Shopfloor.

*By **Prakash Pudale,** Associate Vice President & Head Operations, Kirloskar Brothers Ltd.*

"Emphasis on empowerment, transparency, communication and being agile in responses will give a new dimension to the Shopfloor."

Going 'Green'

Kirloskar Brothers Limited has always believed in the mantra of 'Go Green'. Yes, Shop floors are becoming conscious towards energy conservation and are deploying greener practices such as maximising the use of daylight with rooftop solar panels to run operations in daytime, use of green chemicals. Everyone associated with the shop floor acknowledges that recycling has a wide scope in the manufacturing process.

Culture of innovation

A systematic approach to incorporate innovations in the support functions of operations, decision making and process on the shopfloor is an integral part of the function. Encouraging the culture of innovation cannot be left behind while addressing super shopfloors.

Download this Form from www.themachinist.in

Calling all manufacturing plants in India to send entries

THE MACHINIST
ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

Super SHOPFLOOR 2015

The Machinist magazine is proud to announce its **'Super Shopfloor'** programme.

It is open to all manufacturing plants in India under two categories

Large enterprises *(Rs1,500 crore turnover and above)*

SMEs *(Less than Rs1,500 crore turnover).*

There will be three winners* from each category and winning entries will be felicitated in April 2015.

Participation is simple and there is no entry fee.

Tell us in 1,000 to 1,300 words why you think your shopfloor should be '**The Machinist Super Shopfloor 2015'**.

Your entry should explain the achievements of your shopfloor across the following five key aspects in last one year:

1. Safety, 2. Quality, 3. Productivity, 4. Sustainability, and 5. Innovation.

You may also attach supporting documents.

You must also provide the following details

Category (Large Enterprises or SMEs): .....

The overall company turnover is to be taken into consideration for determining the category

Name of the company: .....

Location of the plant: .....

Name of the plant head: .....

Plant size: .....

Staff strength: .....

Key products manufactured: .....

Annual capacity: .....

Key clients: .....

Key market (domestic / exports): .....

Manufacturing principle followed: .....

Recent milestones: .....

Technological highlights: .....

Please also provide two high-res images of shopfloor in JPEG format (300 dpi)

Note: Entries should be sent on a simple word document or a PDF file only. Entries in other formats will not be accepted. Images should be sent in high-resolution JPEG format (300 dpi). Please send your entries to niranjan.mudholkar@gmail.com and niranjan.mudholkar@wwm.co.in. Please mention 'The Machinist Super Shopfloor 2015' in the subject line of the email. For any queries regarding participation, write to the above email ids or call on +91 9819531819.

Last date for sending your entry is February 25, 2015

**The decision on the winners will be final and no query will be entertained after the winners are announced.*

IMTEX 2015

What: International metal cutting machine tools technology exhibition

Concurrent show: Tooltech 2015

Dates: January 22-28, 2015

Venue: Bangalore International Exhibition Centre (BIEC)

Organised by: Indian Machine Tool Manufacturers' Association (IMTMA)

Website: *www.imtex.in*

Renewing **hope and optimism**

By Shivani Mody

Moving on from a slowdown trend last year, the industry is showing positive momentum. The year 2015 is already reflecting the winds of change - a slow start but a promise of steady growth. Moreover, the manufacturing sector grew at its fastest pace in two years in December, ending 2014 on a high note on strong orders flows, including from abroad, as per a recent HSBC survey.

Amidst the renewed enthusiasm comes IMTEX, the largest exhibition of metal-cutting machine tools and manufacturing solutions in South and South-East Asia. The 17th edition, IMTEX 2015, will allow the industry to attract business opportunities in store for everyone connected to manufacturing. It will showcase exhaustive range of innovations and technological refinements in the complete product segment of metal-cutting machine tools. Concurrent with IMTEX 2015 is TOOLTECH 2015 - 17th international exhibition of cutting tools, tooling systems, machine tool accessories, metrology & CAD/CAM. With emphasis on "Make in India" and Government announcing various enhancement schemes, the exhibition will carry tremendous value for exhibitors and delegates wherein a record number of business enquiries and related activities like product launches, dealerships, joint ventures, etc. are expected.

Industrial conglomerates at Imtex 2015

- Aerospace
- Automobiles and auto components
- Defense
- Food processing and dairy equipment
- Construction equipment
- Medical engineering
- Power & gas
- Pharma equipment
- Plastics processing
- IT & electronics
- Railways
- Shipping
- Nuclear
- Agriculture

Showcasing latest trends

Over the years, IMTEX has developed a reputation for showcasing latest trends as well as accomplishments of the already successful technologies from India and across the globe. This makes IMTEX the most sought after exhibition in this part of the continent. The event will provide a unique opportunity to witness a wide range of metal cutting ma-

chine tools and manufacturing technologies on a single platform.

With renewed focus on domestic manufacturing by the government and the recent developments in this direction, the event is likely to attract large number of visitors from newer manufacturing sectors leading to higher business momentum. The combination of IMTEX 2015 and TOOLTECH 2015, held over an exhibition space of around 50,000 sq mt, will feature more than 1,000 exhibitors from various parts of India and across the world.

Displays at the event will focus on optimizing productivity, enhancing quality, increasing reliability and reining competitiveness of world-class standards. These include automatic lathes, gear cutting & finishing machines, machining centres, assembling systems, industrial robots, drilling machines, boring machines, milling machines etc.

Highlights of Imtex 2015

Participation from over 25 countries
50,000 sq mts of exhibition space
Over 1,000 exhibitors
Over 1,000 live machines
5 exhibition halls
Group participation from 9 countries

Concurrent event TOOLTECH 2015

TOOLTECH 2015, a premier event concurrent to IMTEX 2015 will showcase machine tool accessories, metrology and CAD/CAM cutting tools, tooling systems and current trends in the tooling industry. TOOLTECH will shed light on recent trends in technology, design and product development to achieve competitiveness and excellence in all metal working operations. The 17th in the series, TOOLTECH 2015 will unveil yet again the explicit range of cutting tools from the stable of the world's leading brands.

International Seminar on Machining Technologies

With a view to highlight evolving trends in machining technologies, IMTMA has organised an International Seminar on Machining Technologies (6th in the series) on 21 January 2015, in conjunction with IMTEX 2015. The international seminar – "Powering Manufacturing Growth and Competitiveness," will look provide key takeaways for customers to adopt in their production processes successfully.

International experts in metal-cutting technology from Germany, Israel, Japan, Sweden, UK and USA as well as India will facilitate the seminar – spread over two key note and five concurrent sessions.

Through the seminar, IMTMA intends to cover the more pertinent aspects of metal-cutting processes, its requirement in the manufacturing industry and the technology gaps that can be bridged. It will provide both manufacturers and users of machine tools with latest metal-cutting solutions that

would enhance productivity, improve quality and finish of machined components, in addition to reducing costs.

Academia-industry pavilion

With the Imtex trade exhibition, IMTMA also provides a platform for academia to bond with the industry. The Indian Academic/R&D Institutions get an opportunity to showcase their R&D capabilities in metal working field. The participation is through display of posters from each institution. These interactions benefit staff and students from the various institutions as they witness best practices in metalworking first hand. The institutions also get an opportunity to explore commercial strategies with the industry for their products/ technology.

Ten Reasons to Visit IMTEX 2015

- Meet and interact with professionals from leading companies from across 25 countries at one place.
- See well over a thousand machines in action; get to know about new products, technology innovations and manufacturing solutions from across the continents.
- Find out latest trends in Metal Cutting and listen to over 50 experts sharing their valuable knowledge at the international seminar on metal cutting.
- Technical know-how and industry inputs gained at Imtex may be taken as equivalent to the knowledge gained by visiting individual companies in respective countries.
- Opportunity to rub shoulders and network with decision makers, company heads, consultants, industry professionals on common grounds during 7 days of the largest expo on Machine Tools in South-East Asia.
- Opportunity to be in midst of bustling business activity at multiple halls spread across 4800 sq. meters exhibition space, experience and envision deals getting done, enquiries being generated and contacts being made. It is estimated that Imtex 2015 may surpass all previous records in order bookings.
- Imtex 2015 gives you an opportunity to interact with foreign manufacturers and innovators to form joint ventures, technology transfers and even distribution networks in India and across the globe.
- Be the first to witness latest technology entering Indian shores. Imtex 2015 will present many firsts and launches of cutting edge machines from Indian and Global manufacturers.
- Imtex 2015 will act as a catalyst to 'Make in India' movement and provide an impetus to Indian economy.
- Opportunity to link up with various interesting Academia institutions, Solution Providers and Consultants leading to positive interactions to boost up your productivity and prospects over the next few years, all at Imtex 2015.

