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THE MACHINIST

ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

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"The shopfloor is the place where the gears of a country's economy are built. It is the place that brings your imagination alive with solid attributes like discipline, commitment and teamwork. And no place that fills life into metals and all such materials can be ordinary. It has to be special. Of course, while some are good, some are simply the best! 'The Machinist Super Shopfloor Awards' is an endeavour that brings the greatest of India's shopfloors to the limelight. With participation from some of the finest manufacturing brands in the country, this Awards platform has already created a benchmark. We have further strengthened their faith in us by ensuring that we create an Awards property that is not just fair and credible but is also industry oriented and reputed. Little wonder that more shopfloors will be competing this year to get certified as

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'Super Shopfloors' and take home the coveted 'Machie' trophy. We promised to make it better and bigger this time and we are living up to that promise. We are preparing the first ever 'Red Carpet' for Indian manufacturing! Because 'Real Heroes' deserve nothing less! Well, if your shopfloor has sent in the nominations and if it passes our jury test than you will be walking on it. And there is every possibility that you could be seen on national television doing so!

And if you still haven't sent your entries then get the nomination form and other details at *supershopfloorawards.themachinist.in/*

Editor & Chief Community Officer

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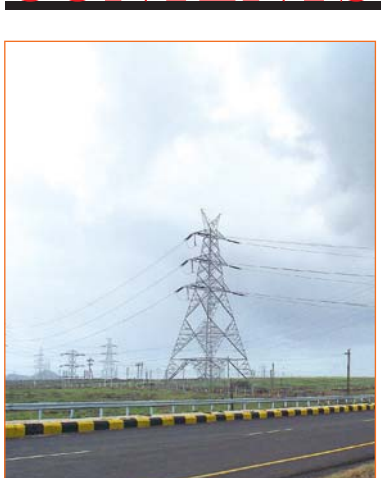
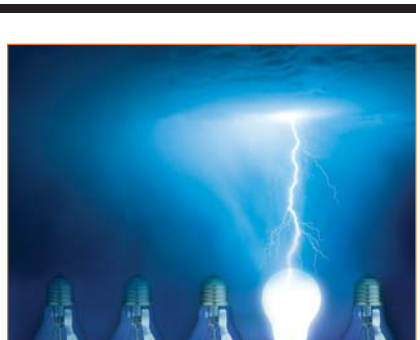
CONTENTS



POWER EQUIPMENT 38

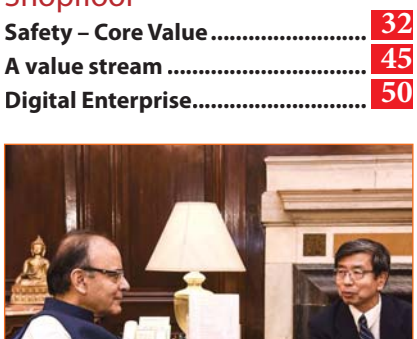
DIE & MOULD 51

DEFENCE



Insight

Shopfloor



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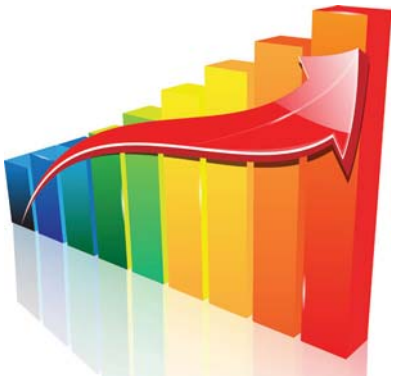
India to achieve 8 percent growth rate in coming years: FM

DURING his visit to the Sydney Campus of S P Jain School of Global Management, Union Finance Minister Arun Jaitley delivered a Lecture on 'Reimagining India' and said that India expected to achieve the higher growth rate of 8 percent and above in coming years. Stating that India continues to be one of the fastest growing economies in the world, the Finance Minister said that India is yet to realise its full potential of growth. He said that even during the global economic turmoil in the past, India



has always showed resilience. Mentioning the significant improvement in the macroeconomic stability, as reflected in low levels of inflation, contained fiscal deficit (FD) and Current Account Deficit (CAD), he said that this has been in spite of uncertain global economic situation. The Finance Minister further said that in the last 22 months, the present Government has undertaken various initiatives and reforms. He said that the Government has opened India's economy for investment in different sectors. The Government is working towards ease of doing business, making process transparent and speeding-up the stalled projects. On tax front, the Government is working towards rationalisation of both direct and Indirect tax regime.

Eaton to build Innovation Center in Pune

POWER management company Eaton has announced its decision to establish a global innovation center in India over a state-of-the-art 390,000 sq. ft. facility at Magarpatta City in Pune. The establishment of the new Eaton India Innovation Center (EIIC) will create a vertically integrated engineering organization that will deliver complete product design lifecycle management solutions for Eaton's global businesses. The incubation center of the EIIC is operational from April 2016. Sudhakar Potukuchi, VP – Technology, will head the EIIC. Eaton's Executive Vice President & CTO, Ram Ramakrishnan said, "The EIIC will be an integral part of Eaton's global engineering footprint. The establishment of this center is in line with Eaton's commitment to achieving global technology leadership through its focus on innovation." "The EIIC is a reiteration of Eaton's continued and deep commitment to India." commented Nitin Chalke, managing director – India, Eaton. "India is not only an important growth market for the company but also a uniquely strategic opportunity to create a distinct competitive edge." Chalke added.

Mahindra acquires 35 percent stake in Sampo Rosenlew

MAHINDRA & MAHINDRA LTD (M&M Ltd) has announced its foray into the global combine harvester business, by entering into a strategic partnership with Sampo Rosenlew, a combine harvester company based in Pori, Finland. Under the transaction, which is expected to close by June 30, 2016, Mahindra will acquire a 35 percent equity stake in Sampo Rosenlew. The two companies will work in tandem to grow their combine harvester business globally. Commenting on the development, Dr. Pawan Goenka, ED, M&M Ltd. said "We are now putting in place a strategy to build a full product line of farm equipment that goes beyond tractors and with this we will compete globally in both advanced and developing markets."

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Delta opens new manufacturing plant in Hosur

DELTA has announced the official launch of its third manufacturing plant at Hosur in the state of Tamil Nadu. The new plant is Delta's 3rd plant in India and is part of Delta's investment commitment and expansion plan in India. In the initial phase, the Hosur plant will manufacture C and CP series of Variable Frequency Drives (VFD) with the rating of 10HP to 50 HP. In the second phase we will add on E series VFD of 7.5HP to 30HP ratings. The factory has been designed and built using environmental conservation measures and it will

provide a healthy and safe workplace for employees. As part of Delta's expansion plans in India, the new factory reinforces Delta's mission: "To provide innovative, clean, and energy-efficient solutions for a better tomorrow." Delta Electronics India is looking to invest about US$500 Million over the next 10 years, helping to generate employment for India's multi-skilled talents with the expected creation of over 20,000 new jobs. Dalip Sharma, MD of Delta Electronics (India) said, "India is an important market for Delta. With this factory we reiterate our commitment to better products and services for our customers. As a result of this operation, we also anticipate substantial job growth in engineering and manufacturing, facility maintenance, delivery and administration."

CVCFL acquires stake in Him Teknoforge Ltd.

CONTINUING its strategy of investing in unlisted companies with high growth potential Canbank Venture Capital Fund Ltd. (CVCFL) through its Emerging India Growth Fund, has picked up a minority equity stake in 'Him Teknoforge Ltd' (HIM) for a consideration of Rs 30 crore which includes Rs 7.80 crore towards partial buyout of equity shareholding held by IFCI Venture Capital Funds Ltd. HIM is a leading manufacturer of forgings and machined components for various industries. States Rajiv Aggarwal, Executive Director, HIM, "We have been looking for funds to expand/upgrade our operations to achieve the full capacities of the units and also to enhance the Product value/branding besides increasing our share of business from the existing customers as well adding new Customers.". The funds from CVFCL shall be deployed towards modernisation/additional plant and machinery and tools & dies at its existing forging and machining units. The company is planning an IPO sometime in the next 2-3 years.

Toshiba to build new facility for railway systems

TOSHIBA CORPORATION will establish a new production facility for electrical equipment for railway systems in Hyderabad, India for expanding its commitment to India and its ability to supply international markets. The new unit will manufacture power conversion systems and train control systems that provide overall operation management. It will be built by Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. (TTDI), which will establish a new, dedicated railway systems division to promote the business. Production is planned to start in April 2017, and will be expanded to match demand. Dr. Katsutoshi Toda, CMD, TTDI, said: "We will grow the new manufacturing base with investments that, I hope, will provide employment and contribute to "Make in India" for India's industrial development."

India is world's 4th largest defence spender

INDIA has become the world's fourth largest spender on defence, following a 13.1 percent increase in its 2016-17 defence budget, according to IHS Inc, the leading global source of critical information and insight. India's climb in the rankings – from sixth position last year – is a result of an increase in expenditure to $50.7 billion combined with cuts to military spending by other countries, namely, Russia and Saudi Arabia, where low oil prices have put considerable strain on their finances. "Growth in the Indian budget is expected to outpace that of all other major defence spenders over the next five years. This position is only likely to strengthen further," said Craig Caffrey, Principal Analyst at IHS Jane's. According to IHS analysis, short-term pressures, caused by increases to military pay and the introduction of One Rank, One Pension (OROP), are the main reason for the higher rate of budget growth. As a result, spending on the acquisition of military equipment remained largely static in real terms and remains lower than its 2013-14 peak, despite an increase in the overall budget.

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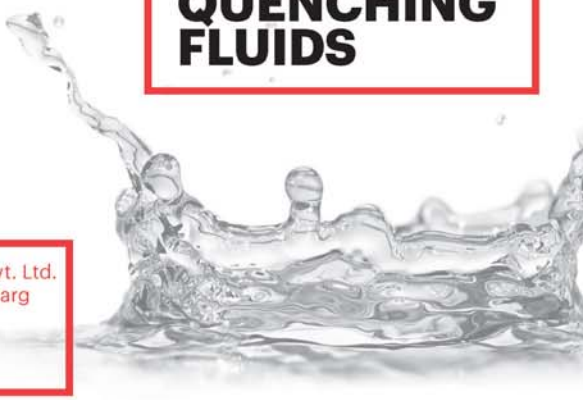

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• MARK YOUR DIARY •

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

Hannover Messe 2016
April 25 to 29, 2016,
Hannover (Germany)
www.hannovermesse.de/home

Rapid 2016
May 16-19, 2016
Orlando, Florida (US)
http://www.rapid3devent.com/

CeMAT 2016
May 31-June 3, 2016,
Hannover (Germany)
http://www.cemat.de/home

AMTEX 2016
July 8-11, 2016,
New Delhi
http://www.amtex-expo.com/

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

MINExpo International
September 26-28, 2016,
Las Vegas (USA)
http://www.minexpo.com/

Pune Machine Tool Expo 2016
September 29-October 2, 2016
Auto Cluster Exhibition Center, Pune
www.mtx.co.in

India International Textile Machinery Exhibition 2016
December 3-8, 2016,
Mumbai
http://itme2016.india-itme.com/

BAUMA CONEXPO India 2016
December 12-15, 2016,
New Delhi
http://www.bcindia.com/

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

ProMat 2017
April 3-6, 2017
Chicago, US
http://www.promatshow.com/

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

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Nikkei India Manufacturing Purchasing Managers' Index is indicative of another improvement in business conditions across the sector; the headline index up to an eight-month high of 52.4

India's manufacturing upturn gathered momentum in March, with stronger inflows of new work leading firms to scale up output. Along with improved domestic demand, producers also recorded an increase in new export business. These positive developments encouraged companies to buy more inputs, but workforce numbers were left broadly unchanged. On the price front, cost inflation accelerated, while charges were raised to the greatest extent since November 2014.

Registering above the crucial 50.0 threshold for the third consecutive month in March, the seasonally adjusted Nikkei India Manufacturing Purchasing Managers' Index (PMI) – a composite single-figure indicator of manufacturing performance – was indicative of another improvement in business conditions across the sector. Moreover, the headline index was up from 51.1 in February to an eight-month high of 52.4. Production growth accelerated to the fastest since August 2015, amid a stronger upturn in new business inflows. The latest expansion was widespread across the three monitored sub-sectors, with consumer goods posting the quickest rate of increase.

March data highlighted a third successive monthly rise in order books, which panellists associated with improved demand from both domestic and external clients. New business inflows increased at a solid pace and one that was the most pronounced since last July. Growth of new export orders was sustained, but the rate of expansion remained slight.

Buying levels increased further in March, which survey participants linked to stock-building initiatives. Although quicker than in February, the rate of growth was slight overall.

As a consequence of rising purchasing activity, pre-production inventories expanded. The rate of accumulation was slight overall and in line with those seen throughout the current four-month sequence of growth.

On the other hand, holdings of finished goods declined in March, and to the greatest extent since last August. According to panellists, both existing and new orders were often fulfilled directly from stocks. Backlogs of work decreased in March, highlighting spare capacity in the sector. This prevented manufacturers from taking on additional workers and employment levels were broadly unchanged again.

Meanwhile, input costs rose amid reports of the weaker rupee resulting in higher prices paid for imported raw materials. Tariffs were subsequently raised. Rates of cost and charge inflation were at three-and 16-month highs respectively.

Commenting on the Indian Manufacturing PMI survey data, Pollyanna De Lima, Economist at Markit and author of the report, said: "PMI data suggest we should expect another quarter of robust economic growth in the last quarter of the 2015-16 financial year. The Manufacturing PMI ticked higher in March, providing welcome reassurance that the sector has moved farther away from the flood-related contraction seen in December.

Despite gathering momentum, growth of production and new orders still remained below trend rates however. On the export front, it was encouraging to see a sustained increase in new export orders, often attributed to the depreciation of the rupee. "In addition to the underlying growth picture, a lot of focus remains on the trend in prices. On this front, March's survey suggests that inflationary pressures in manufacturing are on the upside, with cost burdens rising at the quickest pace in three months and output charge inflation reaching a 16-month high."

It is important to note what is happening in the manufacturing industry around the world to get a comparative perspective. The opening quarter of 2016 saw the UK manufacturing sector register one of its weakest performances during the past three years. German manufacturing companies reported further lacklustre growth at the end of the first quarter. March survey data pointed to only a fractional deterioration in operating conditions faced by Chinese manufacturers. A renewed expansion in total new order books led to the first increase in output for a year. Operating conditions at Japanese manufacturers deteriorated at the end of the first quarter of 2016.

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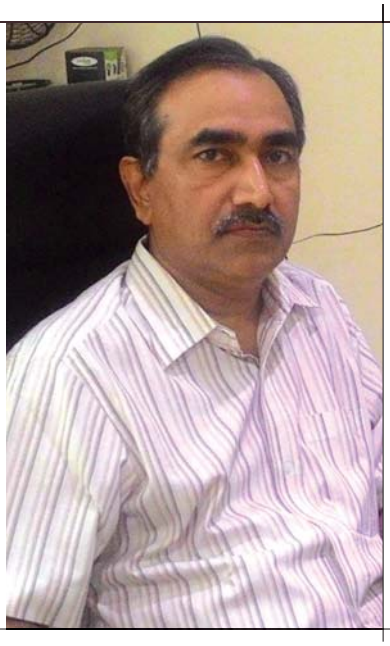
TOMOHIKO OKADA IS MANAGING DIRECTOR, TOSHIBA INDIA

Toshiba Corporation – Japan has appointed Tomohiko Okada as Managing Director at Toshiba India, a 100 percent subsidiary of the Group. Effective April 01, 2016, Okada will lead Toshiba India to the path of next level of growth across Group's storage, social infrastructure, and energy businesses in the country. Okada will replace Kenji Urai, who has been committed to India success story and played an integral role in Toshiba's growth and development in India. Under his leadership during the past six years, Toshiba's India growth strategy has enhanced including the significant extension of the business portfolio, and expansion of their production capacity.

Accepting his new role, Okada said, "Toshiba has been an intrinsic part of India's energy and social infrastructure fabric with a manufacturing presence for more than half a century and I feel extremely privileged to head the operations in India. Mr. Kenji Urai has played an instrumental role in establishing India as a key market and an important manufacturing & export hub for Toshiba. With the exciting developments in the country for manufacturing in India, Toshiba India is poised for many more milestones. With my experience, I look forward to pursue the 'For the Next India' story further. We have one of the finest teams and strategic partners on-board to take Toshiba forward and support the development in the country."