"IMTEX, South and Southeast Asia's largest machine tool expo - is the flagship event of Indian Machine Tool Manufacturers' Association (IMTMA). "All preparations are on-going to make the event a grand show. IMTEX 2015 will see more than 1,000 exhibitors from India and abroad showcasing their latest technologies and products on offer. We have group participations from countries like China, Czech Republic, Germany, Italy, Japan, Spain, Taiwan, US. Also looking at the present market scenario and growth in the manufacturing sector we estimate 100,000 footfalls this year"

L. Krishnan,

President, Indian Machine Tool Manufacturers' Association (IMTMA)

Reflections of the past

Imtex 2013 (15th in the series) showcased an exhaustive range of innovations and technological refinements in the product segment of metal cutting machine tools. In its 15th edition, Tooltech 2013 featured new trends in cutting tools and tooling systems from across the globe. Both exhibitions featured participation of 987 exhibitors from India and 25 overseas countries. Almost half of the total participation comprised overseas companies. The response was equally spectacular. Notwithstanding the industry slowdown, the exhibition was host to around 84,000 business visitors from across the Indian manufacturing industry. Key highlights of B2B turnouts were high-level delegations from user industries, group visits by manufacturing conglomerates and several Indian & international business delegations. Interaction with business visitors led to a virtual sell-out of all machines displayed at the exhibition. Orders worth Rs 8,000 million were booked at the event and exhibitors further generated business enquiries to the tune of Rs 1,41,440 million.

Moving forward with renewed optimism

Imtex 2015 and Tooltech 2015 are being scheduled amidst the winds of change in India. A new political climate has renewed hope and optimism in the economy and industry in general. The economy is already showing signs of recovery with bright prospects for growth and employment. By all measures good times are ahead.

Summarising it – business opportunities would be in store for everyone connected to manufacturing, around the time Imtex 2015 and Tooltech 2015 is scheduled.

INDUSTRY SPEAK

Ravi Raghavan

Chief Executive Officer, **Bharat Fritz Werner Ltd**

Visit us at Hall 1 A Stand A102

IMTEX is a good platform to meet customers, understand their plans, challenges and to see how we could align with them from product/service offering perspective to make them successful in meeting their objectives regarding manufacturing competitiveness. We are looking forward to share with our clients various initiatives we have taken regarding new products, processes and technologies which we believe would be of great interest to them. The event provides us an opportunity to exchange views with our partners on the supply chain aspect as well. Overall, IMTEX would allow us to capture many valuable inputs for our medium term plans.

Market sentiments

We see an upbeat environment in the manufacturing segment. This is a pro investment feeling, which we expect to translate in tangible new capacity creation starting from end fourth-quarter and spanning during the coming financial year. Various initiatives announced by central government - especially the ones relating to "Make in India," thrust on infrastructure development, public private partnerships in defence and railway equipment manufacturing etc is expected to boost the manufacturing segment. Upcoming budget would be a crucial platform for the government to strengthen these initiatives.

Recent technology trends

The multi-tasking abilities of the machines will get enhanced significantly - to be able to manufacture work pieces from "raw to finish" in minimum set ups and with minimum movement on shop floor. In this direction the technology trends would drive multi axes machining capabilities, merging of turning, milling, drilling processes. Indian manufacturing industry will look forward to enhanced role of 'Simple automation systems' to get reliable and consistent throughput. Customers would look for 'Smart' machines which have in built sensors to enable swift diagnosis - at many times ahead of actual breakdowns.

New **CNC products and technologies** from **BFW**

Showcasing an array of new products and technologies from BFW, Matec and Spinner brands, the company believes it will spark interest in clients.

The multi-tasking machine

(Vertical turn mill centre, model BVL 550 ML)

The milling head type vertical turn mill centres from BFW are full-fledged multitasking machines which combine several machining processes including turning, facing, boring, threading, drilling, tapping and partial milling. The robust BVL 550 ML's milling head comes with BT-40 live spindle and 7.5/9 kW power series motor that ensures drilling up to hole diameter 30 mm and tapping up to M24 x 2 pitch.

The direct tool pick-up system is used for tool change with 12 stations umbrella tool magazine for either typical turning/boring operations or for drilling/tapping live tool operations avoiding additional setup on VMC while ensuring consistent accuracy due to reduced setup. With a single tool in the working station, it can overcome traditional tool interference problem of turret type turn mill centres.

The high productivity machine

(High speed vertical machining centre, model Dhruva HE)

This is aligned with customer's needs and the single lift quick installation allows for easier plug and play. The machine is able to obtain high productivity through 60 m/min rapid rates and acceleration of 1G, while having a chip to chip time of less than 2 seconds. Moreover the machine has a compact footprint, is customisable and user friendly.

The automobile specialist

(High speed horizontal machining centre, model 320 MCR)

It is fast, compact and flexible. It is a small machine with large job envelope (dia 650) and has direct pickup tool magazine with 20 tools. The machine also offers a compact footprint (1.5m x 4.2m).

For more info: prafulshende@bfw.co.in

A V Srinivasan

CEO, **Meiban Engineering Technologies Pvt Ltd**

Visit us at Hall 3B Stand B 110

Currently for IMTEX the expectations are quite high as it comes after the new government has taken over the reins. The market outlook and people's view look positive. Also with the increased number of visitors expected at IMTEX we envisage more business opportunity. The event is a good measure to gauge customer needs and expectations.

Market sentiments

The auto industry witnessed a difficult period for nearly two years. But the market is now showing strong signs of revival. During the previous IMTEX, outlook was not promising but we see a more positive mood this time. In general, industry exports are up by 20 per cent to 25 per cent, however, one area of concern is that domestic consumption is not as per desired levels.

Moreover, customers are not looking for new technology. The demand is for more enhanced services, process optimization and improving cost per piece. Also there is need for value additions to already existing machines.

Recent technology trends

The exhibition is well known for showing innovations and is a good measure to understand technology trends. Increasingly space constraint is becoming a major issue for the industry. Also the labour costs have been rising over the years. These issues are making customers look for machines with a compact footprint and automation in turning machines. Moreover as electronics is becoming a regular feature for machines, customers are focused on long-term working, user-friendliness and reliability as well.

The latest effort in turning machine technology from Muratec ensures that customers get a compact footprint, versatile automation and high speed loading advantage. Also our efforts are to ensure customers in manufacturing of automotive components get the benefit of high quality, latest technology, next generation twin spindle turning machines for high accuracy, high productivity and cell, customized automation requirements.

Additionally, as part of our expansion plan, we have started localization of the engineering part and will start local turnkey operations.

Twin spindle CNC chucker **MW180 from Muratec**

The latest effort in turning machine technology from Muratec ensures that customers get a compact footprint, versatile automation and high speed loading advantage.

The new MW180 twin spindle CNC chucker machine is an ideal answer for the cutting solution. It is a great benefit with its compact space (i.e. compact cell system with floor size 2850mm X 1865mm) for customers faced with space constraints. The three axis gantry loader offers versatile automation and the high speed gantry loader and turret axes helps reduce the cycle time drastically. The long stroke loader chuck allows reduced set-up time. Additionally heavy duty cutting is possible with column/turret bar style design construction.

The twin spindle CNC chucker MW180 is part of Muratec's effort to ensure customers in manufacturing of automotive components get the benefit of high quality, latest technology, next generation twin spindle turning machines for high accuracy, high productivity and cell, customized automation requirements.

For Further information contact:
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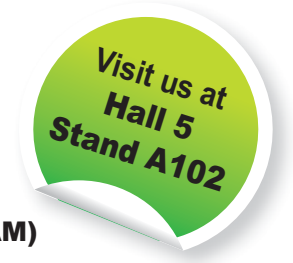
INDUSTRY SPEAK

Indradev Babu

Managing Director, **Uday Computer Aided Mfg Pvt Ltd (UCAM)**



At the event we look forward to strengthening the UCAM brand while also launching new brands. Our focus is to demonstrate our meaningful solutions and answers to meet customer needs. We also look forward to meeting our existing customers while exploring new customer deals. We are launching high-tech Orion series torque motors products of Nimble Electric business unit. As a surprise element, we will launch another brand with the new product, which is still under wraps.

Market sentiments

We are aware that the entire exhibition space has been sold well in advance and participants had to actually get space reduced to accommodate all applicants. It is a great opportunity for business for Indian and international companies.

The Indian economy has shown signs of improvement and we need to wait and watch how this would continue. With a stable government at the centre and "Make In India" campaign we hope that Indian manufacturing should see positive sign of improvement and sustain for next few years.

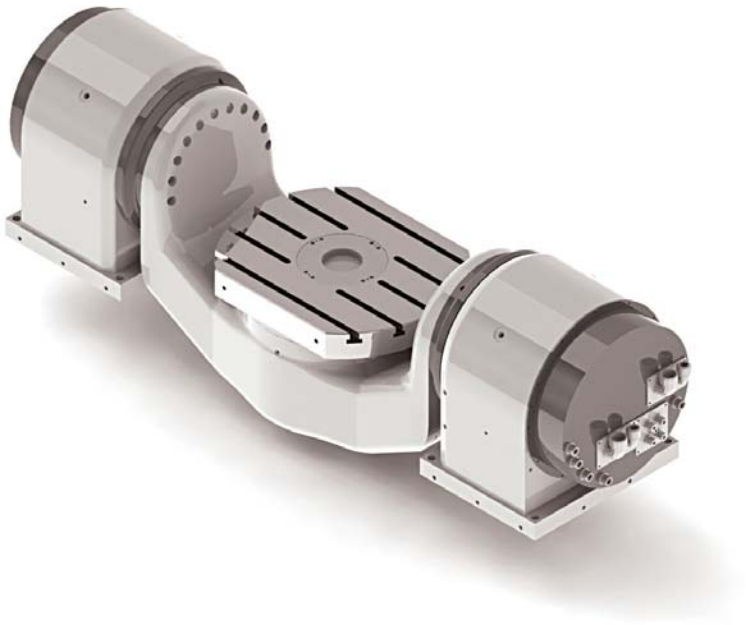
Recent technology trends

The machine tool building community is sensitive to the expectation of Indian customers and have produced innovative products specific to their needs. The trend has been to move from the standard 2 and 3 axis to 4th and 5 axis machining solutions with affordable cost to meet the Indian economics. As part of this demand, we have our 4th axis and 5th axis units for OEM's to incorporate including the direct drive high dynamic tilting tables.

In order to cater to the growing demand in large size rotary tables for both Indian & International markets, UCAM has set up its third manufacturing unit on an area of 28500 sq mtrs at Dobbaspet, Bangalore. The large size table hanger with the 14,500 sqft built-up area has a capacity to accommodate 5mx5m rotary table with 5m linear axis and comes with the 25+15 ton EOT crane facility. The assembly hanger with the built-up area of 14,500 sqft has a capacity to produce 2000 small rotary tables per annum. It is twin floor and is equipped with numerous unslung cranes, high-tech centralized AC to manufacture high precision parts.

600 dia direct drive tilting rotary table from **UCAM**

Among all new products introduced by UCAM, the major attraction is the 600 dia direct drive tilting rotary table driven by 3 torque motors and which will be integrated with the machine. Tilting head, table in table, cantilever table (swivel table) are few technological advanced products which already UCAM has in its product portfolio and will be showcased at the event. New series of high-tech rotary tables will also be launched at IMTEX.



For more info, contact:
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Email: marketing@ucamind.com

Manas Majumder

GM, Integrated Marketing, **Walter Tools India Pvt Ltd**

Visit us at Hall 5 Stand A 106

We do have high expectations participating in such a global event like IMTEX. Participating in this exhibition is a great opportunity to show new and existing customers what Walter has to offer and to establish our latest innovations. Each IMTEX we try to give customers a short, compact overview of our complete product range and at the same time we try to focus on some specific products we think are suitable for our customer's dynamic demands.

Market sentiments

An exhibition can also be the initiator for new developments and trends within the market. An exhibition is important and can be a turning point in a reviving economy as it initiates investments and establishes confidence among important decision makers. By participating at IMTEX 2015 all exhibitors, especially global players are proving that they are committed to the Indian economy and want to expand their businesses.

Recent technology trends

Today, process reliability, precision and productivity are more important than ever – because cost pressure is continuously rising and the competition is keen. Walter has, for decades now, been providing its customers with intelligent tool solutions. Using this experience, we are driving forward total solution concepts in our customers' value creation chain.

We have introduced a new phrase to describe our range of products and services: Engineering Kompetenz. This German-English phrase represents the demand to always offer the best solutions for the machining market worldwide and values such as precision, perfection, competence, quality and reliability.

With this new concept, Walter is preparing itself for the increasing demands of the machining market. New materials, automation and digital processes are causing the industry to become ever more complex. It is no longer just about turning, milling, drilling and threading. Customers consider perfection and precision to be basic requirements. For this reason, the Walter Group emerges as a complete technology and solutions provider.

PV Prasad

Proprietor, **SAP Technical & Marketing Consultants**

Visit us at Hall 3 A Stand A104

It is an occasion for all of us, including our principals, to sit and talk machine tools. A warm meeting, one which no one misses, over a customary hot meal at our stall is what we always work towards. Our efficient & optimized solutions to the industry together with honest & prompt service have won the hearts of many big customers. IMTEX is a networking-platform to meet them not just for business but a friendly get-together.

Market sentiments

There are positive signs, yes. Every IMTEX is a gala event. Everyone comes to show their best technology. This year is going to be no different.

Recent technology trends

Besides showcasing new innovations and improvement in various aspects of machine tools, this IMTEX is also going to be a platform for machine tool manufacturers to bring more aerospace specific technology to India. We want to be a part of the Indian aerospace component industry and also expand our clientele in the aerospace industry with the latest technology.

To cater to this need, we are planning to exhibit Mitsui Seiki 5 axis high precision vertical machining centre which is a favourite brand being used by most of the aerospace Industries worldwide. Also on display is high productivity VMC with 4th axis and die & mould features from Doosan.

Additionally, we will launch the Takisawa TT-500 which is the fastest parallel twin-spindle gantry loader machine in the world. This 5" CNC lathe is designed for high speed mass production with high accuracy. The TT-500 is built to cater to the intense and high productivity environment of a sophisticated manufacturing line. Packed with energy saving features, this rigid but fast machine is the ideal weapon to be deployed in field.

INDUSTRY SPEAK

Positive momentum

Spokesperson, **India, United Grinding**

Momentum is positive in India post the launch of the 'Make In India' concept. Also overall market expectations are high. IMTEX 2013 had taken place during recessionary times and hence the industry is keen to make the most of IMTEX 2015. People are expecting recovery to start post IMTEX, which is good news for the industry. We also have the full year budget in February end, which we feel will bring a positive boost to the manufacturing sector. We have lot of expectations on the policy front as well such as the GST. The coming six months will make big difference to the manufacturing sector.

Market sentiments

Automotive industry has picked up to a certain extent. There are some declines here and there but on the whole there is a positive outlook. Other than that, thrust from the government is on defence, aerospace and railways. One sector lacking attention is the Infrastructure sector. This needs to be addressed in a big way, as major manufacturing activities are linked to infrastructure. Initiatives in this direction will surely help the industry. The government is planning to develop water transport, which is one area that is completely unexplored. We have many water bodies that can be developed for transportation and the manufacturing sector can definitely play a big role for the same.

Recent technology trends

We are into the grinding field. Considering customer benefits, most important for them is reduction in cycle times, reduction in cost per component and improvement in quality. Grinding is a slow activity wherein the material removal rate is also slow. To reduce the cycle times we are now using a combination of grinding and eroding technology through a laser process. This technology is introduced for the first time in the grinding field.

Laser technology is used to remove a big chunk of the material, for the rough grinding. Presently, the combination technology is used to substantially reduce the cycle times and improve quality. Another technology trend is using laser technology for dressing of grinding wheels. This gives a better finish to the end product.

Satish Sadasivan

Managing Director, **Schunk Intec India Pvt Ltd**

Visit us at Hall 2B Stand A 106

This time with IMTEX we have set specific, realistic goals for ourselves. From our previous IMTEX exhibitions we have generated lot of interest. But this time around we are looking at materialistic strategies. Focus will be on having quality business connections, which go a long way. The event is known for its technology focus but the way the industry is shaping up, business potential will be the foremost thought for the manufacturing industry.

Market sentiments

All indications such as the recent economic growth data, government measures, auto industry figures are showing positive signs. Most of the industry players will be looking to tap into this immense potential.

Recent technology trends

Trends such as automation, compact footprint of machines, reliability is all given. Customers are now on the look out for machines that excel at cost reduction and optimization. That would be one of the key factors to watch.

Keeping up with changing times we will be showcasing some of our new products at IMTEX. The Schunk Magnos magnetic chucks with square pole technology have proved their work thousands of times. They represent unique quality, maximum clamping force and the highest possible flexibility in the field of clamping. It can be used easily on all common milling and machining centers.

Our universal clamping system Planos is reliable and efficient and allows for short set-up times, high holding forces ensuring maximum precision. Moreover something new at our end is the matrix plates with friction islands having up to 30 percent greater horizontal holding forces.

The other product to look out for is Tendo aviation hydraulic expansion toolholder, which is beneficial as it provides more safety for highest demands in high-performance machining.

Keshav Khurana

Sales Director and Country head, **Wohlhaupter India Pvt Ltd**

Visit us at Hall 2B Stand E 102

We are positive about further brand building as we as an Indian subsidiary of Wohlhaupter Gmbh are a new name in India. Business enquiries are also expected to be better than IMTEX 2013. We believe that IMTEX 2015 can be a platform to connect more customers to technological brand Wohlhaupter as we see that today's competitive world need a quality product to stay ahead of competitors.

Market sentiments

The output from an exhibition is suggestive of the market's outlook and we definitely see positive sentiments. The Indian economy and manufacturing sector are seeing some hope in the new government and its policies, though they will take time to get fully implemented. We have added manpower to cater to the growing demand. We have had some good news lately: inflation eased sharply in October; industrial output for September saw a better-than-expected growth; and more recently, the government deregulated diesel prices. All this will convert into a more comprehensive economic revival.