NU-VU CONAIR APPOINTS CHIEF EXECUTIVE OFFICER

Nu-Vu Conair Pvt. Ltd., a leading name in Plastic Auxiliary Equipment in the country has appointed Sanjay Lapalikar as CEO who will be based out of its factory premises at Ahmedabad, Gujarat. Lapalikar is an accomplished executive with strong track record of performance in high paced organizations. He graduated in BE (Hons.) Mechanical Engineering from BITS Pilani. Apart from that, he has completed Business Leadership Program - CG's executive development program (1996-97) and Advance Management Program – Conducted by faculty from Harvard, organized by CII at Tata Management Center Pune (2005). He has served in reputed organizations such as Larsen & Toubro Ltd., Crompton Greaves Ltd. and Anup Engineering Co. (Lalbhai Group) at various senior positions as well as a CEO. Speaking on the occasion, Lapalikar shared "I am very happy and honoured to be part of this wonderful organization. Plastics industry is growing at a fast pace and we will try to be ahead of the competition and offer products to customers that help them increase production, improve quality and cut costs." "We welcome Mr. Sanjay Lapalikar to Nu-Vu Conair family. We hope that his expertise at senior level will help us achieve greater success in future," commented a company spokesperson. The appointment will help company in the long term given that it is registering a growth of 15 percent every year. It will also help in day to day functioning of the company.

JOHNSON CONTROLS APPOINTS TRENT NEVILL AS PRESIDENT APAC

Johnson Controls has announced Company Vice President Trent Nevill's appointment as President Asia Pacific, making him a corporate officer effective immediately. In this critical leadership role, Nevill is responsible for driving enterprise leadership, strategy, fast-paced growth and functional management for all of Johnson Controls' businesses across the Asia Pacific region. He will be based in the company's corporate headquarters in Shanghai. He will serve as Johnson Controls' most senior leader in the region, working with governments and industry to ensure Johnson Controls' presence and commitment are well-understood and embraced in the marketplace.

"Johnson Controls has made a strategic commitment to China, as we continue to invest in our business there and build capabilities coincident with our new headquarters in Shanghai," said Alex Molinaroli, Chairman and CEO, Johnson Controls. "Trent's experience with the company and demonstrated ability as a seasoned leader in our buildings business make him uniquely qualified to lead our Asia Pacific team through the next phase of growth for Johnson Controls in the region."

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Towards **indigenisation**

For the prestigious FICV project, Tata Motors has signed an MoU with the Maharashtra Ex-Servicemen Corporation Ltd

To be developed under the 'Make Category', the FICV is a high mobility armoured battle vehicle. *Courtesy: Tata Motors*

Tata Motors has signed a Memorandum of Understanding (MoU) with the Maharashtra Ex-Servicemen Corporation Ltd (MESCO), for creation of employment opportunities for ex-service men of Indian Army, in response to Tata Motors solution for the Indian Ministry of Defences' (MoD) prestigious $10 billion combat vehicle programme. As one of the indigenisation partners for the development of Tata Motors FICV (Future Infantry Combat Vehicle), the MoU with MESCO was signed at the DEFEXPO 2016 in Goa.

Commenting on the partnership, Ravi Pisharody, Executive Director, Commercial Vehicles, Tata Motors Ltd. said, "Defence particularly needs partners with long-term commitments, to see products and solutions through multiple generations of evolution and we at Tata Motors are proud to have joined hands with MESCO and the Indian army's ex-servicemen, for India's first indigenously developed combat vehicle. Through this partnership, we will be even better positioned to involve the Small & Medium Scale Enterprises in defence equipment manufacturing and at the same time cater to the opportunities available right here in India."

Commenting on the occasion, Vernon Noronha, Vice President Defence and Government Business, Tata Motors said, "We are pleased to collaborate with MESCO for the Indian MoD's FICV Programme. Through this collaboration, we hope to utilize the experience and further develop the expertise of our nations ex-servicemen, to develop and produce components for the Indian MoD's FICV program. Aimed at creating skilled professionals in the defence space and in-line with the government's 'Make in India' initiative, the collaboration is expected to create domain specific job opportunities for ex-servicemen of the Indian army."

(Retd.) Col. Suhas Jatkar, Managing Director, MESCO said, "We are honored to have partnered with Tata Motors in this unique collaborative effort to generate employment opportunities for the country's ex-servicemen, that will also lead to crafting out a niche of skilled personnel, in the development of defence equipment. Vital for the safe keeping of our country, we look forward to pushing the boundaries of learning and implementation through this initiative"

Tata Motors recently also signed a strategic agreement with Bharat Forge Limited (BFL) and General Dynamics Land Systems (GDLS) of the US, for the Indian Ministry of Defence (MoD's) prestigious Future Infantry Combat Vehicle (FICV) program. Tata Motors will lead the consortium, playing on its strengths related to Design, Development & Integration of mobility platforms, with Bharat Forge Limited as a partner, bringing on board its competence in local manufacturing. General Dynamics Land Systems will bring in its much proven expertise in combat vehicle programs, as a SOSI (a system of systems integrator), enabling Tata Motors, the lead integrator, to offer a truly indigenous solution for this 'Make' (in India) program.

To be developed under the 'Make Category', the FICV is a high mobility armoured battle vehicle, for infantry men to keep pace with new advancements in weaponry system. The FICV needs to be compact, tracked and amphibious, no heavier than 18-20 tonnes, so that it can be airportable and transportable by other means, onto combat zones.

> "Through this partnership, we will be even better positioned to involve the Small & Medium Scale Enterprises in defence equipment manufacturing and at the same time cater to the opportunities available right here in India."
>
> **Ravi Pisharody,**
> Executive Director, Commercial Vehicles, Tata Motors Ltd.

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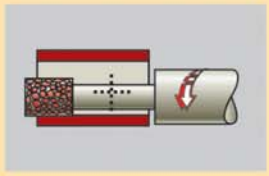

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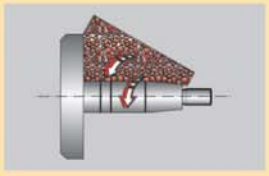

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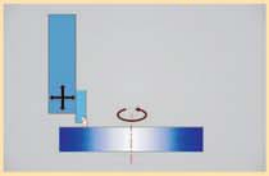

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India is one of the largest importers of defence equipment, contributing heavily to the adverse balance of trade situation

How India can Become **Defence Manufacturing Giant**

India's spend on defence equipment is huge. However, majority of these equipment are sourced from the partner countries. Here is a roadmap to achieve a flourishing defence manufacturing base in the country.

By Gaurav Mehndiratta

India faces threats both by external forces such as precarious neighbourhood and internal threats such as national unrest, riots, naxalism, etc. coupled with mounting pressure to sustain the country's dominance as a potent Asian force to reckon with, it is imperative for India to have a robust and efficient domestic defence manufacturing base.

While the defence sector has always envisaged to be one of India's major economic boosters generating mass employment, contributing to economic development and quenching the security needs of the nation, today the country is poised as one of the largest importers of defence equipment, contributing heavily to the adverse balance of trade situation and adding to the mounting pressure on the exchequer. Thus, it has become increasingly evident that a firm approach is required at the government's end to achieve autonomy status in defence production.

It is not only imperative to mould and strengthen the country's defence manufacturing capabilities but is also equally important to help ensure enhanced quality and durability of the arms and ammunitions carried by Indian soldiers, to achieve the desired status. If energies and resources are channelised in the right direction, the 'Make in India' initiative, could act as a deflection point in creating a growth oriented and manufacturing driven defence sector by efficiently utilising the young and technically skilled talent in the country, thereby creating a competent automotive sector and a flourishing IT base, which are the requisite ingredients for a strong foundation of defence manufacturing.

The following are some recommendations or aspects that the government should ponder upon to lay the building blocks of a flourishing defence industry and achieve an upward trajectory for defence manufacturing in the country.

"It is not only imperative to mould and strengthen the country's defence manufacturing capabilities but is also equally important to help ensure enhanced quality and durability of the arms and ammunitions"

Are offsets a boon in vain?

To begin with, 'offsets' are a defence procurement mechanism in which the governments of certain nations (procuring defence equipment) require foreign sellers/service and technology providers (winning strategic defence contracts) to plough back a portion of their earnings into the procuring country's defence and/or ancillary sectors.

Though highly effective at a conceptual level, in India, offsets have dismally failed to

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achieve what was really envisaged during its inception. Ironically, the implementation mechanism structured for defence offsets is not conducive, given the prevalent rigid policies and practices followed by the Ministry of Defence (MoD). The concept of offsets however, can be turned around by recourse to the following measures:

- ***Reschedule offset negotiation timing:*** The timing of offset-negotiation should ideally be pushed to the post-contract negotiation phase. This shall momentously help enhance the level of flexibility currently granted to global original equipment manufacturers (OEMs) who might then be in a position to plan and park their funds better in improved avenues.
- ***Install skilled administration system:*** A skilled administration system should be installed to spearhead offset allocation, negotiation implementation and monitoring. The domain should be reserved for experts rather than bureaucrats. Offsets should be aligned to a clearly laid out vision for domestic defence manufacturing. This shall help ensure that investments in the form of offsets are channelised to the right platform for manufacturing the latest and technologically advanced products/equipment or requisition of necessary technology.
- ***Negotiate offset channelisation:*** During actual offset negotiation, the government may negotiate offset channelisation towards projects of immediate and strategic importance. For instance, the government may hand pick projects like manufacturing of bullet proof jackets, surveillance systems for tracking fishing vehicles, etc. and grant such projects multipliers in view of their tactical importance.

A clear and transparent policy in relation to defence offsets expressly spelling out the mode and manner of credits coupled with the flexibility to negotiate such offsets in a staggered manner, at a later stage or at a point in time during execution of strategic defence contracts shall not only help augmenting the defence base of the country but also greatly enhance India's credibility in the global defence market.

Raksha Udyog Ratnas (RuRs)—a reincarnation?

The Ministry of Defence (MoD) has ironically decided to retain its decade-old barrier against allowing India's private sector a meaningful role in defence production. The Kelkar Committee's futuristic proposal of nominating certain private players as RURs and granting them an 'at-par' status with Defence Public Sector Undertakings (DPSUs) has been scrapped from the Defence Procurement Procedure (DPP), 2013. While the introduction of the concept of RURs itself remains a dormant or paper policy till date (not being practically implemented), the scrapping of the same, diminishes all hopes of the private and public sector undertakings coming at par in the arena of defence production. This is a big set-back for defence production in India, as RURs were one avenue through which leading technology could be articulated beyond the realms of governmental corridors.

Pragmatically, while the DPSUs have tremendous potential and have done great service to the country, one has to accept that a joint and conductive effort is required on part of both public and private sector undertakings to keep pace with the rampantly changing industrial and technological developments.

"While the DPSUs have tremendous potential and have done great service to the country, one has to accept that a joint and conductive effort is required on part of both public and private sector undertakings to keep pace with the rampantly changing industrial and technological developments."

Global OEMs have a greater level of comfort in dealing with private players and thus, giving them a larger role to play shall provide a momentous thrust to defence production in the country.

While the government plans to introduce the concept of 'strategic partners' in more or less a similar footing as that of RUR, one needs to see if the policy may actually take off or remain a paper policy. While arguments run in both directions, some believe that the concept of 'strategic partnership' is narrower than RURs and may not facilitate a long-term business case.

Notwithstanding the above, to tap the talent in the private sector towards augmenting defence production, it is required that:

- ***Discontinue lip service:*** The lip service of bringing the private sector on an equal footing with the public sector should be stopped and the promise should be delivered with substantive measures.
- ***Set-up production agencies:*** The private sector should serve as production agencies and technology transfer from the DRDO should be facilitated.
- ***Similar benefits to RuRs:*** The same benefits/privileges are to be granted to RuRs (akin to DPSUs) and should be placed on an equivalent pedestal in order to help ensure their efficient and robust growth.
- ***Reintroduction:*** The reintroduction should be done in a manner such that it opens up avenues not only for the extremely large industrial houses in the country but also for comparatively smaller ones who might have a latent pool of talent as well as the requisite capabilities to contribute effectively to the defence production arena.

Thus, the reincarnation of RURs and practical implementation of the concept envisioned by the Kelkar Committee is expected to provide the much needed boost to the defence industry in the country.

Public Private Partnerships (PPP)

While defence contracting has been built on the pedestal of

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The defence sector has always envisaged to be one of India's major economic boosters generating mass employment, contributing to economic development and quenching the security needs of the nation.

PPP models, defence PPP contracting is different from the standard PPP models adopted for other infrastructure projects. Accordingly, the MoD should consider the following to provide for requisite clarity in defence contracts:

- ***Define contractual execution terms:*** Clearly defining the terms of contractual execution such as delivery, title transfer, etc. to avoid any ambiguity or doubt from a commercial standpoint.
- ***Import execution and drafting manner-*** Importing the manner of execution and drafting of engineering, procurement, construction (EPC) contracts to strategic defence deals, specifically in terms of robust and detailed tax clauses.
- ***Encourage joint ventures:*** Alternatively, new joint ventures between Indian private players and OEMs may also be encouraged to provide a thrust to defence production and augmenting the existing assembly lines.

> The time is ripe to bring in bold reforms that position India as an investment hub for global defence majors and simultaneously amplify defence production capabilities of the country.

DPSUs – To tap the untapped

Despite the infusion of mammoth investments by the government in the form of time, money and efforts, it is clearly evident that Indian PSUs have been unable to reap the benefits of the same. Hence to overcome this embargo, Defence Public Sector Undertakings (DPSUs) should be looked at from an altogether different perspective and the following measures can be considered:

- ***Outsource aspects to private sector:*** The areas in which the DPSUs do not have expertise or are unable to function, should be outsourced/sub-contracted to the private sector so as to exploit existing technologies and create upgrades.
- ***Share technological inputs:*** Sharing technological inputs received by DPSUs with private players and sub-contracting to them can also act as an effective tool in augmenting defence production.
- ***Identify the skill gap:*** It is imperative to identify the skill gap prevalent in DPSUs, especially in human resources. Appropriate skill training and an overarching emphasis on hiring the best talent should be the focal point for such organisations.

Way forward

The time is ripe to bring in bold reforms that position India as an investment hub for global defence majors and simultaneously amplify defence production capabilities of the country. Joint efforts between the Indian industry and global OEMs can help enhance India's self-reliance, conserve foreign exchange and boost our manufacturing capabilities. A positive approach of the government in this direction, including liberalisation of FDI norms in the defence sector, bringing in clearer licensing requirements, providing a thrust to the 'Make in India' initiative, etc. has shown the government's clear inclination towards catalysing growth in the defence manufacturing.

With the appropriate skill set (labour) and requisite resources (IT and auto sectors), India is rightly poised to become a mighty defence base to reckon with. What remains to be seen now is how the government fine tunes its fiscal, economic and regulatory policy and provides the much needed impetus to industrial players to help establish India's domestic military might.

The author is Partner at KPMG India and presents this article with inputs from Rajat Duggal, Associate Director, KPMG India.

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STALL BOOKINGS OPEN

Constructive achievement

It is more important than ever to provide high quality products which are cost effective, low maintenance, with easy returns to instill trust and confidence in the company, says **Prashant Vatkar,** MD, HIL Limited

By Niranjan Mudholkar

When did the Total Productivity Management (TPM) journey at HIL start and what inspired you to undertake the same?

Over the last 10 years, the Indian market and in particular, the construction market has changed substantially. The consumers today are brand conscious and product savvy with easy access to a lot of information resulting in heightened awareness. So, today's scenario demands constant review and upgrades to survive and flourish. It is more important than ever to provide high quality products which are cost effective, low maintenance, with easy returns to instill trust and confidence in the company.

HIL Limited has been conferred upon the TPM (Total Productivity Management) Award 2016 by JIPM (Japan Institute of Plant Maintenance) for its Kondapalli unit (Andhra Pradesh). With this global recognition, HIL Limited also becomes the first Indian company in the roofing segment to have applied and received a TPM award in category B.

Anticipating this shift, HIL noticed that the manufacturing facilities had scope for improvement in overall efficiency and quality as well as employee involvement. We realised a fresh innovative approach in the manufacturing facilities and processes would provide us the edge by maintaining a tight leash on costs and largely reduce inefficiency and breakage. This made HIL embark on the journey of (TPM) Total Productivity Management in the year 2008. As TPM provides a framework for systematically identifying areas for improvement and steadily working on them by focused monitoring and discovering ways to reduce deviations. It ensures that the HIL

employees constantly update their skillsets and knowledge base to keep up with the changing times.

Recently, our Kondapalli Plant became the first Indian Plant to win the TPM award in category B by JIPM (Japan Institute of Plant Maintenance) for the Sheeting Roofing industry, and our Balasore and Satharia sheeting plant bagged the Silver in the National Awards for Manufacturing Competitiveness (NAMC) assessment. These milestones reiterate the fact that we are on the journey of excellence and efficiency. TPM has helped raise the bar not only for us but the industry in general.

Winning an award of such stature cannot be possible without the active involvement of all employees. Tell us how they have contributed to this success?

At HIL we believe that our Employees are our most precious resources. Success is not possible without a dedicated and able team. However, it is the company's responsibility to see that they map their employees according to their aptitude and to provide opportunities for them to upgrade their skills and knowledge. This is easier said than done, as 70 – 80 percent of the time we focus on grooming our customer face or senior management but for a manufacturing organisation it is important to groom each and every individual from the worker level upwards which is where TPM plays an important role. TPM was adopted by HIL in 2008, since then it has become a part of HIL Plant working DNA.

Our plants are run by an efficient and qualified team of engineers who take care of operation, maintenance and quality-assurance. As a part of TPM practice, skill development programmes are regularly conducted at the facility, focusing on basic and multi-skill grooming. The effectiveness of these programmes are duly measured and recorded. The employees know its importance and their role is well defined and communicated. This encourages and empowers them to do and be better.

As a result, our employees have become more proactive, and a sense of ownership has been successfully instilled that contributed to their effectiveness. The interpersonal dynamic between production and other departments has been simpler and smoother as their roles are clearly defined.

In this way, our employees have played an instrumental role in making TPM Successful and in-turn TPM has provided them with a better work environment and an endless opportunity to grow, improve and build and at the same time be a part of the organisation which is playing a important role in shaping the Indian building material sector.

Tell us about your R&D activities. How much do you spend on R&D in terms of percentage of your sales?

HIL's strategic advantage is our R&D department. We have one of the largest R&D centers in India at Hyderabad. Con-

"We realised a fresh innovative approach in the manufacturing facilities and processes would provide us the edge by maintaining a tight leash on costs and largely reduce inefficiency and breakage."

tinuous work on improving technology, waste management, new product and process development, testing facilities, sustainability and commercialisation are some of the key areas we focus in. HIL's R&D center is recognised by DSIR – Govt. of India. Owing to the innovation at these centers, we hold multiple patents across countries.

HIL's Research and Development faculty is also focused on upgrading our plants' technology and making its products eco-friendly. This in turn led to the introduction of fly ash in our plant manufacturing processes and it has successfully met the latest ISO quality standards.

Q. A key factor in taking 'Make in India' to its desired results would be a strong focus on quality and manufacturing excellence while being cost competitive. Tell us what you think in the context of HIL's focus on these issues.

In HIL, Quality and Productivity improvements are identified and implemented on a regular basis resulting in consistent business benefits. The key is simultaneous focus on efficiency and cost effectiveness. While there is pressure to keep costs down, buying cheap materials and cutting corners is not the answer. We are focused to giving our customers products that carry the 'Make in India' tag with excellent quality. So our concentration is on increased reliability by making processes more reliable and robust with the help of Successful implementation of TPM. This has helps improve production, yield, and efficiency without compromising on the cost. Additionally, we have also commissioned a new line sheeting line in Faridabad and a Blocks plant in Thimmapur, Telangana to increase overall operation and capacity.

Q. How would you describe your position in India in terms of market share? Do you see the TPM Award impacting business directly?

HIL holds the world record in production and sales of roofing products, owing to Charminar's unassailable feat of having sold 1 Lakh metric tonnes of fibre cement sheets during May-June 2014 and during April 2015.

Brand Charminar is synonymous with roofing materials and has been so for more than 60 years. The brand is characterized by positive associations with progress, prosperity, well-being and leadership.

Charminar is the largest production and seller of AC sheet in the country with a market share of 22 percent. It has a pan-India presence with 53 depots, 8 sales offices, 2500 stockists, 6500 retailers, and 8 plants spread across the country. Charminar's strength lies in its state-of-the-art manufacturing facilities, its unmatched distribution network, a diligent customer care system and a long list of satisfied customers who have become 'Charminar brand Ambassadors'.

Winning the prestigious TPM Award for our Kondapalli Plant is a testament of our manufacturing and operational excellence, which directly translates to proof of superior product quality. We are the first to win this coveted award in the industry and hence it is definitely a feather in our cap, which motivates us to retain and surpass the benchmark set by us. Hence, it definitely benefits our business positively.

Q. What was your turnover in last FY and what is the projection for the current FY?

The last FY has been challenging owing to the slowdown in the real estate and the rural economy. In this challenging environment, the company is in the process of recalibrating the business approach. However, our brand Charminar has managed to maintain its market share of 22 percent and our brand Aerocon has managed to become the largest seller and manufacturer of AAC Blocks in the country.

Our projection for the current year is also very positive. With the streamlining of manufacturing processes, a more-than-capable team and government initiatives to improve, revive and bolster the rural economy, and projects like Make in India, we are confident that we shall maintain the same upward growth over the years to come.

Successfully meeting **power challenges**

A crane manufacturing major integrated the handling of transformers through various processes and assembly stations right from the incoming raw material stage to the final despatch bay for a leading transformer manufacturer

Prime Electric Limited (PEL) is one of largest transformer manufacturers in India. It caters to the requirements of Indian and international markets for power utilities, EPC companies, substations, power generation, transmission and distribution companies and large industries from various sectors (steel, cement, petroleum, petrochemicals, etc.) using bulk power. PEL is one of the most significant activities of the Prime Group. The Prime Group has rich experience in addressing the most exacting needs of the power sector and through its range of eco-friendly (low noise), aesthetically designed, extra high voltage power transformers up to 1000MVA/500kV. PEL's production capacity, projected to 35,000MVA, makes it one of the largest manufacturers in India, producing world-class extra high voltage power transformers for users across the globe. PEL's manufacturing plant at Nayudupet Special Economic Zone in Nellore district in India is spread over 100 acres of land.

At Prime Electric Limited (PEL) - a leading transformer manufacturer, 18 ElectroMech cranes integrate the handling requirements in their state of the art plant; from incoming raw material to complete transformers weighing 300 MT, through various processes and assembly stations.

The handling challenges at Prime Electric Ltd.

The task assigned by Prime Electric to ElectroMech was challenging in several aspects. ElectroMech cranes are expected to integrate the handling of transformers through various processes and assembly stations right from the incoming raw material stage to the final despatch bay. The cranes were expected to cover the entire length and width of the shop-floor, providing maximum hook

approach, reaching every nook and corner of the shop floor. The most critical part of the transformer manufacturing process is filling oil in assembled transformers. For this, the transformer needs to be lowered into a vacuum chamber where it is completely dried to make it moisture free. Here, precision positioning using the cranes is extremely important. After this, the transformer is filled with oil and is to be moved without any spillage due to jerks. Hence, the cranes should be able to handle the load ensuring absolutely jerk-free movement. As the transformers pass through this process, their weight gradually increases, the heaviest transformers weighing in at 300MT which need to be carefully lifted and taken to the despatch area.

"The most interesting part of the solution is in the form of two 150/30 MT cranes which work in tandem to lift the large transformers weighing 300MT, using a specially designed lifting beam. This ensured safe handling of heavy components of 300MT with ease and precision."

Solutions

The ElectroMech solution comprises 18 cranes ranging from-5MT, 8.5m span to 150/30MT, 30m span to ensure complete integration of handling on the shop-floor while covering every process station and reaching every corner of the plant. These cranes cover the handling requirements through various stages of the manufacturing process, including handling of raw material such as steel coils and copper plates, operations at various assembly stations, core winding stations, vacuum chamber, oil filling station, testing room and finally, the dispatch bay.

The most interesting part of the solution is in the form of two 150/30 MT cranes which work in tandem to lift the large transformers weighing 300MT, using a specially designed lifting beam. This ensured safe handling of heavy components of 300MT with ease and precision. The lifting beam is designed so as to ensure equal division of the 300 MT load between both cranes, thus allowing the crane structure to be optimized, enabling savings in the factory structure due to a reduction in weight.

Efficient project coordination

From ElectroMech the entire project was efficiently coordinated by its sales, design and project engineering teams. "ElectroMech is proud to be associated with Prime Electric Ltd. for one of their largest transformer manufacturing facilities in India. We have achieved another milestone by adding the Prime Electric Group to our client list. The plant is already commissioned and all ElectroMech cranes are operational round-the-clock, helping them achieve the desired productivity," says an ElectroMech spokesperson.

Source: ElectroMech

How PEL benefitted

Integration of various processes and maximum coverage
Saving in project costs through use of appropriate capacity cranes of compact and light weight design
Ensuring jerk-free handling of transformers at critical work stations and through various processes
Higher up time of cranes and higher productivity through optimally designed cranes
Enhanced plant aesthetics, thanks to the sleek design of the cranes and high quality paint finish
Tandem lifting of mammoth 300MT loads by two 150MT cranes providing stability and substantial saving on project cost.

Challenges	Solutions
• Lifting of completely assembled transformers weighing 300MT	✓ Two synchronised cranes of 150MT each, working in tandem to lift 300MT loads
• Jerk-free handling of heavy, oil-filled transformers	✓ Anti-sway device to avoid jerks
• Integration of handling in the complete plant	✓ Carefully planned 18 cranes
• Lowering of transformers in vacuum chamber required precise positioning	✓ Smoothly operating drives with inching facility.

SAFETY – Core Value

Safety is central to our business success and directly impacts the bottom line in many ways, says **Balachandar N V**, Senior VP – Group Head Human Resources & CSR, Ashok Leyland

By Niranjan Mudholkar

Q How important is safety for you and where does it start?

Employee safety, health and well-being is a core value for us at Ashok Leyland, and we have attempted to inculcate the fact that safety on the shopfloor is the responsibility of each and every individual employee. Our safety philosophy states simply that safety begins with "Self". This process includes engaging with employees, training them to operate within a safety envelope, helping them understand their individual safety goals, getting their commitment, and measuring and managing risks regularly.

At Ashok Leyland, we believe accidents are preventable, and strive to eliminate all such occurrences. We believe that improvements in health and safety are both an individual and a collective responsibility, with full alignment and ownership across the organisation. We have worked hard to co-create a world-class safety culture to achieve an accident-free, incident-free, and a safety-compliant work environment.

Q The manufacturing industry in India is poised for a major transformation. How will adherence to safety contribute to the business success of the industry?

Safety is central to our business success and directly impacts the bottom line in many ways. Safety-conscious and responsible manufacturing are a core part of a product's value proposition. Customers will increasingly look to deal with organisations with a good track record of safety and regulatory compliance on its shop floor.

We believe every employee is entitled to a safe work environment, and have made a concerted effort toward ensuring employees on the shop floor are working in the safest environment possible.

> Automation allows manufacturers to effectively predict maintenance cycles ahead of potential failures. This boosts factory productivity and, by extension profitability, by helping avoid failure related downtime or idle time.

While one can never achieve absolute safety, we are constantly working towards a safer and accident-free shop floor. Regular audits and upgrades of our safety standards, surprise checks to check compliance, refresher training to keep employees safety-focused, are part of an on-going safety protocol.

This increases the feeling of being cared-for, boosts morale, reduces absenteeism, enhances motivation, and helps build an empathetic and positive work culture. Improvements in productivity are an additional bonus.

Improvements in technology, use of new generation

machines, analytics help prevent accidents, and help reduce downtime. This in turn results in lower costs and improved factory productivity, with a positive impact of financial metrics.

Tell us about the safety norms and regulations followed at your shopfloor/s. Do you think regulatory compliance plays a big role in ensuring safety?

Regulatory compliance is crucial in creating safer shop floors. a robust regulatory framework with disciplined implementation, along with legally enforceable remedial solutions, prevent exploitation of labour and prevent cutting of corners for quick gains.

At Ashok Leyland, we are very particular about shopfloor safety. Like I said earlier, constantly evolving safety guidelines benchmarked to global best practices, regular audits and refresher training programs are central to adapting to an ever-changing factory workplace. This helps us proactively anticipate and mitigate potential safety aspects.

It is important to go beyond regulatory compliance, and to evolve your own set of safe work procedures together with employees best acquainted with its risks, and are directly impacted on an everyday basis. This has worked very well for us. For us safety comes before profit, and we are continually engaged with improving shop floor safety; exploring best solutions to help keep our factories safe and our employees secure.

We believe that improvements in health and safety are both an individual and a collective responsibility, with full alignment and ownership across the organisation. We have worked hard to co-create a world-class safety culture to achieve an accident-free, incident-free, and a safety-compliant work environment.

Does use of automation on the shopfloor ensure a safer environment for the operators?

Automation has certainly made work environment safer for operators. Accidents and consequent injuries usually occur when workers come in direct contact with machines. Automation allows for distance, and lets machines take over complex and/or dangerous aspects of the manufacturing process. Motion sensors or light curtain systems help minimise chances of injury, but safety is about the individual taking responsibility for his or her safety, as well as that of her co-worker. The responsibility to educate, empower and enable rests with us as the corporate, and we take this very seriously.

How does industrial automation impact machine safety and performance?

Automation allows manufacturers to effectively predict maintenance cycles ahead of potential failures. This boosts factory productivity and, by extension profitability, by helping avoid failure related downtime or idle time. Planned maintenance schedules and the use of back-up machines ensure maximum asset utilisation and seamless continuation of operations with minimum disruption.

How are you using industrial automation to improve the safety on your shopfloors?

At Ashok Leyland we always strive to keep our factories at the leading edge of safety. For instance, electro mono-rail systems for cab fitment at our chassis assembly line, or the Programmable Logic Controller (PLC) system to pick and place components on the assembly and machining line, eliminate human intervention. Robots machine axle arms and a programmed gantry system for our axle arm, axle beam, crankshaft and cam shaft lines, while Automated Guided Vehicles (AGV) ferry heavy parts like blocks and engine between workstations.

Technology has helped not just streamlines processes and make operations more efficient, but also reduce employee fatigue, distance them from potentially hazardous tasks, and make our factories significantly safer to work in.

Of course technology is continually evolving, so are we, as we seek to explore, innovate and introduce newer solutions that can help make our factories safer.

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INTELLIGENT SET-UP FUNCTIONS

A wide variety of automation functions is available for ease of operation and reduced se

ISF

- Auto Torch Changing
- Auto Nozzle Changing
- Focus Detection
- Auto Focus Positioning
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- Auto Profiler Calibration

INTELLIGENT MONITORING FUNCTIONS

Operation status of laser processing can be monitored.
The laser processing head is equipped with a sensor to check piercing and to detect defects (bu
If any plasma is detected, the operation is corrected to ensure high quality cutting. If burning is d
the cutting is automatically stopped.

IMF

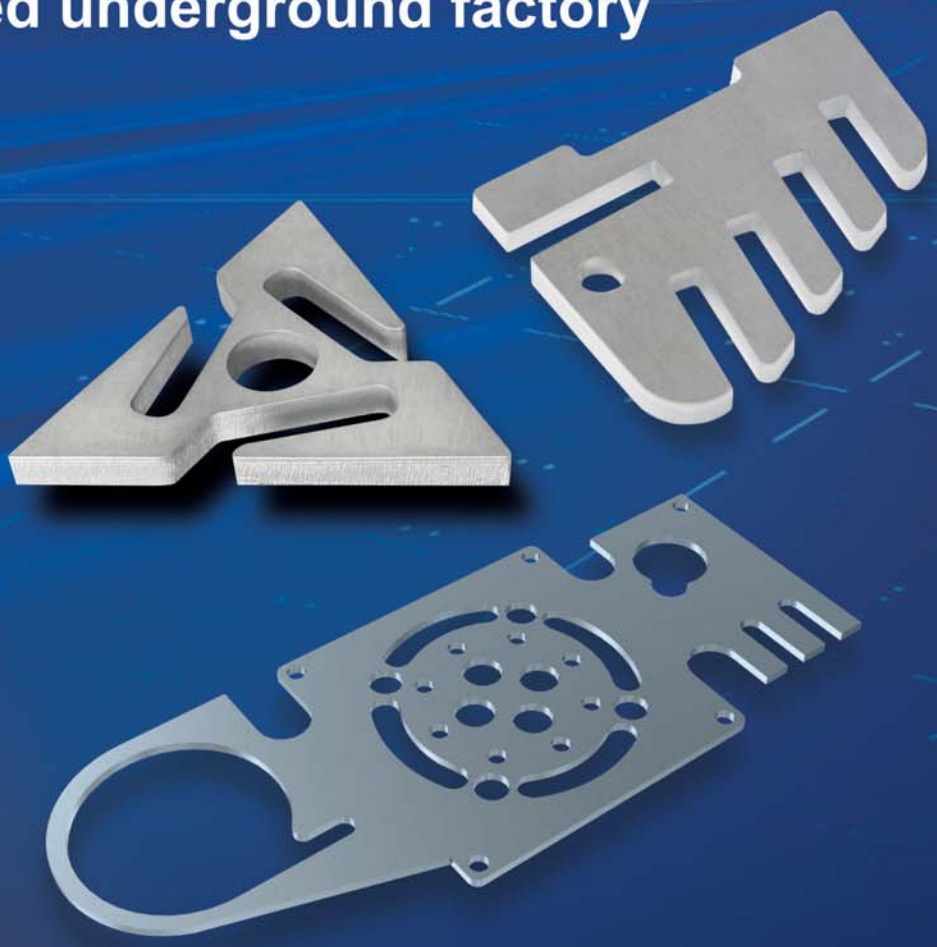
- Pierce Detection
- Burn Detection
- Plasma Detection
- Le

OPTIPLEX 3015 II

uced in advanced underground factory

etup time.