Recent technology trends

We expect to see products which are an extension of current products but will further improvise on existing benefits. Also we help our customers to achieve quicker and more precise results with our high quality tools and evolving technology. Our range of digital boring bars, autobalance and combiline tools which help in getting the best quality and low process time are an efforts towards this regard. Our digital boring range solution starts from 0.4mm and goes up to 3255 mm. This really helps customer avoid any manual error of changing the size of boring diameter as compared to analogue setting.

Further, we are looking at making inroads into heavy engineering and government sector as these companies focus more on quality and avoid rejection due to high component costs.

Cable carriers from **Kabelschlepp**

Visit us at Hall 3C Stand D 122

Material variety – your application determines the material, says Kabelschlepp.

The range of usage of cable carriers from Kabelschlepp extends from standard applications such as machine tools, crane systems, washing lines and medical and laboratory technology all the way up to complex applications such as industrial robots, high-sea oil drilling platforms and space travel. The company offers solutions for special requirements such as in the chemical industry for EX-protection zones, in the semi-conductor industry for ESD applications, and for high and low temperature applications in steel plants and cold stores.

ESD
Our proven ESD cable carriers based on nano-technology with carbon tubes easily meet the requirements of the ESD standard (with < 109 Ω) in terms of conductivity and resistance.

High Temperature
High temperature material 1: Suited for a (dimensionally stable) long-term temperature range for 2,500 hrs. up to 190 °C and for 10,000 hrs. up to 160 °C.
High temperature material 2: Suited for transient surface contact temperatures of up to 800 °C.

Low Temperature
Suited for usage in low temperature areas such as cold stores, etc., up to around – 40 °C.

Clean Room
QUANTUM: Clean room compatible, purity class "Class 1" is possible. Thanks to the usage of extruded sidebands, no links, no link wear, in contrast to conventional bore-hold and bolt connections, which makes QUANTUM ideally suited for usage is clean rooms.
TKR: The movable connectors are directly molded on the chain links. In contrast to conventional bore-hole bolt connections, hardly any wear occurs (link abrasion), which makes the TKR type outstanding for usage in clean rooms.

Flame Retardant
We offer special materials including V0 versions for operating areas having a risk of fire. All materials listed by UL94. Additional special solutions on request.

Irrespective of the material, whether its steel, hybrid or plastic, the application determines the material and Kabelschlepp supplies the appropriate cable carrier. As part of customization and case specific solution, the cable carriers can be made from standard material or various special materials – exactly matched to the customer's use and application.

For more info contact:
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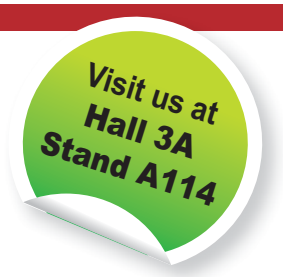
Website : www.kabelschlepp.in

Expansion of **Multi-master range** by **Iscar**



Keeping in mind global market demand, Iscar has expanded its popular range of Multi-master high-quality, indexable solid carbide tools with the introduction of the T04, Multi-master's smallest threaded adaptation.

The new milling head sizes and shanks expand the Multi-master application range, making the flexible system even more versatile.

The endmills with the Multi-master heads boast of features such as zero setup time and carbide thread connection for quick change. Moreover one shank carries heads with different profiles and one head can be mounted on many different shanks. Further it is auto-balanced for high speed machining and has conical and face contact for high precision and rigidity.

The T04 threaded connection for small diameter sizes is available in the following milling heads and shank families:

- ***MM EC-4:*** 6 mm diameter 4-flute interchangeable solid carbide endmill head, with 45° helix and 0.5 mm corner radius.
- ***MM HBR:*** interchangeable 8 mm diameter 2-flute high precision solid carbide milling head, with 240° spherical cutting profile ball nose.
- ***MM TS-N:*** interchangeable 10.5 mm diameter and 2 mm width solid carbide T-slot milling head.
- ***MM S-A (stepped shank):*** 8 mm diameter stepped cylindrical shank for T04 threaded connection interchangeable milling heads.

Interchangeable Heads for Flat Counter Boring

The new range also includes Multi-master EFCB heads for flat counter boring, designed mainly for machining counter bores for metric socket-head cap screws. It features frontal edge geometry to drill into solid or enlarge an existing hole. Moreover the rear side diameter of the drilling head is smaller than the cutting edge diameter in order to eliminate re-cutting. Salient features include high speed and feed capability, long tool life and no need to re-set the tool length after indexing.

Improving chatter dampening ability for Aluminium

The Multi-master MM EA-CF Chatterfree interchangeable solid carbide head family has also been expanded by adding more productive heads with 4 flutes, 40º different helix and sharp corner, for machining aluminum.

The new milling heads feature excellent chatter dampening ability and are used for both roughing and finishing. They are able to perform shouldering, slotting and drilling applications. Essential for cutting aluminum and preventing built-up edge, they feature very sharp cutting edges and an excellent surface finish. The 40º helix with the spacious chip gullets is capable of very high stock removal, leaving an excellent machined surface finish.

Chatterfree high material removal rates

Another expansion of the MM EC-CF Multi-master/Chatterfree family is the addition to the 25 mm diameter milling heads. These include 1.0 and 2.0 mm radii added to the 22 mm cutting edge length heads and additional 28 mm edge length in 4 and 12 flute configurations.

The Multi-master interchangeable solid carbide heads feature variable pitch for roughing and finishing operations and chatter free high material removal rates. They are used for machining alloyed and stainless steel and exotic materials.

For more info: www.iscar.com
Tool advisor: http://www.iscar.com/ita/MainPage.aspx
Mail: iscar@larsentoubro.com

Linear encoders from Heidenhain

Using linear and angle encoders ensures high precision of components to be manufactured even under strongly varying operating conditions of the machine tools.

The capability of a machine tool to cope with rapidly changing operating conditions is a decisive factor for its accuracy. A transition from roughing to finishing completely changes the mechanical and thermal load on the machine. Flexible machining of small manufacturing batches also results in rapid changes in the operating conditions. Particularly in small production runs, however, the profitable manufacturing of orders with narrow tolerances depends upon the accuracy of the first part. That's why the thermal accuracy of machine tools has become a prominent issue.

Thermal stability of machine tools

Solutions for avoiding thermally induced dimensional deviations of work pieces have become more crucial than ever for the machine tool building industry. Active cooling, symmetrically designed machine structures and temperature measurement are common practice today. Thermal drift is primarily caused by feed axes on the basis of recirculating ball screws. The temperature distribution along the ball screw can rapidly change as a result of the feed rates and the moving forces. On machine tools without linear encoders, the resulting changes in length (typically: 100 µm/m within 20 min.) can cause significant flaws in the work piece.

Position Measurement of Feed Drives

The position of an NC feed axis can be measured through the ball screw in combination with a rotary encoder, or through a linear encoder. If the slide position is determined from the pitch of the feed screw and a rotary encoder (Figure 2), then the ball screw must perform two tasks: As the drive system it must transfer large forces, but as the measuring device it is expected to provide highly accurate values and to reproduce the screw pitch. However, the position control loop only includes the rotary encoder. Because changes in the driving mechanics due to wear or temperature cannot be compensated, this is called semi-closed-loop operation.

Positioning errors of the drives become unavoidable and can have a considerable influence on the quality of work pieces.

If a linear encoder is used for measurement of the slide position (Figure 3), the position control loop includes the complete feed mechanics. This is referred to as closed-loop operation. Play and inaccuracies in the transfer elements of the machine have no influence on position measurement. This means that the accuracy of measurement depends almost solely on the precision and location of the linear encoder.

Improving machining accuracy

The successful fulfillment of manufacturing orders requires machine tools with high thermal stability. As a consequence, feed axes must achieve the required accuracy over the complete traverse range even with strongly varying speeds and machining forces. Position errors may result if the slide position is only determined from the spindle pitch and a rotary encoder on the motor side. These errors can be eliminated by using Heidenhain's linear encoders. Also Heidenhain's angle encoders used on rotary axes provide similar benefits since the mechanical drive components are also subject to thermal expansion.

For more info visit: www.heidenhain.in

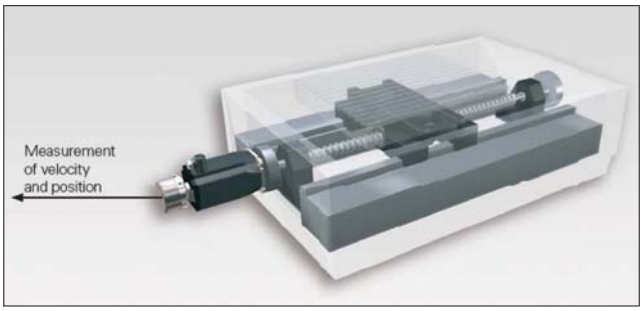


Figure 2: Position feedback control with a recirculating ball screw and a rotary encoder in semiclosed-loop mode

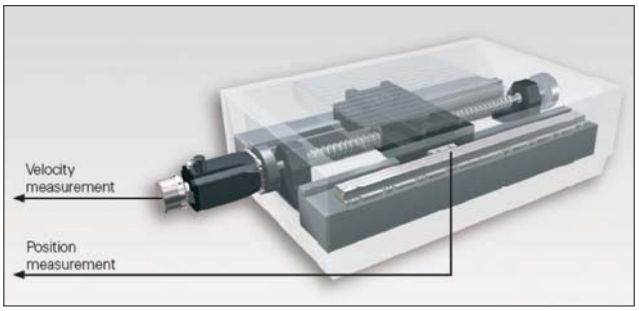


Figure 3: Position feedback control with a linear encoder in closed-loop mode

Latest CNC machine technology from Askar

Visit us at Hall 2A Stand B 102

Until recently, the heavy axle shaft & wheel shafts used by the Indian Railways were produced on machines imported from either Germany or South Korea. Taking up the challenge, Askar has produced CNC machines in India that are up to the task.