Auto Nozzle Cleaning



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Positive change, now and always!

The true culture of continual improvement implies improvements happening everyday, being driven by everyone, and across every aspect of the organisation.

By Jayanth Murthy

Continual improvement is at the heart of the Kaizen culture, which is aimed at transforming operations in organisations. We have seen that when we set out to work with organisations towards this objective, some companies change more and deeply while some slow down or even stop the process of continual improvement. Why is it that some change more, while some companies change less?

The answer is not simple. There are many reasons – leadership, goal clarity, skill levels, tools and methods adopted to drive continual improvements, daily work practices etc. Five fundamental elements need to be addressed and balanced when an organisation aims to drive and attain, deep and sustainable change.

Defining True North: The most common challenge is that true north is not defined and shared within the team. People have varying ideas on the goal. No journey can begin and end successfully unless there is clarity on the goals and that is shared and accepted by all stakeholders.

Ensuring Support and Governance: The next key is providing the support structure that is required for deployment, promotion, monitoring and sustenance of an improvement culture. It consists of a clear roadmap, regular audits, skill building, dedicated internal champions, a change leader and a project management cell.

Engaging Leadership: Change has to be co-created, with engagement and contribution from the leadership. This engagement includes going to the Gemba (real place or workplace), changing their own skill sets and redefining their paradigms.

Problem Solving: Building capabilities to solve problems are another essential. Unless a standard problem solving tool set or template to capture, define, analyse, ideate and plan solutions is adopted, problem solving will be unstructured and left to chance.

Daily Routines: While often overlooked as trivial, changes in daily habits and practices go a long way in contributing to the overall quest of an organisation's change process. Successful and sustainable change requires not only daily problem solving but also daily tracking of certain KPIs, which are clubbed under daily management.

Often organisations miss out one or more of these elements and this impacts their change efforts in various ways.

For instance, a change or improvement effort minus a clear true north is nothing but a false start. A similar effort without the engagement of leadership will lead to an early death of any traction achieved, with the change efforts cooling off. Yet again, a change or improvement effort without a proper and adequate support structure suffers from poor co-ordination, tracking and governance. Furthermore, when structured problem solving skills are amiss, the change effort results in poor solutions, frustration and recurring problems (often with the same problems repeating themselves). Finally, with no focus on changes in daily management and routines, no habits that lead to sustainable change are formed.

> Change has to be co-created, with engagement and contribution from the leadership. This engagement includes going to the actual workplace, changing their own skill sets and redefining their paradigms."

The process of deep and sustainable change management can be compared to a wholesome balanced meal, which consists of a variety of food items; each taking care of the different nutritional needs of the body. Change needs the above five elements; when all of them come together they drive, attain and sustain operational changes and continual improvements.

Every organisation does improve at some point in time, due to internal or external challenges. The key question, however, is whether an organisation can truly claim that it believes in and sustains a continual improvement culture where improvements happen everyday, are driven by everyone, and in every aspect of the organisation?

The author is one of the Founding Directors of Kaizen Institute India Pvt Ltd

India to be **fastest-growing economy** in 2016

ADB expects that India's economic growth will continue to exceed 7 percent in fiscal year 2016–17 (starting April 2016) and the following year.

Asian Development Bank (ADB) President Takehiko Nakao recently met India's Finance Minister, Arun Jaitley, and praised India's strong economic performance in the face of weak global growth and turmoil in commodity and financial markets.

"I believe India is likely to remain the fastest-growing large economy this year given the prudent macroeconomic management and the government's efforts to improve the investment climate," said Nakao. "The recent budget also balances the urgent requirements for infrastructure investments with the need to reduce the fiscal deficit." ADB expects India's economic growth will continue to exceed 7 percent in fiscal year 2016–17 (starting April 2016) and the following year.

> "I believe India is likely to remain the fastest-growing large economy this year given the prudent macroeconomic management and the government's efforts to improve the investment climate."
>
> **Takehiko Nakao,**
> President, Asian Development Bank (ADB)

Nakao commended the success of the country's reform measures, including the liberalization of foreign direct investment rules, cuts in subsidies, and the "Make in India" campaign. At the same time, he emphasized the importance of continuing reforms to boost the long-term growth potential of the Indian economy, noting the government's efforts to unify the tax regime, make closing businesses easier, improve labour laws, and strengthen public sector banks.

To support the government's commitment to build more infrastructure, Nakao said ADB will increase its lending to $10 billion to $12 billion for the 3 calendar years 2016 through 2018. ADB will support flagship government projects such as solar parks and solar rooftops, energy efficiency using LED lighting, smart cities, metro lines, railway modernization, irrigation system expansion, economic corridors, and major ports.

Nakao also met the Governor of the Reserve Bank of India (RBI), Raghuram Rajan, and commended the RBI for its prudent monetary policy which has contributed to strengthening external resilience. Consumer price inflation averaged less than 5 percent through most of 2015–16. The current account deficit declined to 1.4 percent of GDP in the first half of 2015–16, compared with 1.8 percent in the first half of 2014–15. Nakao said that the phased recapitalisation of public sector banks, while simultaneously improving their governance structures, will help consolidate the financial sector. Together with the central government's higher public investment, which grew by more than 20 percent in 2015–16, such measures will enhance private sector investment.

While in India, the ADB President visited Mumbai and Bengaluru. In Mumbai, he met Chief Minister of Maharashtra, Devendra Fadnavis, and Metropolitan Commissioner of MMRDA Urinder Pal Singh Madan, together with senior officials, and discussed the potential ADB assistance for metro lines, expressways, urban development, energy and tourism. In Bengaluru, he met Chief Minister of Karnataka, K. Siddaramaiah, and discussed ADB's ongoing and future assistance in transport, urban development, and water resource management. While in Bengaluru, he also visited the Infosys campus and met Infosys Chairman, Emeritus N.R. Narayana Murthy, and discussed opportunities for business process management in India and possible cooperation between Infosys and ADB.

Nakao also spoke at the high-level conference, Advancing Asia: Investing for the Future, co-hosted by the Government of India and the International Monetary Fund. In his address, he emphasised the need to make Asia's growth low-carbon and sustainable, while building resilience to rising climate risks.

In 2015, ADB's loans to India amounted to close to $3 billion, including non-sovereign lending of $841 million.

BHEL commissions 250 MW thermal Plant in Bihar

Bharat Heavy Electricals Limited (BHEL) has achieved one more milestone by successful commissioning a 250 MW coal-based thermal power plant (TPP) in Bihar. The 250 MW unit has been commissioned at the upcoming, greenfield 1,000 MW Nabinagar Thermal Power Project (4x250 MW), being set up by Bhartiya Rail Bijlee Company Limited (BRBCL), a joint venture of NTPC Limited and the Indian Railways. This is the first 250 MW unit to be commissioned at Nabinagar TPP, located at Nabinagar in Aurangabad district of Bihar. Execution of the other three units is also in progress. BHEL has a long-standing partnership with NTPC and has supplied over 30,000 MW of the coal-based power plants of NTPC and its JVs that account for around 80 percent of NTPC's coal-based installed capacity. Notably, the 200-270 MW rating class sets supplied by BHEL, form the backbone of the Indian power sector and have been performing much above national as well as international benchmarks.

India to be APACs power equipment investment hub: Report

The Indian power equipment sector is expected to be APACs upcoming investment hub, according to a report by ResearchMoz. The report pegged the global power industry to reach US$457.0 billion by 2019. It was recorded at US$342.0 billion in 2014. As given in the report, an estimate was released by the National Manufacturing Competitiveness Council, which states that the manufacturing sector of India will provide nearly 25.0 percent of the nation's GDP before the end of 2025. A large segment of this contribution will come from the manufacture of electrical equipment. The report also includes citations that show that an FDI allowance of 100 percent into the sector of electrical machinery will propel the investments portfolio from within the nation as well as from international sources. This could significantly increase the revenue generated by the industry in the near future. Another benefit gained from it is the speeding up of research and development activities. This will further increase the level of activity in the India electrical machinery sector, further allowing it to progress towards making the country a key manufacturing hub. The report also states that by 2014, the India electrical equipment market had already reached US$25.6 billion, which was a share of nearly 7.0 percent in the market.

According to the report, the global power equipment market itself is currently experiencing steady growth owing to a rapid increase in the manufacturing rates of developing economies in the past five years. These economies include China and India, two nations that have displayed strong economic progress in recent years.

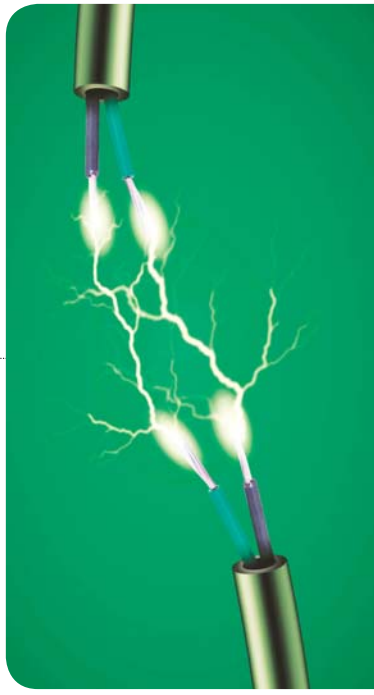
Furthermore, as new and evolving research methodologies are being employed in the India electrical equipment market, the industry can start to show better development rates at the cost of being more capital-intensive.

Overview of India's electrical equipment industry

Comprises of two segments – generation equipment (boilers, turbines, generators) and transmission & distribution (T&D) and allied equipment like transformers, cables, transmission lines, switchgears, capacitors, energy meters, instrument transformers, surge arrestors, stamping and lamination, insulators, insulating material, industrial electronics, indicating instruments, winding wires, etc. The generation equipment sector is 28 percent and T&D equipment sector 72 percent of the industry

- Industry Production (Estimated) for 2014-15: INR 1,28,000crores; Exports: US$ 5.3 billion
- 9.9 percent of manufacturing sector is terms of value and 1.4 percent of India's GDP
- Direct employment to 5 lakh persons, indirect to 10 lakhs, and over 50 lakhs across the entire value chain
- Diversified, matured and strong manufacturing base, with robust supply chain
- Rugged performance design of equipment to meet tough network demand
- Presence of major foreign players, either directly or through technical collaborations with Indian manufacturers
- State-of-art technology in most sub-sectors at par with global standards
- Major Export Markets: United States of America, United Arab Emirates, Germany, United Kingdom, Nigeria, Saudi Arabia, Australia, Brazil, Canada, France.
- Major Export Products:, Switchgear and Controlgear, Transformers & Parts, Industrial Electronics, Cables, Transmission Line Towers, Conductors, Rotating Machines (Motors, AC Generators, Generating Sets) & Parts
- For the rapid development of the domestic electrical equipment industry, encompassing the complete value chain in power generation, transmission and distribution, a holistic Mission Plan launched by the Department of Heavy Industry (DHI), Government of India, with support from IEEMA
- The Mission Plan lays down a clear roadmap for enhancing the competitiveness of the domestic electrical equipment industry
- Vision 2022: To make India the country of choice for the production of electrical equipment and reach an output of US$100 billion by balancing exports and imports

Source: CEA



Smart grid market to propel the demand for low voltage power cables

According to the latest research report released by Technavio, the global low voltage power cable market will likely reach over USD 150 billion by 2020. "Low voltage cables are deployed in T&D networks of smart grids. Moreover, the addition of novel appliances such as heat pumps, electric vehicles charging stations, and solar panels to the distribution networks further necessitates the use of low voltage cables in their interconnection. Smart grid systems incorporate automated software and electronic hardware such as meters, switches, and relays that guarantee smooth and appropriate transmission and distribution of electricity by upgrading and controlling operational processes over a network," said Anju Ajaykumar, one of Technavio's lead industry analysts for IT spending by region and industry.

"Rising investment in smart grids in APAC, EMEA and the GCC countries, owing to increased demand for electricity in these regions, is expected to be a significant factor in the market's growth during the forecast period. This will fuel the demand for low voltage cables," added Anju. Some of the other driving forces behind the growth of the global low voltage power cable market are Growth in power distribution sector, Low voltage cables for power generation from renewable energy sources, and Demand from automotive and non-automotive industries.

In solar power generation, low voltage cables are used to connect the panel to the combiner box; the combiner box to the inverter; and the inverter to the transformer, whereas medium voltage cables are used to connect the transformer to the substation, and high voltage and extra high voltage cables are used to connect the substation to the grid.

Similarly, in case of power generation by wind energy, the cables are used in the nacelle of the wind turbine to connect the tower to the grid. Low and medium voltage cables are employed in the wind turbine and their technical specifications depend on the type of generator (low voltage or medium voltage) and the location of transformers (that can be installed inside the nacelle and in the middle, bottom or outside the tower). Low voltage cables are used when the transformer is placed in the middle or bottom of the tower to connect the low voltage generator in the nacelle to the transformer. Growing penetration of renewable energy sources such as solar and wind in the power generation sector will therefore drive the demand for low voltage cables.

India solar power equipment market to cross US$4 Billion by 2020

For representation purpose only

According to a TechSci Research report "India Solar Power Equipment Market Forecast and Opportunities, 2020", solar equipment market in India is projected to surpass US$4 billion by 2020. Prices of solar panels declined by 19 percent in 2013 and by 12 percent in 2014 due to technology advancements and improvements in manufacturing processes, thereby making them cheaper. In the past, solar equipment industry confronted various challenges such as poor raw material supply, underdeveloped supply chains and limited access to low cost financing. However, rising government investments in the sector, increasing technological advancements and growing environmental concerns are expected to boost solar equipment market over the next five years.

"With rising demand for solar equipment, many domestic players such as Indo solar, Tata Power Solar, Moser Baer India Ltd and Websol Energy Systems are offering cost-effective and high efficiency solar equipment with low system cost per kW. Increasing competition in the market is resulting in considerable average selling price declines of equipment. Additionally, government support in the form of favourable policies, subsidies and tax incentives are expected have a significant positive impact on the market in the ensuing years," said Karan Chechi, Research Director with TechSci Research, a research based global management consulting firm.

"India Solar Power Equipment Market Forecast and Opportunities, 2020" has evaluated the future growth potential of solar equipment within the country and provides statistics and information on market structure, consumer behavior and trends. The report includes solar equipmentmarket projections and demand forecasting. The report is intended to provide cutting-edge market intelligence and help decision makers take sound investment decisions. Besides, the report also identifies and analyzes emerging trends along with essential drivers, challenges and opportunities available in the solar equipment market in India.

Owing to the decline in the solar prices, the Solar Energy Corporation of India (SECI) has lowered its base tariff from INR5.45 per kWH to INR4.43 per kWH for the Uttar Pradesh solar projects which has drawn many bidders. RattanIndia Solar 2 Ltd and the France-based company, SolaireDirect won 50MW Allahabad solar park and 75MW Mirzapur park respectively through this bidding. These companies would be eligible for viability gap funding (VGF), which comes around to be INR75 lakh per MW for the Allahabad park and INR74.3 per MW for the Mirzapur park.

TechSci Research depicts that with the Government target to achieve 100,000MW of solar power by 2022 and with policies that promotes local manufacturing through subsidies and anti-dumping duties will support large scale production of equipment. Prices of solar panels declined by 19 percent in 2013 and by 12 percent in 2014.

Pad-mounted switchgear market is expected to reach a value of USD 6.3 billion by 2020

Pad-mounted switchgear market is expected to reach a value of USD 6.3 billion by 2020, at a CAGR of 9.1 percent during 2015-2020, says a report from ReportBuyer. Increasing T&S infrastructure investments along with the rising trend towards placing electrical lines underground is driving the demand for pad-mounted switchgears across the world. Pad-mounted switchgear is considered to be a vital protection component in present day underground distribution networks which are more reliable as compared to overhead lines. North America and Europe are investing heavily towards upgrade of their aging T&D infrastructure. Globally all countries are moving towards adopting underground distribution networks as they are less susceptible to lightning and have low maintenance costs.

Air insulated pad-mounted switchgear is the largest market segment nearly holding half of the total market in 2014. This is attributed to its economic viability. In areas with extensive space, air insulated switchgear is the primary choice due to its low cost. Air insulated pad-mounted switchgear market is further segmented by its voltage rating. Air insulated pad-mounted Switchgear at 16-25 kV voltage held the largest market share by value in 2014 followed by 0-15 kV air insulated pad-mounted switchgears. Asia-Pacific is the fastest growing market for pad-mounted switchgear. Growing trend towards underground distribution is driving the market for pad-mounted switchgears in the region. Massive T&D network expansion and industrialisation projects in Asia-Pacific countries are influencing the growth in the region.

Higher FDI can be considered in defence: Defence Minister Manohar Parrikar

While inaugurating the 9th edition of Defexpo India at Goa, India's Defence Minister Manohar Parrikar has said that, while Foreign Direct Investment (FDI) in Defence Sector is capped at 49 percent, cases for higher FDI can be considered on case to case basis. At the outset Parrikar also announced that the Defence Procurement Procedure-2016 (DPP-2016) has been uploaded on the website of Ministry of Defence, commenting that it will provide a push to the 'Make in India' campaign. He said the Government has been proactive in its 'Make in India' initiative and desires to also include 'Startup India' which will find opportunities in Defence sector. The Defence Minister stated that the Government has tweaked the policies to address the concerns of defence manufacturers and suppliers and enhanced transparency. The new procurement policy being promulgated by DPP-2016 will ensure faster pace in procurement especially through newly introduced categories under Indigenously Designed, Developed and Manufactured provisions. Such provisions will encourage Indian Industry in Defence Sector, he added.

Saab keen to 'Make in India' with Tata Power SED

Defence and security company Saab and Indian company Tata Power Strategic Engineering Division (Tata Power SED) have started the process of manufacturing Self-Protection Systems for Land-based Platforms, for the Indian market and for export to Saab's global market. The partnership will also involve joint development of the next generation Self-Protection System.

The process of Transfer of Technology for production of initial orders for Saab's global customers has already commenced at Tata Power SED.'s facility in Bangalore. Tata Power SED will eventually manufacture a large part of the system in India and also do final assembly. Tata will also be responsible for marketing the system in India. "Saab is fully committed to working with Indian industry to Make in India, and this partnership is another step in that direction. Tata Power SED's strengths in Defence Electronics manufacturing are a perfect complement to Saab's expertise in Electronic Warfare systems, sensors and self-protection systems for all domains", says Jan Widerström, Chairman and MD, Saab India Technologies.

OIS-AT, Rafaut to manufacture aircraft pylons in India

OIS Advanced Technology (OIS-AT) and Rafaut of France have entered into an additional agreement where OIS-AT and Rafaut have agreed to manufacture aircraft pylons in India in OIS-AT's manufacturing facility in the National Capital Region. Aircraft pylons are advanced technology items for aircraft to carry weapons, including bombs and missiles. The companies have also agreed to establish a joint research & development facility in India to cater to customised Indian requirements. "We are pleased that Rafaut has agreed to support establishing a manufacturing line for advanced aircraft pylons in our manufacturing facilities. When combined with our agreement to jointly establish a Research and Development lab to cater to the special requirements of the Indian military, is in support of the Government of India's Make In India program", said Sanjay Bhandari, CMD, OIS Advanced Technology.

Boeing, Tata, NTTF launch skills program

Boeing, Tata Advanced Materials Limited (TAML) and Nettur Technical Training Foundation (NTTF) announced the launch of a skills development program to train front-line workers for the aerospace industry. The first batch of students was inducted at a ceremony in TAML's Bengaluru facility. Sponsored by Boeing and conducted by NTTF, the "Learn and Earn" program offers students a three-year diploma program in Aerospace Manufacturing Technology (Advanced Composites), rolled out under the 'National Employability Enhancement Mission' (NEEM), a skills development initiative of Government of India. The program involves classroom sessions on fundamental theory, behavioral skills training and vocational training in manufacturing skills at TAML. This is a second initiative by Boeing, with training provided by NTTF, a partner of the National Skills Development Corporation (NSDC).

New Age of **Global ER&D Outsourcing**

Outsourcing can ultimately relieve a company of investing in fixed assets and dedicating additional engineering resources and labour that prove integral to take the core product to the market. Conversely, it can also allow a company to invest in additional resources to develop their core competencies. Here is an overview of engineering research and development outsourcing market.

By Samir Yajnik

The global engineering research and development (ER&D) outsourcing market has witnessed monumental growth in recent years. A gradual yet definite shift is seen towards the emerging economies like India so as to make the most of the engineering capabilities offered. The changing dynamics of the global manufacturing industry is necessitating segregation of core engineering functions from non-core engineering functions redefining the requirements that original equipment manufacturers (OEMs) have from their global ER&D outsourcing partner. The core functions that are vital in making the brand unique must be performed in-house.

Traditionally, the ER&D spend has always seen heavy investments from automotive OEMs and suppliers, and, the sector continues to lead the engineering services spend by industry vertical. The product development capabilities and manufacturing processes that are utilized under the ER&D outsourcing model for the automotive sector are fungible in nature and thus, they are being adapted in other sectors like aerospace and industrial machinery. Furthermore, the demands for localised products and faster time to market are also driving industry sectors like healthcare, medical devices and energy to concentrate on ER&D for solutions. With the focus on perennial demands like cost, savings and flexible capacity and a global drive towards resource usage efficiency, businesses are now witnessing a shift towards outsourcing to meet increased demand in the global ER&D operations efficiency.

> "ER&D functions operate through cutting edge processes like digital engineering that encompass areas such as design virtualisation, simulation based development, 3D manufacturing, concurrent engineering and even miniaturisation"

Addressing the Business Needs of Now and the Future

No matter which geography or vertical a business is situated in, manufacturers all over the world are facing the increasingly steep demands of maintaining or reducing costs, meeting evolving environmental and other procedural regulations and at the same time, improving time-to-market numbers. Moreover, there is increased expectation from consumers demanding innovation and detailed customisation in products and interfaces.

ER&D operations help businesses meet these demands through its focus on enhanced regulatory environments, developing market-specific models to cater to niche preferences and catering to software-led differentiation in a world where consumers are 'app'-driven. ER&D functions operate through cutting edge processes like digital engineering that encompass areas such as design virtualisation, simulation based development, 3D manufacturing, concurrent engineering and even miniaturisation—a growing trend in fields as diverse as medical diagnostics and oilfields, where applications range from wearables to nanobots that can be inserted in the body.

"ER&D operations help businesses meet these demands through its focus on enhanced regulatory environments, developing market-specific models to cater to niche preferences and catering to software-led differentiation in a world where consumers are 'app'-driven."

Global linkages and interdependencies in all functions of manufacturing have now led to the creation of a corporate 'ecosystem'. As the value chains have become disaggregated, organisations are driving innovations from global sourcing operations and developing new capabilities to operate seamlessly in these global value chains and extend the location advantage.

Making the Right Outsourcing Choice Matters

Thanks to increasing globalization, outsourcing has become more sophisticated than ever. The landscape of engineering domain is not product-centric anymore and focus is equally been given to the service industry that provides core as well as non-core engineering expertise. It is essential for the OEMs to differentiate the core functions from non-core ones to choose the right partner for ER&D outsourcing. Cost optimisation and labour arbitrage are not the exclusive criteria for the OEMs to partner with a service provider. In fact, the prospect for two organisations to grow hand-in-hand with a strategic outsourcing model that leverages core competencies is also a compelling factor. Such responsible outlook from the OEMs is precursor of desired results from the ER&D partner.

The Role of GICs and ESPs

In today's landscape, Global In-house Centers (GICs) are an indispensable part of the global services market. GICs not only strive to add capacity to the overall functioning of the organisation but also deliver meaningful Total Cost Ownership savings and value addition. These value additions come in various forms, including but not limited to, enhancing cost efficiency of operations with continuous productivity improvements, building end-to-end high skill capabilities, garnering revenue through extension or implementation of new services, enabling top-line growth and of course, maintaining the focus of the organisation on delivering an enhanced customer experience.

Engineering Service Providers (ESPs), on the other hand, enable businesses to run independently through tactical engineering support even in cases where the organisation might lack the capability or expertise in-house. ESPs make use of staff augmentation models for cost and labour arbitrage and bring in added expertise on an as-needed basis. In effect, this enables organisations to control and verify costs more clearly as compared to in-house engineering.

In order to make better use of the available resources, service providers are defining and implementing Global Engineering Centres (GECs) that are located near the client's site. These GECs are equipped with state-of-the-art operative capacities to facilitate collaborative outsourcing. Companies like Tata Technologies enables clients to build cutting edge products and delivering best-in-class operations with their dedicated or shared engagement model that provides access to a rich pool of global talent and engineering capabilities.

While problems of scale have traditionally been perceived to resemble a linear progress graph, the same does not hold true in most real-life business situations. Thus, using ESPs makes it easy for organisations to not only get access to a global talent pool but also solve problems of scale on as-needed basis. They provide surge capacity and flexibility that businesses require when they are developing complex systems under aggressive schedules. ESPs also allow for greater speed of deployment that results in quicker time to market and lower overall costs, more sustainable intellectual property and greater cost efficiency through addition of expert external sources without

The product development capabilities and manufacturing processes that are utilized under the ER&D outsourcing model for the automotive sector are fungible in nature

adding to the ongoing operational costs.

Over the last few years, ESPs have come to function like global engineering partners to their clients. They not only support the engineering design and production needs of their clients but also help them decide on the most effective innovation for the market and aid them in putting together the right mix of resources to take that solution to market. This shift is now evident with ESPs moving from a cost arbitrage model (responsible for engineering and cost outcomes) to a shared risk model of partnership.

Ready to Partner—the Indian USP

While the US and European countries remain hotspots for ER&D initiatives, localisation and innovation needs have steadily drawn focus towards Asian economies. A need to address dynamic customer demands makes it imperative for manufacturers to lend a local flavour and consequent customisation to their innovations. As Asia is already a major manufacturing base for most OEMs and has the added advantage of a readily available large talent pool, it is expected to account for nearly one-fourth of the global ER&D spend by 2020. India, on the other hand, is emerging as a strategic partner to global organisations even in the mature markets that need innovation and high value engineering solutions. India's outsourcing models such as solution delivery, ODCs and managed services are high up on the maturity scale making the country a preferred outsourcing destination. The ER&D industry in India is currently valuated at US$ 10 billion—accounting for over 15 percent of India's ITeS exports and employs over two lakh people. It has witnessed a double-digit growth and is estimated to grow further at a fast pace to reach US$ 30–38 billion by 2020.

It is noteworthy that India offers one of the largest third-party vendor bases leading to a generous flow of ER&D outsourcing. Alternatively, the country also has a mighty share of more than 24 percent as a global sourcing centre. Strategic geographic presence, better communication capabilities and shorter product development lifecycles attract investors to outsource their ER&D requirements to the Indian market.

There is a visible move on customer emphasis, currently witnessing a decisive shift towards enabling innovation and transformation besides cost imperatives. At this inflection point, there is a definite need for businesses to partner with manufacturers offering innovations in their products and services, specific not only to their local markets but to the global market. To this end, there is tremendous innovation being undertaken in the product development domain with Indian engineering service providers (ESPs) making substantial investments in domain expertise and infrastructure to cater to the increasing customer requirements of product development. Additionally, Indian organisations possess the partnering mindset to co-innovate with global players for the world market. Indian organisations have demonstrated their ability to provide alternative solutions to not just design problems, but also enhancing productivity through automation as well as showcasing innovation in engineering. As a result, customers have begun to offshore more complex work to Indian ER&D players.

"It is noteworthy that India offers one of the largest third-party vendor bases leading to a generous flow of ER&D outsourcing. Alternatively, the country also has a mighty share of more than 24 percent as a global sourcing centre."

Product to Market without Scaling—Made possible with outsourced ER&D

For manufacturers, the value of ESPs in ER&D is derived from their ability in product development to execute the conversion from conception to manufacturing a viable product to serve a real market. These leave organisations free to focus on their core competencies even as they continue to draw the advantages of methodology and domain expertise from external sources to shorten product development cycles and produce efficient engineering outcomes.

The author is The President Global Delivery & COO APAC at Tata Technologies.

A value stream

A simple production set up which has an interface between man and machine, where the data is not only captured but also utilised to improve the quality of the output, in this case, the end product would be an ideal Super Shopfloor, says **Dr. Andreas Wolf,** Executive Vice President, Manufacturing & Quality, Bosch Ltd., India

Q What according to you is a 'Super Shop floor'?

A value stream when enabled with connectivity to offer the highest levels of "Productivity, Quality and Safety levels apart from offering a lean approach and continuous improvement is how I would define a super shop floor. A Super Shopfloor need not necessarily be fully automated which is usually interpreted as high cost requiring a sophisticated technical line and equipment. A simple production set up which has an interface between man and machine, where the data is not only captured but also utilised to improve the quality of the output, in this case, the end product would be an ideal Super Shopfloor.

Q How does a 'Super Shop floor' manage cost?

It is a misconception that a super shop floor needs to be high end, sophisticated and involving high cost set-up. Every single rupee spent on improving the shop floor must yield in cost savings of at least twice if not thrice the amount spent, in a span of less than two years. Several companies globally have been leaders in the connected industry space. What we need in India is a localised smart solution – that is a solution which is adapted to the conditions and requirements of India. The cost benefits through better quality and productivity will be much more and long lasting as compared to the amount spent in making small improvements in the set-up.

"Quality and productivity go hand in hand. You cannot weight out one over the other. What use would it be to make 100 cars in one hour with 98 of them being defective? To a certain extent, productivity can be compromised for better quality."

Q What role do 'people' play in powering a 'Super Shop floor'?

In a typical 'Super Shopfloor' or what we call as the smart manufacturing set-up – people move hand in hand with the technology. Just before the concept of connected industry was widely established, there was the 'CIM' – Computer Integrated Manufacturing where we spoke about 'Ghost shifts' and 'machines running machines'. In a smart manufacturing set-up, People are at the center and are the drivers for the entire set-up.

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

Quality and productivity go hand in hand. You cannot weight out one over the other. What use would it be to make 100 cars in one hour with 98 of them being defective? To a certain extent, productivity can be compromised for better quality.

Q Is a 'Super Shopfloor' Green?

Being green is an embedded aspect of the super shop floor concept. We have a lot of cost saving projects by using connected industry in order to reduce energy consumption.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ULTIMATE GUIDE TO PROFITABLE MANUFACTURING
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For Indian Manufacturing
Nominations open till 7.00 pm, April 25, 2016
Super SHOPFLOOR 2016 Awards
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Group photo of last year's winners

THE CATEGORIES

- ✓ Safety
- ✓ Quality
- ✓ Productivity
- ✓ Green Manufacturing
- ✓ Innovation
- ✓ Machining Excellence New
- ✓ Technology Adoption New
- ✓ Super Shopfloor of the Year

Nominations invited from Large Enterprises and SMEs

Awards Night

6.00 pm to 7.00 pm	Registration
7.00 pm to 7.05 pm	Opening Remarks
7.05 pm to 7.15 pm	Welcome Note by Presenting Partner
7.15 pm to 7.30 pm	Entertainment Performance
7.30 pm to 8.15 pm	CEO Panel Discussion
8.15 pm to 8.40 pm	Awards Ceremony – Part 1
8.40 pm to 8.45 pm	Vote of Thanks
8.45 pm to 9.00 pm	Awards Ceremony Part 2
9.00 pm to 9.05 pm	Photo Session
9.05 pm onwards	Cocktails & Dinner

May 26, 2016. PUNE

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Industrial Lubricant Partner

MOTUL TECH

Metrology Partner

FARO

Jaya Hind Montupet opens Gravity Die Casting plant in Dewas

Jaya Hind Montupet Pvt Ltd; a joint venture between Jaya Hind Industries; Pune based Aluminium Die Casting Company and Montupet S.A of France celebrated a grand opening of its ultra-modern Gravity Die Casting foundry at Dewas. This Joint Venture was formed for the development and manufacture of automotive cylinder heads in India. It will develop complex cast Aluminium components drawing on the engineering strengths of Montupet S.A., and cost efficient manufacturing experience and in-depth market knowledge of Jaya Hind Industries (JHI). Set up with an initial investment of Rs200 crore, this plant has a current installed production capacity of 325,000 cylinder heads per annum. The plant has

been built with capability of increasing production capacity up to one million cylinder heads per annum as the need arises. This plant is capable of producing high precision cylinder heads compatible for Euro IV, V and VI engines to power the new age vehicles manufactured by the global OEMS and is easily amongst the most advanced Gravity Die Casting foundries in the world. The plant has started rolling out the first batch of cylinder heads for Ford's global engine program. The lead country for the launch of the new global gasoline engine is India and this facility is the first to be producing this in the world. Prasan Firodia said, "The inauguration of this state of-the-art plant at Dewas marks an important step into the manufacture of high precision cylinder heads in India. It is a matter of great pride that we shall cater to not just India but also the Russian Federation and entire Asia Pacific regions".