Spinner 25/3000

Meeting quality standards

The wholly owned Indian company, has indigenously designed, developed and produced a heavy duty true slant bed (30˚) CNC lathe – spinner 25/3000 - for the Indian Railways. The machine is built with a heavy duty single piece casting. The complete machine structure is optimally designed using FEM. The base, saddle and cross slide have been optimally provided with supporting ribs with sufficient wall thickness to provide very high rigidity to the machine during heavy cutting loads and high depth of cut expected from such super heavy duty machines.

The machines, tested for accuracy and precision by CMTI and quality approval from RITES inspection team, are currently used for shaft production in the railway workshops across the country.

Spin flat 2000 ABC

Perfected for consistent tolerance/accuracy

Over the past five years, the flat bed CNC lathe - spin flat 2000 - has been perfected to meet German international standards in machine tools. The unique concept of building the flat bed CNC lathe with LM Guides for both X and Z axes movements has been successfully incorporated. Withstanding tough workshop rigours and customer requirements, it is now an export-ready machine.

Also the spin flat 2000 is suitable for multiple industrial applications such as hydraulics, automobile, packaging, aeronautics, railways etc where large heavy components have to be machined with consistent tolerance / accuracy.

Enhancing productivity

The machine enclosures are provided with LM Guideways for frictionless movement of the 'Heavy doors' and CNC mounted panel. This eases the fatigue of the operator and enhances productivity. It also shows rigidity in cutting shafts of large diameter, length and has been proven for shaft length of 1000 mm to 3000 mm. It is also proven for large dia hollow tube boring upto 1000 mm with special anti-vibration boring bars.

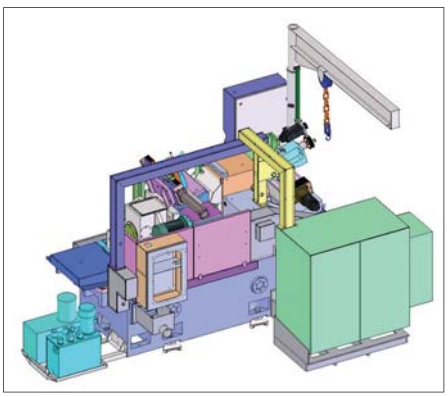
The space availability in the machine allows the operator to load and unload heavy components using overhead cranes. The turret is mounted towards the non-operator side ensuring clear visibility and access.

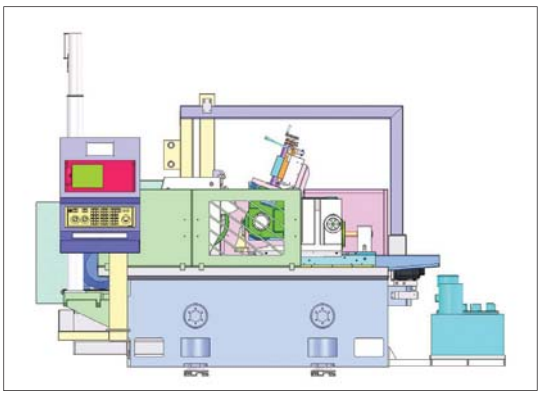
With its latest CNC machine technology Askar, is all set to demonstrate to the world that Indian entrepreneurs and engineers are at par with the best in the world.

Gemini twin spindle VMC and HMC from **Ace Manufacturing Systems**

Visit us at Hall 2A Stand A 104

Twin spindle machines are best suited for the automobile industry catering to high volume production and multiple customer supplies without compromising on the output quality. The twin spindle machines help gain a perfect balance of flexibility – productivity & economy. It also reduces manpower requirement, resources maintenance cost and power consumption. The cost per component is reduced by at least 35 per cent while the cycle time is reduced by 42 per cent. Also it gives two times the productivity within a footprint only slightly larger than that of a single spindle machine.





AMS offers twin spindle machines of different variants: Gemini Mini, Gemini Jr., Gemini Jr. XL, Gemini XL and Gemini Max. The Gemini Mini is an economical design with the option of an automatic pallet changer, while the Gemini Jr. XL & XL are most suited for mass production.

Gemini twin spindle HMC – H 330

Twin spindle HMC:

Gemini- H-330 is one of a kind - a machine developed to provide the Indian market with state-of-the-art technology, which is currently provided for by products from other countries.

The multipurpose, high precision twin spindle HMC is adaptable and robust. It covers wide range of machining operations like milling, drilling, tapping, and reaming, contouring etc. The machine helps the automotive, locomotive, tool-room and sectors pertaining to all engineering industry, by increasing the cutting time to idle time ratio of the machine, using higher cutting parameters and thus improving productivity.

Versatile materials can be machined using Gemini H-330, which can match performance of machines presently being imported from other technologically advanced countries. Since this is a modular concept machine wherein the work piece is stationary and the spindle transverses in all 3 axes, a gantry can easily be interfaced to a line of machines for different setups. Also the HMC is rugged with excellent static, dynamic and thermal behaviour under maximum load conditions and eliminates the need for special foundations for high speed machining.

CNC centre less grinding (CLG) machine

The CLG 5020 is suitable for both through feed & in-feed grinding and can be interfaced with various types of auto-loading/unloading devices. The machine is highly productive for high precision small size components. Customers can get enhanced rigidity and life of outboard support by using precision roller bearings to improve best geometrical accuracies (roundness < 0.001 µm on smaller components). It has in side spindle type auto dynamic balancer for grinding wheel for high surface finish. The machine also features two-axes CNC dresser for grinding wheel dressing, in-feed & traverse. And it has precision antifriction guide ways for GW dresser for best profile accuracy.

For more info visit: www.amsl.in

VL 8 Automation: Workpieces are transported to the pick-up station in flexible carrier prisms mounted on the conveyor belt, making resetting efforts to accommodate workpiece diameter changes minimal

The **VL-series** from **EMAG**

It has been demonstrated with the help of numerous tests that it is possible to exploit metal working fluids for productivity in machining successfully.

The vertical pick-up turning machines in the VL series represent a new machine concept - modular machines - from the EMAG Group.

Reducing costs by modular design

The aim was to develop a system in the form of the modular machines which is ideal for use in the manufacturing of medium and large series. One common feature of all modular machines is that they have a basic compact design. Their small footprint means reduced floor space costs and flexibility in machine layout (for example, Chaku Chaku or close linear arrangement). Then there is their integrated automation. Every VL machine features an O automation system for workpiece transport on its left-hand side. When combined with self-loading pick-up spindles, this concept of integrated automation ensures short cycle times and therefore high productivity.

Thought has also been given to the machine operators. For example, all the service units are easily accessible. All the units (electrics, hydraulics, cooling system, cooling lubricant and central lubrication system) can be accessed at any time so that the machines can be maintained with consummate ease. Low maintenance costs due to the use of identical components, excellent accessibility, reduced floor space costs due to the compact design, integrated automation and short cycle/idle times reduce the cost per piece to an absolute minimum.

The VL series – the solution to any range of workpieces

The VL series vertical pick-up turning machines were specially developed for manufacturing precision chuck parts. VL machines are available in 4 versions to cover as wide a range of parts as possible. The smallest machine is the VL 2, which is designed for chuck parts up to 100 mm in diameter. Then come the VL 4, VL 6 and VL 8 machines in which the size of the workpieces that can be handled increases by 100 mm with each machine. This means that the VL series covers a range of workpieces up to 400 mm in diameter. Every VL machine features a tool turret with up to twelve (driven) tools for machining chuck parts, which ensures short swiveling times and therefore falling cycle times.

Quality comes as standard

The entire machine concept is based on maximum component quality. The machine body is made of vibration-absorbing MINERALIT polymer concrete. Together with the self-loading high performance spindle which completely eliminates clamping errors, this ensures perfect machining. The vertical layout ensures ideal chip flow conditions, bringing an end to the times when operators had to give serious thought to chip clusters. Every VL machine can be fitted with an optional measuring station outside the machining area to allow quality to be checked at any time.

Modern manufacturing with VL machines

EMAG's VL series vertical pick-up turning machines are the perfect tool for reacting to the increased demands of the global market. The modular machines combine the latest manufacturing technologies with a smart design to ensure maximum productivity from every VL machine. Thinking about modern machining? Think vertical!