Mercedes-Benz S 400 launched; local production started

India's largest luxury car manufacturer Mercedes-Benz has launched the S 400, a new variant of its flagship luxury model the S-Class, in Hyderabad. The S 400 was launched by Roland Folger, MD and CEO, Mercedes Benz India and Yashwant Jhabakh, Group Chairman, Mahavir Motors. Folger said, "Mercedes-Benz believes in introducing the latest products and variants in the market at regular intervals, to keep customer interest and curiosity intact in the brand. This strategy we firmly believe has contributed to our unmatched success in India. With the launch of the S 400, we further extend the S-Class model range and also bolster our strong presence in the prestigious S-Class segment. The S 400 symbolizes benchmark craftsmanship, affluence and grandeur. No other car stands for the Mercedes-Benz brand promise more than the S-Class". Folger further added, "The S 400 will be locally manufactured in our world-class production facility in Chakan, Pune. This is yet another firm affirmation of our vision of 'make in India', and our unwavering commitment to the Indian customer in presenting the best of our global offerings."

Maruti Suzuki India Ltd. records highest-ever annual sales

Maruti Suzuki India Ltd. sold 129,345 units in March 2016. This includes 118,895 units in the domestic market and 10,450 units in exports. It sold a total of 111,555 units in March 2015. With this the Company ended 2015-16 with its highest ever sales of 1,429,248 units, a growth of 10.6%. This comprises highest ever domestic sales of 1,305,351 units and 123,897 units of exports. For the 4th year in a row, the top four best-selling models in India are from the company: Alto, Dzire, Swift and WagonR. New models, innovations, expansion of existing network and introduction of NEXA brought incremental numbers.

Tata Motors to supply 619 6X6 HMVs to Indian Army

Tata Motors has signed a follow-on contract for the supply of an additional 619 units, of its high-mobility (HMV) 6X6 multi-axle truck, from the Indian Army. Being built with a material handling crane, the Tata 6X6 HMV is meant for the loading-unloading and transportation of ammunition pallets, spares and other operational equipment. This is in conjunction, to an earlier order awarded to Tata Motors for 1,239 units of its 6X6 High Mobility Vehicles, and is the single largest order awarded to an Indian private OEM (Original Equipment Manufacturers) in land systems by the Indian army, under the Indian Ministry of Defence DPP (Defence Procurement Procedure). Developed indigenously, the Tata 6X6 high mobility all-terrain all-wheel drive vehicle, has demonstrated maximum performance in the most demanding conditions and is built on a capable platform for diverse tasks, utilizing Tata Motors state-of-the-art systems and aggregates.

Tata Motors launches Tiago

Tata Motors has commercially launched its new hatchback, the Tiago. Speaking at the launch, Guenter Butschek, CEO & MD, Tata Motors, said, "The Tiago reflects our passion and commitment to bring exciting, technology driven cars into the market. Class leading features, advanced driving dynamics, outstanding fuel efficiency, offers a great value for a contemporary, young car." According to Mayank Pareek, President, Passenger Vehicles Business Unit, Tata Motors, said, "This is the first car to be launched under our Made Of Great campaign and the first to embody our new IMAPCT Design language. This globally benchmarked car, represents the next big leap in our transformation journey." With inputs from the Pune, UK and Italy design studios, the TIAGO's appealing exterior design has a dynamic silhouette to emphasize the compact look and sharp design. The new 3-dimensional 'T' Logo is placed in a semi vertical position on the signature hexagon grill, giving it a bold, expressive face with a confident, agile stance.

Waaree to power electric solar car

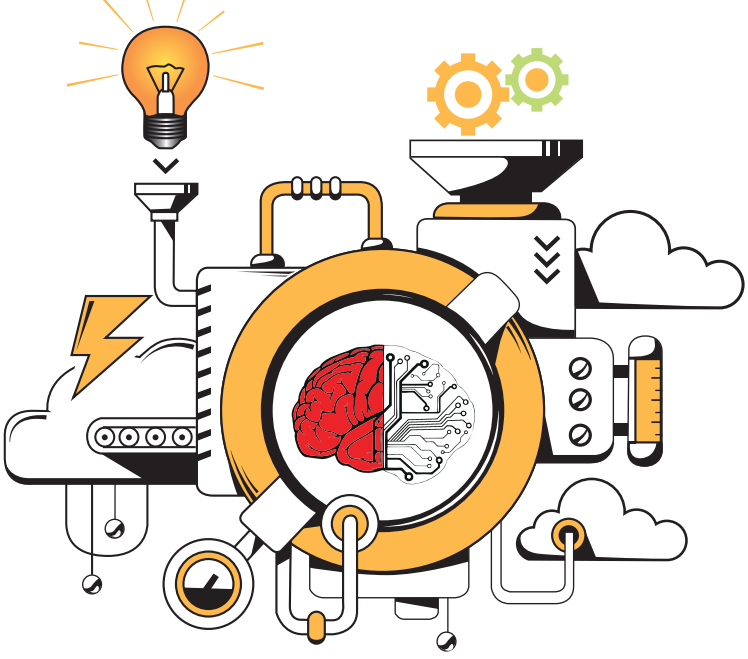
Waaree Energies Ltd. is sponsoring the making of Electric Solar Vehicle by the VJTI RACING – the collegiate club of VJTI College, Mumbai. The club has been constantly participating in events involving manufacturing of ATV's and formula-type cars.

The idea is to design a vehicle that is feasible enough to be manufactured on an industrial scale and also economically viable for all sections of society. It is meant to be a technology that provides an efficient way of transportation using renewable source of energy. The car uses seamless pipe chassis, which makes it easier to manufacture. It has a compact design and provides high manoeuvrability and short turning radius. The car is driven by 2KW BLDC motor along with well-engineered power transmission, which helps in achieving high speeds with low consumption of power. The area and positioning of solar panels is chosen with utmost optimization so that all energy requirements are met. The car uses Li-ion batteries by virtue of their less charging time, increased output and at the same time reducing the overall weight.

Toyota unveils the new Prius Prime

At the 2016 New York International Auto Show, Toyota has unveiled the new Prius Prime, an ultra-efficient model with a plug-in hybrid powertrain. The Prius Prime's manufacturer-estimated 120 or above MPGe (miles per gallon equivalent) is expected to be the highest MPGe rating of any Plug-in Hybrid. It also represents a substantial 26-percent enhancement over its predecessor, a result of greater battery capacity and an improved hybrid system. In hybrid mode, the Prius Prime is targeting a hybrid MPG equal to or better than the Prius liftback. The Prius Prime is expected to offer an estimated two times the electric range of the previous model -- 22 miles – meeting the daily commuter distance of over half of U.S. drivers, and drive at speeds up to 84 mph without leaving EV mode.

Digital Enterprise



Connectivity and interaction among parts, machines, and humans are expected to make production systems faster and more efficient, says **Karlheinz Kaul**- CEO of Business Unit Digital Factory, Control Products - Siemens AG

By Niranjan Mudholkar

Q. What role will 'Smart Factories' play in the success of the 'Make in India' initiative, which aims transform India into a global manufacturing power?

Karlheinz Kaul

Digitalisation of the manufacturing process or Smart Factories has long grown to become a vital lever of growth in almost all industries, and the comprehensive optimisation of systems and processes has made it the key to increased productivity, efficiency, and flexibility. For example, connectivity and interaction among parts, machines, and humans are expected to make production systems as much as 30 percent faster and 25 percent more efficient and elevate customization to new levels. Manufacturing will be transformed from single automated cells to fully integrated, automated facilities that communicate with one another.

This will be a mandatory adaptive process for Indian manufacturing companies to boost flexibility, speed, productivity, quality and be globally competitive.

Q. Will 'Smart Factories' mean sustainable and ultra-efficient production lines that require little or no human intervention? Will it mean increasing automation and robotics at the cost of human jobs?

The simple answer is 'No'. In fact, we believe that labour productivity will rise as a result of more targeted management of workforces and even more extensive automation of business processes. Manufacturing has already been transformed in several industries, For example, testing now takes place using virtual prototypes rather than real ones, and teams from various firms collaborate in the cloud on complex virtual designs of large-scale developments, seamlessly tapping into global talent pools. Thus the productivity of physical assets will be drastically improved through the use of smart infrastructure, the integration of physical goods into the digital world through embedded wireless devices, and better investment decisions through deeper analysis of increasing amounts of data.

Therefore, workforce would have to be redefined in terms of its skills, relevance and its place in the newly defined value chain. It would need to be part of the Digital thread and therefore, would need to be dynamic with frequent evaluation, up-gradation and re-skilling to remain valuable & relevant. This is a paradigm shift from where we are today.

Q. Today, consumers can provide feedback directly to manufacturers through various digital platforms. How can a 'Smart Factory' make the most of this information?

In the near future, manufacturing will be characterised by a considerable increase of horizontal exchange of data across various production cycles starting from planning, design, engineering, execution and services as well as the integrated use and analysis of data. This digital integration will make the whole production process a lot more flexible to specific inputs in any part of the production process and digitally simulate the necessary adjustments and optimisations in the rest of the production cycles.

Q. How will a 'Smart Factory' adopt to the evolution from simple 'product development' to disruptive innovation'?

Profound changes are expected in products and the way they are designed and manufactured which will cause the global manufacturing sector to look very different in the future from how it looks and operates today. The expanding role of software and electronics in what have been traditionally mechanical products is driving new levels of product innovation and intelligence. Add to this the fact that new, disruptive technologies are being leveraged which make real product innovation even more challenging.

At Siemens we believe that manufacturers must weave a digital thread through ideation, realization and utilisation. It's not enough to digitise—mimicking processes digitally for incremental improvement. You have to digitalise—make the digital thread a proactive agent in driving your business. With a fully optimised 'Digital Enterprise', manufacturers are better equipped to initiate or respond to disruptive innovation.

Moulding the Future

Organised by Tool & Gauge Manufacturers Association of India (TAGMA), Die & Mould India International Exhibition 2016 concluded on a positive note. Read on to know more about the event and participants that took advantage of the platform.

Die & Mould India International Exhibition (DMI) is known to be one of the popular platforms for the die & mould industry to showcase best of its capabilities. The 10th edition of this biennial event was recently held at Bangalore International Exhibition Centre (BIEC) during April 6–9, 2016. It was inaugurated by KS Sankaran, Vice Chairman, Makino Asia Group Companies; A Dayanand Reddy, President, TAGMA India and Managing Director, Vasantha Tools Crafts Pvt Ltd; N Reguraj, Managing Director, Nettur Technical Training Foundation; R Sree Prakash, Vice President, TAGMA India and Anil C Kilachand from STIACK Engineering Pvt Ltd in glittering ceremony.

With the participation from industry giants to MSMEs, BIEC became a melting pot for the industry and a forum to meet who's who of the sector. Similarly, visitors could browse through variety of latest products and innovations catering to the die & mould industry. The wide product range showcased at the show included additive manufacturing, CAD/CAM system related to dies & moulds, CNC milling, machining centre, EDM, die/mould polishing solutions, die spotting machines, etc.

As DMI 2016 provided a perfect platform to look at the innovations as well as networking, it turned to be perfect forum to judge market conditions and set new trends. In a way, it was an ideal way to mould the future!

The quality of visitors at the show was quite good

ACE Micromatic's booth at DMI 2016

Open Mind Cadcam Technologies Presents New Modules at DMI 2016

The latest solution in the CAD/CAM sector presented by Open Mind focuses on reducing operation times. **Rajeev R Vaidya,** Managing Director, Open Mind Cadcam Technologies India Pvt Ltd speaks to The Machinist about event and the company's future plans.

What new innovations did you showcase at DMI 2016?
We are showcasing new development cycle called hyperMILL MAXX Machining. This package comprises three separate modules for highly efficient roughing, finishing and drilling. The finishing module integrates conical barrel cutter that reduces the time consumed for the activity drastically. Whereas the drilling module features helical drilling, which is a completely new concept for the Indian market.

How has been the last one year for Open Mind Cadcam Technologies India Pvt Ltd?
The last year has been very encouraging and progressive for our company. We registered around 25–30 percent growth if the figures have to be compared with that of 2014's.

What are your expectations from the coming year?
This year, the market seems to be slow. I am expecting around 20 percent growth this year as compared to 2015. As we sell five axis CAM software, our target audience is limited to five axis machine owners. Hence, our market is directly linked with the sale of five axis machines, which I believe to be low this year.

View of the Open Mind Technologies' booth

Assuring High Performance

Toshiba Machines exhibited its latest Servo Machine at DMI 2016. **Girish R Handigol,** Head–PPM, Marketing, Toshiba Machine (Chennai) Pvt Ltd shares his thoughts behind the company's participation in the show and machines at display.

What are the new innovations that you are showcasing at DMI 2016?
The Servo Machine that we are displaying at the show incorporates lot of technological advancements. In Servo class, this will be the lowest power consuming machine. It consumes 15-20 percent lesser power than any other Servo Machine made

in India. Also, it delivers consistency and accuracy and also features advance controls.

What are you expectations from the show?
Though we do not directly cater to this market, we are participating in the show to mark our presence. The show was been good for us as we have booked some orders. Also, it is an ideal platform to meet the customers and educate them about the new innovations.

How was the last year for the company?
The last year was good for our company, we registered 12-14 percent growth, which is satisfying. We have ambitious plans for coming years and we intend to meet customers' stringent demands related to high accuracies, power savings, etc. by delivering best quality products. With this, we plan to gain the leadership position in India.

Which factors are contributing towards the growth that Toshiba Machines registered last year?
There are various factors responsible for the growth including Indian government's positive approach towards the manufacturing industry. It has created positive environment in the businesses. Customers in industries such as automotive, electrical, medical instruments, packaging, etc. have been using our machines for last few years. Due to the assurance of high performance, we have received many repeat orders from the existing customers.

Hybrid Technology is the Future

Delcam Ltd, a CAD/CAM software company, presented its whole range of the software at DMI 2016. **Vineet Seth,** Managing Director, South Asia & Middle East, Delcam Ltd speaks to The Machinist about products presented and technologies of the future.

How has been the last year for Delcam?
Very good. We closed the year in January on a very positive note and grew the business by 27 percent. It was a fantastic achievement specially because when a company is small, it is easy to grow the business by large percentage but being the number one CAM brand in the country, it has been a challenging task.

Where this growth is coming from?
It is coming primarily from the automotive sector is that continues to invest and grow. Therefore, the supply chain like tool & die makers, part manufacturers, etc grows as well. Besides, woodworking and aerospace are other segments which are seeing lot of growth. Large Indian corporations which have entered in this sector recently intend to make big impression. Additionally, the government's initiatives such as Make in India amongst others are creating positive business sentiment. Combination of all is being positive and contributing towards growth.

Vineet Sethi, MD, South Asia $ Middle East, Delcam Ltd.

How has been the DMI 2016 for you?
We have good footfall and have received quality visitors and generated enquires.

It is a big leap for Die & Mould India show to move out of Mumbai and come to Banglore. This facility is world class and it creates impression on anybody visiting.

What are your primary attractions at the show?
We are showcasing the entire range here. We have new versions of the flagship software that we offer PowerMill, PowerShape, PowerInspect and ArtCam. We enhance the customers' experience by enhancing the existing software than introducing the new ones.

What are your plans for the coming years?
One of the upcoming technologies is the hybrid machines that incorporate additive and subtractive technologies in the same enclosure. That is the future even we are looking at. We already have software for 3D printing manufacturing and traditional methods of manufacturing. What we have to do is to bring these two technologies on the same table. This will offer our customers freedom to produce parts as per the choice of their technology.

Aiming at Long-term Relationships with Customers

Misumi India participated in DMI 2016 not only to showcase its products but also to spread message that the company's approach of playing an active role in the customers' growth. **Daisuke Mohara,** Die & Mould Department, Misumi India shares his opinion on the event and speaks about the company's business in India.

What are you showcasing at DMI 2016?
More than to showcase any specific product, through this platform we would like to tell our customers that we have a wide range of products and solutions related to press and mould. Also, we would like to establish a fact that through our high quality products and services, we intend to help customers grow. For example, we have launched a web-based system through which customer can easily get a quote and place an order without wasting much time. This will help making purchases easier and convenient and also less time consuming for customers.

How has the last year for Misumi India?
In India, our major customers are in the automotive sector in India. As I believe this sector is stagnant, the last year was a bit low for us.

What are your expectations from the new year?
I understand the 2016 to be similar to 2015 in terms of business. However, we hope it turns to be better than 2015.

Going Steady!

Mastercam from its corporate side has participated in the DMI for the first time. Earlier the company has been present in the show though dealers. **Dave Moskey,** Business Manager India, CNC Software, Inc. (Mastercam) speaks about the growth in the Indian market and its future plans.

How has been the show for Mastercam?
It was good. We had good flow of quality visitors. They were here for a specific reason and looking for the solution that will help them in the die & mould industry.

How has been last year for Mastercam in India?
We have seen steady growth in India for last 5 years. We have always grown a little bit from corporate side and we are putting more efforts on the Indian market in terms of advertising, participating in more shows and learning what the Indian machine tool industry wants and fulfilling those requests. We have seen 5-6 percent growth every year. This is good as compared to rest of the industry. In US, we registered two percent increase last year which was good considering most of the industry stayed flat.

Which industry sectors are contributing towards this growth?
Aerospace industry is being at the forefront and we are starting to see good pick up by the die & mould industry as well.

What are you showcasing at the show?
For this show, we are displaying Dynamic Milling. Through this we ensure long life for tools. Also, it will help customers achieve cutting speed beyond they normally achieve. It brings 60-70 percent cycle reduction time. Additionally, we are also showcasing the demo of Mastercam 2017, which features a complete new look and design. This has received a good response from visitors and customers.

Growing with India

With a solid last year, **P Ramadas,** Managing Director, Ace Manufacturing Systems Ltd. believes his organisation is all set to leverage the expected explosive growth in the Indian manufacturing sector

Belated congratulations on winning the lifetime achievement award at Imtex Forming in January. Indeed, you have seen this industry grow as a parent would see a child grow.
Yes I fully agree with that because I started on a mission for life 46 year back. And at that time there was no indigenous development, only collaborations. I joined as a young engineer from IIT Madras with HMT. I have seen indigenous machine development starting from scratch to today's level. About 22 years back I became one of promoters of this company called AMS. Today, we are the number one in the machine tools sector in the country. Last year we crossed thousand machines in a year and somewhere it is nice to feel that if you have grown.

So last year has been good for you?
Extremely good. I think it has been one of the best performances in the country. We have grown by 18 percent last year and I have touched the milestone for the company with the highest turnover last year. Our group has touched about Rs1200 crore.

And where is this growth coming from?
For the last one month, it came from the two-wheeler industry otherwise it has come from exports. Our export has gone up very much in the last two years. Last year we had about Rs39 crore and the previous year it was about Rs29 crore. So that was a good breakthrough. Earlier it was hardly Rs5-6 crore. In fact, our number one customer is a French customer contributing Rs12.8 crore.

Your expectation for the coming year, including this show particularly?
We are planning to go for 30 percent. We support "Make in India" the dream of our PM. If it takes off then we will look at 40 percent! But we are getting ready for this boom. We are also adding capacity to meet the demand.

An eventful year

With a slew of activities including new products and technology centers, Bharat Fritz Werner Ltd. has set the stage for growth in the new financial year, says **Praful Shende,** the Company's Head – Sales & Marketing.

How's been the last one year for you?
It has been quite an eventful year. From the business perspective, we have grown compared to the earlier year and the growth continuous. We have introduced new products and new offerings last year and they have all been very well accepted. We have invested very significantly in turning business last year and that product line has been very well accepted by the customers. Yes, we have entered late in the turning business but now we have one of the largest product ranges in the market in this business just like what we have in milling. I don't think many players have that kind of range in this market today.

Where has the growth for you come from?
While we have grown over the previous year despite a tough year, there haven't been big projects. But it has also given us the time to go to more diverse segments of customers. These have largely been small and medium enterprises.

What's new at this show?
We have got our matec machines here. And we have got a new machine for precision hard part die machines. Such machines are largely imported and not easily available in the market. We have introduced this machine with leading state of the art features. It addresses a lot of tough requirements like the quality, accuracy and complexity of the surface finish. We are hopeful that this product will find its rightful place in the Indian market.

Expectations from the new financial year?
It is not a question of whether growth will happen; it is only when. We have equipped ourselves very well over the last one year. One thing that we have been doing very differently for some time now is that we are very intently and actively listening to our customers. That process will stay on course. That has allowed us to get closer to the customer. We have also opened tech centers last year and that process will grow. We will bring out a slew of products and service offerings.

In line with Vision 2020

Vikas Taneja, Vice President (Marketing), Jyoti CNC Automation Ltd., says that his organisation has a vision and whatever growth is required every year they are in line with that.

The last one year and particularly the last few months have been good for Jyoti. Where is this business coming from?
See, this is not a single industry which has grown separately; it is the overall growth which we have seen. Industries like automotive and capital equipment are definitely growing. Especially in the last quarter, they have done very well.

What are your predictions for the new financial year?
We have been talking about the Vision 2020. So, we have a vision and we are working towards it. So whatever growth required every year we are in line with that; that's how we see it.

Basically see good growth coming for the next year?
Very good growth. We are looking at 40-50 percent growth even this year over previous year.

Any new machines that are lined up for launch?
At the exhibition here, we have a vertical machining centre VMC 1580. That's a bigger machine with 1500 x axis and y axis 800. So that's the machine which is a new launch here. It's a very rigid machine capable of handling bigger components. In general, we have a big stress on R&D on a very regular basis. So every exhibition that we participate, like for e.g., IMTEX, every two years you can see a lot many new products coming out every time. It also shows that we are continuously listening to our customers and understanding their requirements.

You have the Huron brand, which is a French brand. So how's that brand doing in India?
That brand is a very premium brand in Europe. They basically cater to the high precision industries and especially the aerospace sector which is coming in India now. So we see a good growth for Huron in India as those machines are required to produce for the world and if you see the caption that we have, 'Make in India, for the world'. So that's what we are actually going ahead with.

Gearing up for tomorrow

Subbarayan S, Deputy General Manager, Die Mould, Makino India Pvt. Ltd. believes that things are slowly getting better and his organisation is gearing up to meet the growth

How has been the last one year for Makino?
Little quiet, but looks like, that period is over; things are getting quite better. Still not comfortable, but we are seeing positive signs.

You basically have high end machines and the industries which are using these machines they haven't been doing so well in the last one year. So now that these industries started to do slightly better, you have better hopes for the next year?
Actually, if you talk about the die and mould industry, they did pretty well in the last two years. Look at the tool rooms; most of them were very busy. Most of them have invested and expanded capacity and are continuing to do so. Tool room industries by itself were always growing. Mainly because most of the auto companies were busy in developing new models.

Any new product that you brought for this show?
We have brought some of the upgraded products. And we have introduced high precision, high speed, and high RPM machine. This is not new to the global market but in the Indian market, this is something new. It has got a 30,000 RPM spindle and it's a very high precision machine targeting the connector industry, optical moulds and medical moulds and some of the emerging applications like mobile phone parts. The market in India is very small but we are seeing a future for it.

Expectations from this particular show?
This show has traditionally been more of networking with customers. It is a mix of machine tool and end user so half the participants here are our customers, so it is more of networking. They need machines and we need customers. We were busy talking business, talking new trends, making new discussions, and talking new investments. The beauty of this show is a lot of networking happens amongst the participants. And those who come are also very specific.

Die & Mould competence across the board

The most accurate, state-of-the-art technologies for tool and mould making are the center of attention in the HSC Center.

DMG MORI presented four high-tech machines and innovative production solutions for the die & mould industry live in operation at its 144 sq m booth at this year's Die & Mould exhibition in Bangalore. That advanced production solutions ensure competitive ability in the manufacturing industry is an undisputed fact. DMG MORI supports its customers in this respect with its many years of experience and holistic process competence. A key feature in the range of products and services of the leader of innovation is also its specific branch orientation. Thanks to innumerable projects in the die and mould making branch, DMG MORI has been able to build up a wealth of application-specific expertise from which its customers today benefit.

DMG MORI presented its branch competence with the powerful entry-level vertical machining centre ecoMill 600 V as well as the high-tech vertical machining centers DMC 650 V and NVX 5080 and the universal milling machine DMU 65 monoBLOCK®.

CELOS® was on board, as it is in all high-tech machines from DMG MORI. This uniform, app-based user interface enables consistent management, documentation and visualisation of order, process and machine data. In die & mold applications in particular, users benefit here from a seamless process chain.

CELOS® from DMG MORI for Industry 4.0: The topic "Industry 4.0" is dominating the discussion of the future like no other, even in the sector of machine tool construction. As the leading manufacturer of metal removing machine tools worldwide, DMG MORI supports its customers on their way to digital transformation of manufacturing process chains with the app-based CELOS® system, which the machine tool manufacturer first presented around three years ago and which it has consistently continued to develop in a targeted manner ever since. Using this uniform user interface for machine and office PC, employees in shop floor and job scheduling can manage, document and visualise job order, process and machine data.

Thanks to its open architecture, CELOS® allows the exchange of information with higher-level structures in addition to its effects in the shop floor area. So CELOS® offers customers complete integration of their machines in the company organisation while simultaneously creating today the interface of metal cutting production in the cyber-physical production system of the future. The benefits in day-to-day operation are convincing: a 30 percent time saving in tooling times and 50 percent lower time and effort for the calculation of technology values or the search for important information are just a few of the effects that can be achieved with CELOS®.

ecoMill V series – DMG MORI has defined a new standard of performance in the sector of entry-level machines with the ECOLINE product line. Even at the very first glance, the vertical machining centre impresses with its new design that ensures further improved work ergonomics and a higher level of value retention. The ecoMill V series is based on a C-frame cast iron bed for the best stiffness and vibration characteristics ensuring highest precision. Ball screws of the highest quality

HSC Center and Mould Laboratory – die & mould competence built on years of experience

Die & mould applications have ranked high at DMG MORI for many years and this has resulted in an enormous wealth of experience in this sector on the one hand and the development and continued development of path-breaking manufacturing technologies on the other. The HSC Center in Geretsried and the Mould Laboratory in Japanese Nara impressively underscore this competence with specialised application technicians who always develop optimum manufacturing solutions for the tool and mould making sector. Trials are carried out here, customers are given technological support and training courses are offered.

The demands on precision, long-term accuracy and surface qualities are met by stable DMG MORI machining centers that are convincing with their thermo-symmetric design and innovative cooling systems. While spindles with shaft, flange and sleeve cooling ensure best surfaces, dynamic linear drives enable the required precision and at the same time shorter machining times.

CELOS® enables smooth entry into the future of metal cutting production, because this takes place gradually. Customers who decide for CELOS® today receive firstly unlimited access to the existing 16 CELOS® APPs and secondly they open up the chance of benefiting from future APPs.

and a powerful 12,000 rpm spindle were combined to meet the highest standards in production. The performance of the ecoMill V machines even in the smallest size is outstanding already in the standard version. The highest precision (without direct scales) can be realized, due to direct coupling in X / Y, no belt drive for no backlash. An optimized machine structure also increases stability during machining, and a high degree of manufacturing flexibility is provided in the standard version by having 30 tool pockets in the tool magazine. The absolute highlight is the new 19 – inches DMG MORI multi-touch SLIMline® multi-touch control with Operate on SIEMENS (19" / Operate on SIEMENS / 400 V) with top screen resolution and touch function represents the next advanced step for a modern user interface. The practical and ergonomically optimised 19" multi-touch display with its maximised resolution and 45° swivel range offers decisive user benefits.The new ecoMill V series is also available with DMG MORI SLIMline® Panel (15" / MAPPS IV on FANUC).

For more info, visit: http://in.dmgmori.com/

Various metrology products

At the Diemould exhibition, Renishaw highlighted 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 was a significant focus on the company's additive manufacturing (3D printing) systems with the new PlusPac™ upgrade for its AM250 additive manufacturing machine.

The company had active demonstrations of its Equator gauging system along with various machine tool software's catering to Diemould industry.

Renishaw is the UK's only manufacturer of a machine that 'prints' metal parts and visitors to the Renishaw stand were able to see applications that demonstrated the capabilities of the company's additive manufacturing technology and Strain gauge high-accuracy machine tool touch probes - Unparalleled accuracy and repeatability make this technology the best choice for complex multi-axis work and machine calibration .

RENGAGE™ technology: This delivers true three dimensional (3D) measurement performance and submicron repeatability.

The Primo™ system – opening up the world of precision manufacturing: An entry-level machine tool probing system that opens up the world of precision manufacturing to all types of manufacturing operation.

Renishaw fixtures: 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.

Automated gauging and process monitoring software for the Equator™ gauge: 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.

Enhancements in metal 3D printing: Renishaw's laser melting systems utilise a pioneering, additive manufacturing process capable of producing fully dense metal parts direct from 3D CAD, using a high-powered fibre laser.

For details, visit www.renishaw.com

First PhillipsCNC Open House in India announced

Phillips Corporation based in Maryland USA with operations in the US, China, India and Europe is a 55 year-old global supplier of manufacturing technology, products and services; primarily focused on CNC machine tools (metalworking) and additive manufacturing. In India Phillips Corporation through its subsidiary CNC Servicing and Solutions India Pvt Ltd represents industry leading global brands such as Haas, Hermle, SHW, Zeiss, Sunnen, Tsugami, Maple, Kent etc in India. The 'PhillipsCNC Open House' in India - the first of its kind will be hosted at the Phillips CNC Technical Center in Navi Mumbai from May 5-7, 2016.

Visitors will get to witness a plethora of High Performance & Precision CNC Machines ranging from Lathes to High-precision Surface Grinders and more.

On display:
Kent KGS-84AHD Precision Surface Grinder,
Tsugami M08J CNC Lathe and B0205 Sliding Head Turning Center with Bar Feeder,
Maple Taiwan ME- 850 Vertical Machining Center
Sunnen USA SV-2015 Vertical Honing Machine
Zeiss Germany/India CONTURA G2 CMM

Alongside the machines will be Delcam the CAD/CAM experts, Tooling Experts from SECO Tools and MMC Hardmetal India, Graphite Machining partner Prime Industries, Nasik.

This event showcases the latest technologies in Milling, Turning, Honing, Grinding and Measuring with experts on hand to provide solutions helping manufacturers enhance their quality and productivity.

CNCSSIPL to host Haas Demo Day in Mumbai

Haas Factory Outlet – A Division of CNC Servicing & Solutions presents the Mumbai Demo Day, the first for the year 2016. With live demos & tours, the event will be conducted at the Haas Factory Outlet in Kopar Khairne, Navi Mumbai from May 5-7, 2016.

Visitors at the Demo Day will see the company's latest generation CNC machines: VF-2SS & ST-35. The center of attraction would be the New Generation Control (NGC) from HAAS which will be showcased at this show.

The Haas NGC Control: Years of development have gone into designing the best control hardware and software in the industry. The new generation control packs even more innovation into what was already the industry's greatest overall CNC control.

The popular Haas VF-2SS CNC vertical machining center has travels of 762 x 406 x 508 mm in the X, Y and Z axes. The machine uses a 40 taper spindle driven by a 22.4 kW vector drive motor delivering high torque through to a maximum speed of 12000 rpm. The VF-2SS boasts of a 24+1 station High Speed Servo Tool Changer and 35.6 m/min rapids on the three main axes.

The Haas ST-35 big bore CNC lathe can accommodate bars up to 102 mm in diameter and offers a capacity of 533 (dia) x 660 mm (length) with 806 mm of swing. The 29.8 kW, 2400 rpm spindle is served by a two-speed gearbox, while additional features include a 381 mm chuck, 12-station bolt-on turret and rigid tapping capability.