More info at www.emag.com

Renishaw to highlight new metrology products

Visit us at Hall 4 Stand B-106

At the IMTEX 2015 exhibition, Renishaw will highlight a range of process control solutions that help tackle the increasing drive to lean manufacturing, from new technologies for pre-process machine calibration, to on-line and off-line post-process measurement. There will also be a focus on the company's additive manufacturing systems.

Major new introductions include a high-speed contact scanning system for CNC machine tools, a family of products for the measurement of aerospace blades, a new range of modular fixtures for metrology applications, and a miniature encoder system. The company will also have active demonstrations of its 5-axis scanning technology for CMMs, plus a demonstration of its Equator gauging system in an automated production cell, together with new process monitoring software.

Visitors to the Renishaw stand will be able to see applications that demonstrate the capabilities of the company's additive manufacturing technology, including the world's first 3D printed metal bike frame.

SPRINT high-speed contact scanning system: The SPRINT system incorporates a new generation of on-machine scanning technology that will deliver a step-change in the benefits of process control, enabling fast and accurate form and profile data capture from both prismatic and complex 3D components. For blade manufacture, the SPRINT system provides unprecedented capability for blade tip refurbishment and root blending applications.

Powerful suite of high performance blade measurement and analysis tools: Renishaw is also highlighting a developing family of high performance hardware and software products to aid the measurement and manufacturing of aerospace blades. All products complement the multi-award winning REVO 5-axis measurement system and include APEXBlade planning software for REVO sweep scanning and DMIS programming, MODUS aerofoil analysis for the calculation and reporting of blade section profile and aerofoil characteristics, and SurfitBlade to aid reverse engineering of the complete airfoil.

Renishaw fixtures: the new single source for metrology fixturing: Following the acquisition of R&R Sales LLC in 2012, Renishaw has developed an extensive new range of modular fixturing designed specifically for co-ordinate measuring machines (CMMs), vision systems and its Equator gauging system. Visitors will see that the new range offers a wide choice of base plates and components available in M4, M6 and M8 thread sizes, and can be utilised for measurement applications across multiple industries, such as aerospace, automotive and medical.

Automated gauging and process monitoring software for the Equator gauge: Renishaw Equator, a lightweight, fast and highly repeatable gauge, will be demonstrated in an automated cell. Equator's innovative flexible gauging technology is based on the comparison of production parts to a reference master part, which can greatly increase throughput and reduce scrap rates at a fraction of the cost of an equivalent custom gauging system. A new process monitoring window has also been added to the shop-floor user interface for the Equator gauging system. This instantly displays measurement results of inspected features to the operator on a bar-graph display.

New developments in understanding rotary axes performance: For visitors who use five-axis machine tools, Renishaw has further extended its solutions for checking the alignment and positioning performance of machine tool rotary axes with the launch of new off-axis rotary software for its XR20-W rotary axis calibrator. The new software for the highly successful XR20-W now allows it to be used to measure the rotary positioning accuracy of an axis on many configurations of five axis machine tools, where the XR20-W often cannot be mounted on the centre of rotation.

Enhancements in metal 3D printing: Visitors will also see a new range of additive manufacturing technologies. The AM250, Renishaw's first additive manufacturing machine is now available with PlusPac – an add-on kit which transforms the machine to meet the demand for cleaner process environments, improved surface finish and precision.

See the world's first 3D printed metal bike: Also on display will be a bike with the world's first 3D printed metal frame.

For more info, visit www.renishaw.com

Walter innovation of 2014 - Icon of a new performance class

As the new icon of drilling, the DC170 would make its appearance on the international stage of metal machining at the IMTEX 2015 in Bangalore. Visibly new, visibly different – a unique design of lands and copper-coloured finish symbolise a new performance class for drills. Walter will be offering the first two models in the dimensions 16xDc and 20xDc from October this year. The newly developed DC170 offers more process reliability, stability, running smoothness and efficiency than carbide drills with traditional geometries.

More process reliability: The new drills are internally cooled. Thanks to shallow grooves, the coolant flows unimpeded, while hazardous chip jams are at the same time avoided.

Longer tool life: The solid carbide mass directly behind the cutting edge makes the DC170 incredibly sturdy. Even extreme temperatures are effectively dissipated.

Higher hole quality: An effect of the new type of alignment of the lands is significantly smoother drill running.

Less expensive manufacturing: The distinctive cooling channels ensure the optimum operating temperature. Drills straight from the factory are supplied with eight visible channels that can be used as a scale for regrinding. The DC170 drills can be reconditioned up to three times, until only two cooling channels are left remaining.

Helmut Gschrey, Senior Product Manager for Holemaking at Walter AG and one of the pioneers of the new performance class in drilling, explains why Walter has developed the DC170:

The DC170 at work: The new lands improve hole quality and provide maximum performance for interrupted cuts. *Image: Walter AG*

Product features of the DC170 at a glance:

- Suitable for ISO-P and ISO-K materials in all industries.
- Preferable for difficult machining operations such as cross holes and inclined exits.
- Upon its launch, available in the lengths of 16xDc and 20xDc.
- Proven piloting strategies can continue to be used.

The idea: From the start, improving the four most important parameters of the DC170 was our primary concern during the development phase: We wanted to improve tool life – but do so reliably. Secondly, it was very important for us to bring the drill as quickly as possible into a condition of 'guidance', because that's particularly important during deep-hole drilling where cross holes and inclined exits are involved.

The matter of heat exchange was also a development requirement: Given the high temperatures generated during drilling, our intention was for this new generation of drills to be optimally cooled, while they also actively cooled the interface to the material. Finally, we wanted our customers to be able to dispense with the costly business of reworking holes after drilling – and so the new drills had to leave an excellent surface finish.

Feedback from our customer advisors: After the test phases, we can already say that the DC170 enables significant increases in productivity, when gauged against all these four criteria. The fact that our customers always need faster and more favourably priced processes is nothing new. But the challenge is to make that a reality, and continue to do so. With its "Engineering Kompetenz", Walter is setting a new standard here – and the first customers have confirmed that to us.

The trend in the requirements for drilling tools: Our customers have to contend with worldwide competition and that drives requirements increasingly higher, especially for high-performance applications. Machining tools supplied to serve this market are therefore also high-tech tools. More productivity than that achieved with the preceding generation of drills is now expected. What needs to be done, anyway, is to also offer these very good tools together with good handling properties and after-sales service, as is provided by regrinding, for example. Tool manufacturers expect to see that they will acquire more responsibility along the entire process chain, in order that customers can concentrate on their core competencies.

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

LETTERS to the EDITOR

'Must read for manufacturing professionals'

What I like the most about The Machinist is that it covers a wide range of critical issues related to the discrete manufacturing sector with the emphasis on use of latest techniques and technology in manufacturing. I strongly believe that SMEs who form the backbone of Indian industry would benefit tremendously by learning from and implementing most of the knowledge shared in the articles published in The Machinist. It is a 'Must Read Magazine for all Manufacturing Professionals'. I am sure that The Machinist will play a crucial role in improving the competitiveness of Indian manufacturing industry so that they get deeply integrated into the Global Value Chain. In this regard, I would like the Machinist magazine to become the Bible of the Manufacturing Professionals.

Shrikant S. Bairagi
Managing Director, TREMEC India, Pune, Maharashtra

Covers both technical and managerial issues

The Machinist magazine covers both technical and managerial issues related to the discrete manufacturing sectors like automotive, aerospace, defence, power equipment, general engineering and heavy engineering, with emphasis on use of modern management techniques in manufacturing. Positioned as the guide to profitable manufacturing, it facilitates decision making through relevant and useful content. Our best compliments on the 10th Anniversary issue and successful completion of a year post re-launch of this publication.

Rajesh Nath
MD, German Engineering Federation (VDMA)
Indian Office, Kolkata

'Good source of information'

The Machinist is an informative magazine due to:
1. We come to know about good solutions.
2. It features success stories of industry & process.
3. It provides good information on new products and who is doing what in the industry.

We would like to see more on innovating solution in machining.

Abhijit Habu
AGM Purchase, JCB India Limited
Talegaon, Pune, Maharashtra

'Very informative'

The Machinist Magazine is very informative and we come to know about the latest happenings in the industry. Congratulations to "Team Machinist" for the 10th Anniversary.

Shivraj Mane
Manager Application, Yamazaki Mazak India Pvt Ltd, Sanaswadi, Pune, Maharashtra

Dear Readers,
We have completed one year since we re-launched 'The Machinist' in a new avatar. I am really excited about the journey so far; the response that we have received is simply phenomenal. Happy to share a colourful snapshot of the feedback from you guys. It clearly shows the dynamic profile of our readers and the broad reach of this magazine. Keep writing to us. Your suggestions and ideas will only make this platform better!

Reach out to us:
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Email: niranjan.mudholkar@wwm.co.in
@Machinist_WWM
Website: **www.themachinist.in**

LETTERS to the EDITOR

'Keeps our Hope & Spirit high'

It has always been a pleasure interacting with The Machinist. In fact it has become more of a habit reading the magazine and the wait to receive the next edition copy. The contents of the magazine keep our Hope & Spirit high about the revival of the industry in spite of the long recession through which the Indian automobile Industry is passing through, especially the CV industry. The steps, investments, technological advancements being taken up by various organisations and the capability of the Senior Management to keep driving the morale of their teams at this juncture is encouraging and gives a hope that we are prepared for the Best Times to come…

PS Gambhir
Dy. Gen. Manager, Materials Procurement, Eicher Trucks and Buses VE Commercial Vehicles Ltd. (A Volvo Group and Eicher Motors JV), Pithampur, Dhar, MP

'Household name in machining community'

The Machinist provides comprehensive information coverage on latest development trends which are of utmost interest to coterie of machining and manufacturing professionals. What impresses me the most is the diaspora of coverage from the perspective of machine builders, tool makers and the end users as well as the spectrum of topics covered. No doubt this would definitely make "The Machinist" a household name among machining community."

Pokala Sreekanth
Deputy GM-Project Planning
Ashok Leyland, Ennore, Tamil Nadu

'Source for good references'

First of all I would like to congratulate your team for successfully completing one year in the new avatar of The Machinist and it's really nice to have such a magazine available for manufacturing personnel that keep us updated about the current manufacturing practices and new technology trend including innovations. In many cases we find good references also.

Neeraj Nigam
Senior Manager, Machine Shop & Flat Tops, Truetzschler India Pvt Ltd
Ahmedabad, Gujarat

'Covers all aspects'

The Machinist is an informative magazine which covers all aspects of setting up a fully equipped manufacturing unit. I love to read this good magazine regularly; excellent magazine for those who are interested in building, modifying and using CNC machine tools and has excellent articles in every issue.

The Machinist is dedicated in keeping its readers informed on all the current trends and developments in today's manufacturing scenarios. It also provides resources for modern manufacturing machinery.

Narayanarao Kudupudi
Manager, Machining, Rieter India Pvt. Ltd, Wing, Satara, Maharashtra

'Clear ideas on new concepts & innovations'

Good to go through this magazine to know about the happenings at automotive and manufacturing. Content wise, it helps to clear ideas about new concepts, innovations of industry. Going forward would be great if you give some detailed case studies as well so that one can co-relate with the same with his working areas as well in order to enhance efficiency at shopfloors.

Jasbir Singh
Deputy Manager-Production Engineering
Maruti Suzuki India Limited
Manesar, Gurgaon, Haryana

'Very good source of knowledge on cutting tools'

I am connected with 'The Machinist' from last six months and getting more and more information on new tooling suppliers in market and new products launched by them. Also it's a very good source of knowledge on cutting tools.

In your December 2014 edition I came to know about Kennametal NOVO software and it was really a very useful software for me and my shopfloor engineers. In line with that please post more and more newly launched products and services from various cutting tool companies.

Anand Tiwari
Assistant Manager – Powertrain
JCB India Limited, Ballabgarh, Haryana

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Since 1945, Pepperl + Fuchs has evolved into a true multinational company and is one of the most experienced and largest sensor manufacturers in the world today.

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IMTEX 2015

Tool Tech 2015

20 - 26 January 2015, Bangalore

THE MACHINIST
ULTIMATE GUIDE TO PROFITABLE MANUFACTURING
SUPPLEMENT WITH JANUARY 2015 ISSUE

The MMCI Way

We will be the Reliable partner for better Productivity & Superior business performance for our customers.

We uphold 5 essential values in our business practice

RELIABILITY

We will conduct our business and transactions with integrity. We will ensure quality, safety and consistency in the product performance as well as assurance of service at every stage of customer interaction along with timely delivery.

PROFICIENCY

We will develop expertise and techniques for advisory and solutions consulting to enhance our customers business performance. We will be proficient in our processes to go beyond customer expectations. We will motivate knowledge development within employees and customers.

CARE

We will be responsible towards the environment and its conservation. We will strive to maintain a harmonious coexistence amongst ourselves, with our customers and society. We will adhere to international best practices and standards. We will be committed towards and proactively respond to our customer needs.

TRANSPARENCY

We will be open, fair and transparent in our communication and dealings with our customers. We will be accessible to our customers and stakeholders at every stage.

INNOVATION

We will be innovative in our solutions, sales approach and delivery. We will focus on customization, future-readiness and cost-effectiveness to meet and exceed customer expectations.

From Director's Desk

What was your thought process behind the change of MMCI image and why was it so important?

Mitsubishi Materials is not just a tool manufacturer. We are committed to promptly respond to customer's challenges with the dedication of a professional craftsman and doing our best to actively contribute to their success.

What do you wish to achieve through this change?

MMCI is instrumental in providing metal cutting solutions to Indian Industries since 1998. However we felt a need of projecting it to customers in a different way so that they understand it well and consider us as their first priority solution provider for all metal cutting needs.

How this renewed approach will benefit customers?

In today's world, rapidly changing market demands requires special efforts to implement new technologies at competitive price, stipulated time frame & user friendly ways. We strive to become the only tool manufacturer globally offering "your personal craftsman studio", a unique service for our customers. It is the place where our customers can find state-of-the-art technologies and products. Find solutions, anytime, anywhere in the world. Share our excitement on the latest technology trends and product innovation. It is the studio where we think, share, create and develop together with our customers exciting solutions to meet their specific needs.

How important is CSR activity in your organization?

"For People, Society and the Earth" - the principles on which Mitsubishi stands on. We will create new materials in this world by utilizing our unique technologies so that we can be the group of No.1 businesses in supporting a recycling-oriented society. We will become the respected leader in our industry by providing unique materials, products, and services which satisfy our customers' needs.

What are your plans for 2015-16?

Gone are the days when there used to be a cutting tool supplier. We strongly believe in playing role of a **"Friend, Philosopher & Guide"** Lot of things are on cards and we are working on it. Looking at the projections of Indian Engineering Industry, we have again set a double digit growth for the next two years. We would like to grow hand in hand together with our esteemed customers.

Prashant Sardeshmukh,
Director, MMC Hardmetal India

Creating Value through Tools & Applications

Automotive

Mitsubishi Materials is a leading cutting tools manufacturer across all industry segments which supply wide variety of metal cutting solutions for Automobile Industry. Mitsubishi constantly introduces new generation products that reduce costs and increase productivity for customers. Mitsubishi has variety of tools in Turning, Milling, Drilling, Grooving & Threading which meets the demanding requirements from Automotive Industry. Especially in milling, we offer state of art products such as face milling cutter AHX640W/S which has high rigid heptagonal double sided insert, a breakthrough in cast iron machining. In drilling, WTAR Super long drill gives 80% cycle time reduction compared to conventional deep hole drilling in 20-30 L/D applications. Other than standard products, Mitsubishi develops special innovative tools of the highest quality, precision and functionality for 5C components.

Energy

The Power & Energy Infrastructure sector in India is poised for a major take-off. Power sector has to grow at 1.8 - 2 times the GDP growth rate as espoused by economists, planners and industry experts. Competitive Manufacturing of turbine blades, casings, rotor shafts is getting more challenging with demanding factors like changing raw materials, amount of material removal & complex shapes etc. Mitsubishi Materials provides effective machining methods together with state of the art tooling solutions to achieve the desired production efficiency. Exchangeable Head End mill iMX is a revolutionary product for Energy Industry which is world's first carbide holder & carbide head combination.

Aerospace

MMCI, a Subsidiary of MMC Japan, is playing vital role in Indian Aerospace sector. The technology & Innovation in Aerospace tooling are directly transferred to Indian customers, through dedicated Application support team of MMCI. Difficult to cut materials like Titanium becomes Easy to Cut with innovative tool like VFX which removes 400cc/Min material. MMCI demonstrated this at many customers across India. Mitsubishi Materials is one of the most preferred tooling partner for machining Aluminum Structures. MMCI has a dedicated team to make Special Solid Carbide tools which are required to machine Airframes, with minimum lead time & maximum accuracy.

Oil & Gas

Amongst all, Oil & Gas is a leading sector to enforce the industrial growth. MMCI propels the manufacturing set-up of this sector by continues development of new cutting edge technology and prospers the growth requirements by innovative cutting solutions & services. For the benchmark productivity in all kind of complex materials machining, MMCI has complete solutions in the areas of Turning, Milling, Drilling, Grooving & Threading applications. To optimize the utilization of all the resources, MMCI provides various training programs to the shop-floor engineers & end users as a part of its corporate responsibility.

Medical

The global medical industry is one of the world's fastest growing industries. The manufacturing of orthopedic implants is growing significantly. As the industry is growing and getting mature, cost saving for effective competition becomes obvious. Not only the cost, but quality expectations are also increased because these parts end up in human bodies. To remain competitive in the growing market, new products development at reasonable costs is essential without compromise on the quality levels. Keeping this in mind Mitsubishi Materials offers its customers, a dedicated solution that includes tool design and high service levels to secure quality & reduction in the cost predominantly. Mitsubishi can deliver medical machining solutions with leading cutting tools and application know-how, on Titanium Alloys, Cobalt Chrome or Stainless Steel body parts with our unique micro machining capabilities that stretch the imagination, but is a reality today.

Die & Mould

Die & Mould Machining primarily refer to the machining of complex shapes precisely. Mitsubishi Materials offers a wide range of indexable and solid carbide tools for this industry. High speed machining & Hard part machining are very important topics for Die & Mould manufacturing. MMC delivers total tooling solutions for Die & Mould industry to machine the required geometry & surface finish in hardened state. MHS Drills can produce holes up to 30 L/D in 50 HRc work materials by eliminating need for heat treatment after machining.

What is New...

WSX445

Low cutting resistance, double sided insert face mill for general machining

Unique insert minimizes chatter and vibration
Z Insert Geometry provides low cutting resistance

Mitsubishi Materials proprietary Double sided, Z Geometry insert features a sharp cutting edge with low cutting resistance by utilizing features of both conventional positive and negative rake inserts.


Double sided Z Geometry

AHX640S

Unique 14 cornered insert

- Economical heptagonal double sided insert.
- Double positive cutting edge geometry offers lower cutting resistance for improved machining efficiency. (MP,MM,MK,HK insert)
- High rigidity by increasing the thickness of the inserts.

VOX400

VOX cutter with vertical inserts for ultra high efficiency

Vertical inserts with high strength cutting edge suitable for a wide range of cast iron rough milling applications

Features of Insert

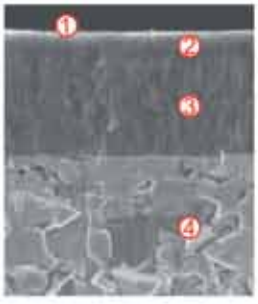
Long life insert grade
MC5020
- 1st recommendation for cast iron machining.
- Black super even coating technology is utilised to help prevent chip welding for long tool life.
- Dry cutting is recommended.

VP15TF
- A PVD coated grade for application versatility.
- Ideal for ductile cast iron, unstable cutting conditions and low rigidity workpieces.
- Wet cutting is possible.

Unique vertical insert
- 8 usable corners with high strength cutting edge.
- The fracture resistance is significantly improved due to a convex curve cutting edge and a specially shaped relief face.
- Maximum depth of cut is 10mm.

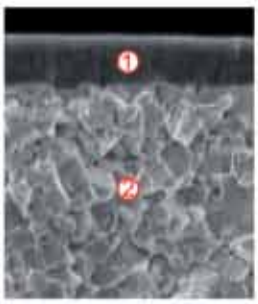
MC7015 / MC7025

A revolution in stainless steel turning



1. **Smooth cutting edge**
   Prevents welding
2. **Thin layer,**
   Nano-texture Al_2O_3
   Controls abnormal damage
3. **Tough,**
   Nano-texture TiCN
   High wear resistance
4. **Special carbide substrate**
   Plastic deformation resistance
   Chipping resistance

MP7035



1. **(Al, Ti)N coating**
   Prevents welding
2. **Special carbide substrate**
   Improved fracture resistance
   Thermal shock resistance

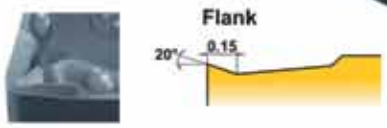
ISO Turning Inserts for Difficult to Cut Materials

MP9005 / MP9015 / MT9015

The new high Al–(Al,Ti)N single layer coating significantly reduces edge fracturing.

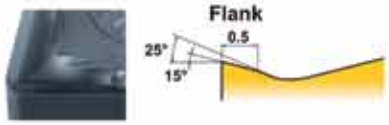
LS breaker for light cutting

Enhanced chip disposal for depths of cut smaller than the corner R.



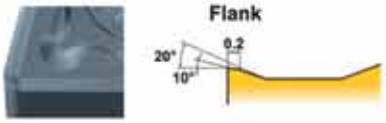
MS*new designed breaker for medium cutting

The large 2-step rake angle generates chips smoothly and without tangling during low feed cutting.



RS breaker for rough cutting

During low speed cutting the positive land controls chip welding and abrasion at the depth of cut line.



- AMBULANCE
- ATM
- AMPHITHEATER
- BUSINESS CENTRE
- CONFERENCE HALL
- ENTRANCE PLAZA
- EXIT GATE
- ENTRY GATE
- FIRE TENDER
- FIRST AID
- FOOD COURT
- FOOD PLAZA
- HALL
- LEFT LUGGAGE COUNTER
- LAGOON
- REGISTRATION
- REST ROOMS IN ALL THE HALLS, FOOD COURT & CONFERENCE CENTRE
- SECURITY OFFICE
- TECHNOLOGY CENTRE

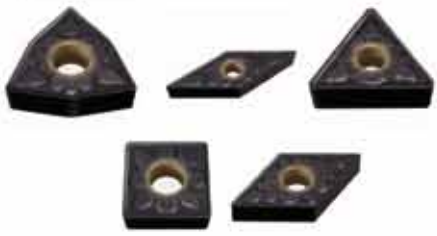
We look forward to see you at

Hall 5, Stall B–103

22-28 January 2015, BENGALURU

MC5005 / MC5015

Reduced cycle times! New coating for speeds up to 600 m/min.



Extra thick Al_2O_3coating layer
Achieved by combining the latest coating technologies.

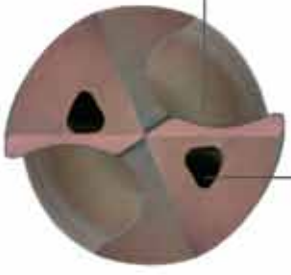
Thickness comparisons of Al_2O_3
More than double as thick as conventional Al_2O_3coating layers.

Nano-Texture Coating Technology
The optimised crystal growth, Nano-Texture coating technology gives outstanding wear and chipping resistance.

Patented technology
TOUGH-Grip Technology
The interface between the layers is controlled at the nano level, allowing the TOUGH GRIP layer extremely high levels of adhesion to prevent delamination.

MVS, MVE

New generation solid carbide drills With new TRI-cooling Technology®



New wavy cutting edge
The unique wavy cutting edge provides excellent sharpness and rigidity and helps to control wear at the periphery.

ZERO μ Surface
Our unique smooth surface technology reduces cutting resistance and offers excellent chip evacuation.

TRI-cooling Technology®
The unique coolant hole geometry (on drills over ø6) increases the rate of coolant flow for improved cooling effect and chip removal.

MVX Drill

High rigidity body produced by utilising the latest technology

4 cutting edges
Economical 4-corner insert.

Wiper edge
A wiper type geometry for the peripheral cutting edge achieves excellent wall accuracy.

US breaker
for Stainless Steel

All-round
UM breaker

Unique breaker design
For a wide range of workpiece materials and applications.

The principles we stand on For People, Society and the Earth

MMC Hardmetal India Pvt. Ltd.
A Subsidiary of MITSUBISHI MATERIALS

MITSUBISHI
MITSUBISHI MATERIALS

Mitsubishi Materials is one of the world's largest diversified materials companies, employing more than 19,000 people. We draw our source from the original mining company dating back to 1950. The Mitsubishi Materials Group draws on the metals processing technologies and expertise that it has accumulated over many years to support a wide range of industries.

The cutting tools division is an integral part of Mitsubishi Materials core business, and JAPAN's No.1. Continued investment in R & D, plant, materials and distribution channels will ensure that Mitsubishi's carbide tools will remain at the forefront of metal cutting technology. The focus of sales is toward newly developed tools that meet the rapidly increasing demand created by new materials and cutting strategies.

MMC Hardmetal India Pvt Ltd (MMCI), present in India since 1998, is a 100% fully owned subsidiary of Mitsubishi Materials Corporation. It is a renowned supplier of cutting tools for various application in the field of Automotive, Energy, Die & Mould, Oil & Gas, Medical and Aerospace.

We will work together to become reliable partner for Better Productivity and Superior Business Performance for our customers.

MMC Hardmetal India Pvt. Ltd.
A Subsidiary of MITSUBISHI MATERIALS

MMCI

The MMCI Identity

MMC Hardmetal India Pvt. Ltd.
A Subsidiary of MITSUBISHI MATERIALS

The new identity of MMCI sets a milestone for high quality delivery of the most 'fitting' metal cutting solutions.
The identity's diamond shape is a contemporary representation of Mitsubishi's legacy and aligns with the global entity through the corporate colour of Mitsubishi Planet Blue. The primary shape is supported by an extruded cutting tool form in Inca Gold, conveying MMCI as the reliable partner in supporting and enhancing the business performance for every customer.

Come, experience the change

Sustained Innovation

Consistent Performance

Change for the Better

Partnering for success across industrial segments.

MMC

MMC Hardmetal India Pvt. Ltd.

A Subsidiary of MITSUBISHI MATERIALS

STRONGER FASTER SUPERIOR

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