Visitors are invited to bring along components or drawings for a full evaluation of optimized machining solutions.

The Demo Day will also feature a number of the company's industrial partners like: ZEISS, Nashik based Prime Industries, Seco Tools, Delcam and MMC Hardmetal India, all able to offer complementary technologies and advice.

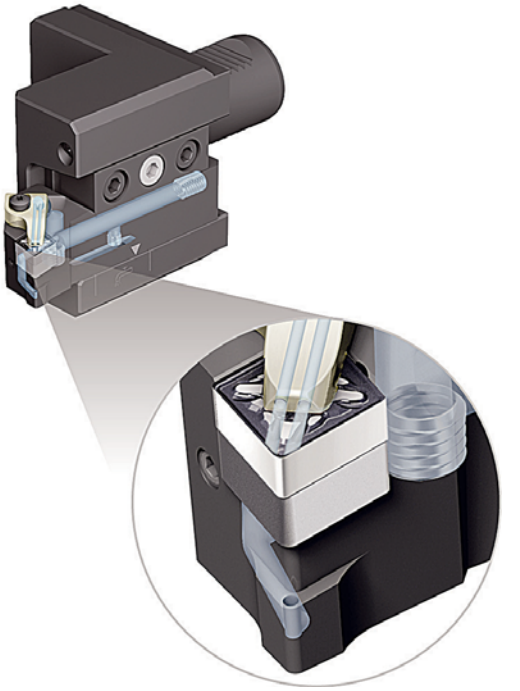
Targeted cooling – directly beneath the chip

Walter RM5 coolant jet guiding turning geometry increases tool life with ISO M and ISO S

Stainless materials are becoming increasingly important, and not only in the food industry and medical engineering. Walter is providing a completely new type of coolant jet guiding insert geometry for machining both ISO M and ISO S materials in the form of the RM5 geometry: Deep, parallel twin coolant channels convey the coolant even closer to the cutting edge, directly beneath the chip. The result: Maximum cooling – and therefore a considerably longer tool life for roughing operations than was previously possible.

The new RM5 geometry in the current ISO basic shapes combines design features, such as the double positive macro-geometry, with Walter's own Tiger•tec® Silver coating featuring a PVD-Al2O3 heat shield. In addition to the unique profile of the coolant channels, the RM5 geometry includes two other features which increase tool life. The new cutting edge design also reduces crater wear, as well as the formation of workpiece material build-up on the cutting edge and the occurrence of notching.

The new RM5 geometry roughing turning insert is the first of its kind in the new ISO M family. Other geometries for medium machining and finishing are to follow. It achieves optimum results when used in combination with Walter precision cooling toolholders. This is because these toolholders feature both rake and flank face cooling. In addition to this advanced method of cooling, the insert can also be used in conjunction with standard ISO turning toolholders on any lathe with standard coolant supply setup.



In addition to an extremely long tool life for ISO M and ISO S materials, the new RM5 turning geometry also impresses due to its very broad range of applications and thus, the wide variety of components, which it can machine.
Image: Walter AG

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

EVENT

MotulTech participates at Simodec, the international bar turning exhibition

The 2016 edition of the Simodec, the international bar turning exhibition just ended. This fair, held every two years in La Roche sur Foron in the Arve Valley, meets suppliers and actors in the heart of the French and European bar turning industry. MotulTech, with a large market share in the neat machining oils in Haute Savoie, must be present to meet with customers, prospects and machine tool suppliers and reinforce its reputation. The MotulTech stand, positioned in Hall D has seen the influx of great days with a local industry in strong recovery. However, visitors from close abroad - Swiss, Italy - or farther -Maghreb, Eastern Europe were numerous as well and quotation requests have even been established for Iranian prospects.

The exhibition was also the occasion to present the new MotulTech film that will soon be available to all sales teams.

Consistent networking must reach the shopfloor

Many terms but just one trend: Industry 4.0, smart factory or the Industrial Internet of Things – the future of machining will be a more networked one. That is because the future of the machining sector is becoming a more challenging one: Not just in terms of high volumes - even a batch size of 1 has to be produced to a high standard of quality and the procedures must be documented. For processes to be safe, it has to be possible to call up ever greater volumes of tool data from any location in order for machine and software systems to work together effectively. All of this of course under conditions of rising pressure on time, cost and quality. Parts must move through production more rapidly and leave in better quality than ever before – yet despite all of that, commercial considerations must never be neglected. That means that more flexibility is called for. From machines, from tools and also from the technologies they employ. For this, networking and Industry 4.0 must arrive in the shopfloor. ZOLLER contributes greatly towards this networking.

Solutions fit for the future: ZOLLER tool presetting and measuring devices can be integrated in the existing production process

"The increasingly broad range of products calls for a wide variety of different tools and for frequent tool changes. This means that the greatest variable in the production process is located squarely between machine spindle and workpiece: The tool!" states Christoph Zoller, who then goes on to say: "This variable is one, that can be managed by ZOLLER using networked systems. Tool data are processed in such a way that, at every step in production, the requisite tool data are being provided – from the planning stage, the creation of a CNC program, the inspection of tools or the transfer of data from presetter to machine in a compatible format for the controllers involved. We have lots of experience with this, and have undertaken some forward-thinking and pioneering work. Indeed, the open-ness of ZOLLER products to all systems involved in the production process has been our hallmark characteristic right from Day One."

Solutions, that grow with you

With forward-looking tool presetting and measuring devices and the TMS Tool Management Solutions for efficient tool management, ZOLLER offers economical solutions, that can grow to meet the challenges of the future. ZOLLER tool presetting and measuring devices are not standalone solutions. Instead, they can be integrated into the existing production process. Existing data structures can be adopted, data already recorded can be reused, while missing data can be downloaded from the cloud. All conventional third party systems from the ERP and CAM systems to cabinet and lift systems through to the machines can be connected up. ZOLLER solutions complement one another, and can be interconnected via the central tool database, z.One. This means that they can be expanded, modified and stocked up at any time.

The future: Communicating tools

What may not be possible today may well be so in the near future. The words of Bernd Schwennig, Sales Director and ZOLLER's nominated member on the smartTool Project, part of the high-tech strategy of the German Ministry of Education and Research. Its aims are to promote the development of intelligent tools.

"The tool and tool holder are going to accommodate more sensor systems. Tools are going to be exchanging information with their environment by means of RFID and DMC technology. The aim is to achieve a higher level of networking in the tool circuit, and through this to optimise tool logistics and tool usage." That is because tools cost money - especially if the exact inventory is not clear, if the location of that inventory is not recorded in a transparent manner and if there is no firmly reliable information about their performance capabilities.

Fundamentals for Industry 4.0

The basis for transparent "Track&Trace" of the tool, transparent networking with all systems involved in the production process and transparency of the tool service life cycle is unique identification of the tool, right down to individual component level. This has now become possible thanks to the latest release of ZOLLER software. Tools and individual components can

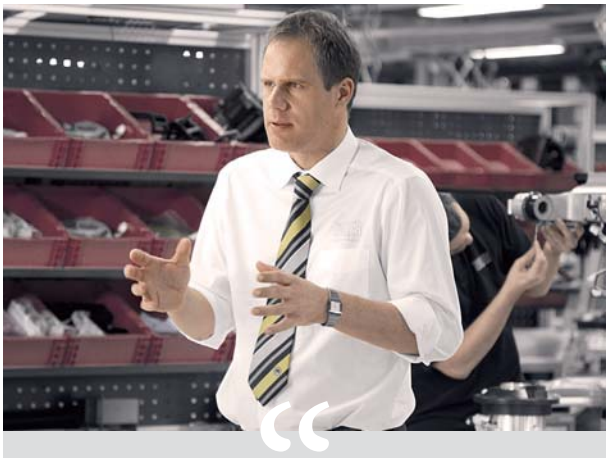
be represented individually and detailed information can be saved and traced comprehensively and along the entire production process. This unique identification of a component, down to individual item level, facilitates genuine transparency in the Tools department, and lays the foundation for systematic Tool Management and for Industry 4.0 processes. By the same token, experience-based values can be derived from this for future processes, and these enable targeted optimisations.

Today already a reality: Process-reliable transfer of data to the machine

Although at this time, consistent networking of the tool circuit is still the subject of research work, the transfer of data for individual steps in a process is already a reality. One example being direct communication between tool presetter and machine tool. Worldwide, there is a large number of machine manufacturers, who use different control systems. With ZOLLER secure transfer of tool data is already possible independently of any specific manufacturer, either via label, RFID chip, post processor or also using higher-order production control systems. One simple but incredibly efficient variant involves encryption of the actual data in a data matrix code that is scanned by a scanner device connected to the controller on the CNC machine. Data transfer by means of an RFID chip is just as simple: the RFID chip is written with its actual data by a tool identification unit on the tool presetting and measuring device and can therefore be scanned automatically by the machine tool. Furthermore, these has for several years now been the option of using the post processor to prepare data for use by the controller and to transmit it to the machine controller by mouse click.

User interface integrated into the system environment

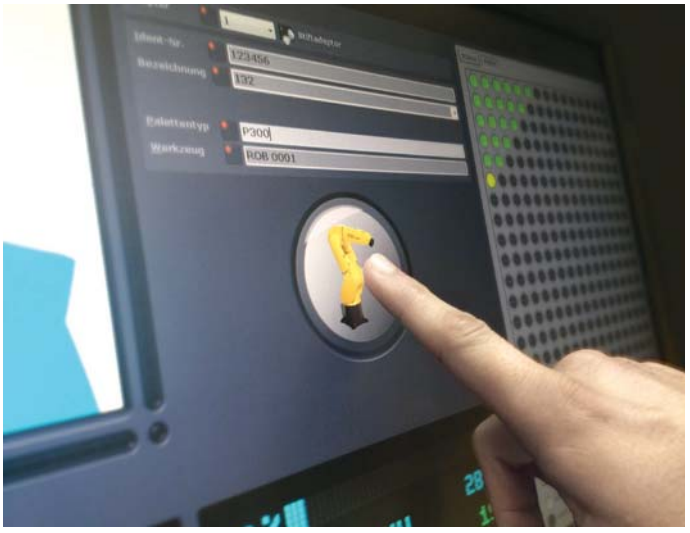
One aspect that occasionally slips out of focus with all the concentration on networking and production transparency is ease of operation. This is wrong, and arises not least as a result of the shortage of skilled personnel, of plants spanning a wide range of ages, and from criteria such as nationality and training - because even networked production facilities need to be operated. “Anyone can operate our devices and software solutions and you can depend on the outcome”, states Christoph Zoller, “Ever since Day One, we have been committed to having a clear operating structure, carefully thought out ergonomics and to stripping away of all non-essential items. Everything runs as automatically as possible, and secures interfaces to other systems, data transparency and this prevents operator error. The globally proven »elephant« technology is a good example of this approach. This is extended into our recently developed software solutions.”



The open-ness of all systems involved in the production process has been a hallmark characteristic of ZOLLER right from Day One - ZOLLER created the variable “Tool” managed over networked systems.”

Christoph Zoller, CEO, ZOLLER

This makes the ZOLLER »pilot« user interface very easy to operate across the full spectrum of applications, even for relatively inexperienced employees, and for staff still receiving training. The user works with the same user interface right across the system landscape. For example, even the CAM operator will experience the accustomed CAM tool structure on the ZOLLER software interface. With ZOLLER automation solutions all the user has to do is to press the Start button.



With ZOLLER automation solutions, the user simply has to press a start button.

Solutions with a real future

“All ZOLLER solutions can be integrated in the existing production environment. This capability, combined with superlative technology, quality, precision and long service life, really pays it way, and the word has spread”, summed up Wolfgang Huemer, CEO of ZOLLER Austria as he enumerated the reasons for corporate success.

For more info: www.zoller.info

3D Imager equipped with a new class of technology

Next generation intelligent 3D imager streamlines automated inspection workflows and drives down costs for industrial manufacturers

FARO Technologies, Inc., the world's most trusted source for 3D measurement and imaging technology, announces the release of the new FARO Cobalt 3D Imager equipped with a new class of technology and on-board computation capability aimed at improving productivity and operations in the manufacturing sector. The Cobalt 3D Imager is an automated, non-contact variable field coordinate measuring sensor that is easily deployed within manual or automated manufacturing workflows.

Ideal for use directly in the production floor environment, Cobalt can be installed in conjunction with a rotary stage, robot, industrial inspection cell, or multiple imager array configurations. By combining blue-light projection, stereo cameras and powerful on-board processing, the Cobalt captures and processes millions of 3D data points in seconds. With high resolution, automatic exposure and high dynamic range, Cobalt expertly handles complex parts with fine details, varying colors, textures, and reflectivity. Cobalt delivers fast and consistent measurements, independent of the operator, for quality inspection and reverse engineering applications on parts, assemblies, and tools.

"The FARO Cobalt delivers reliable and accurate 3D scan data within an automated workflow, making it an exciting new product that enhances the FARO portfolio for in-process or near-process inspection," stated Dr. Simon Raab, FARO's President and CEO. "The price and capabilities of the Cobalt make it a cost-effective, versatile, and convenient tool that delivers a rapid return on investment for customers in a variety of metrology applications."

> "Our analysis shows that for dedicated inspections of large surface areas, a multiple imager fixed array of Cobalt sensors will be faster and more affordable than purchasing the robot-based imager systems that are now on the market."
>
> **Dr. Simon Raab,**
> FARO's President and CEO

To address the growing needs for automated data collection on the production line, Cobalt was designed to be the first imager in its class with dedicated on-board point-cloud processing. This reduces inspection times since the measurement throughput is not subject to the computing limitations of a separate external computer. This computing savings also enables multiple Cobalt units to be easily configured in an array and controlled from a single computer.

Dr. Raab added, "We are particularly proud of Cobalt's on-board processing feature, which ultimately helps simplify the integration of the device into advanced production environments. Coupled with FARO's CAM2 Measure 10 software, two or more Cobalt sensors can simultaneously capture a larger surface area, thereby providing greater resolution and increasing productivity. Our analysis shows that for dedicated inspections of large surface areas, a multiple imager fixed array of Cobalt sensors will be faster and more affordable than purchasing the robot-based imager systems that are now on the market. Yet, Cobalt can also outperform the robot-based systems with its high resolution and data processing speeds in combination with its low profile and light weight."

FARO's Cobalt is available with dedicated software for quick and easy integration onto the production floor, and seamlessly connects with the full-featured FARO CAM2 Measure 10 metrology software.

For more information, you can also visit: www.faro.com/3DImager/in

High efficiency vertical machining center

DNM II series					
Classification		Unit	DNM 400 II	DNM 500 II	DNM 650 II
Travel	X-axis	mm	762	1020	1270
	Y-axis	mm	435	540	670
	Z-axis	mm	510	510	625
Tooling Taper		taper	40		
Table Size		mm	920x435	1200x540	1300x670
Max. Spindle Speed		r/min	8000		
Max. Spindle Motor Power		kW	15	15	18.5
Tool Storage apacity		ea	30		
NC System		-	FANUC/HEIDENHAIN/ SIEMENS		

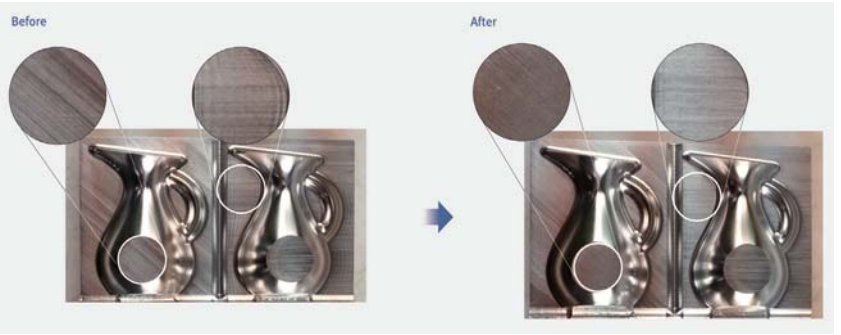
High reliability spindle & high precision
Direct coupled spindle provides high cutting capacity and minimises noise and vibration

Durability
Ball type LM guide is replaced with roller type LM guide as standard to rigidity and long term durability.

Improved usability
The operator panel is redesigned to make operating more convenient

SSP "Smooth Surface Package"
This package will make your surface quality better.

- Field Retrofit available in 2 weeks
- Maximised machine surface with minimum investment
- Easy to use (Automatically apply on your machine)



Optimised mold processing solutions

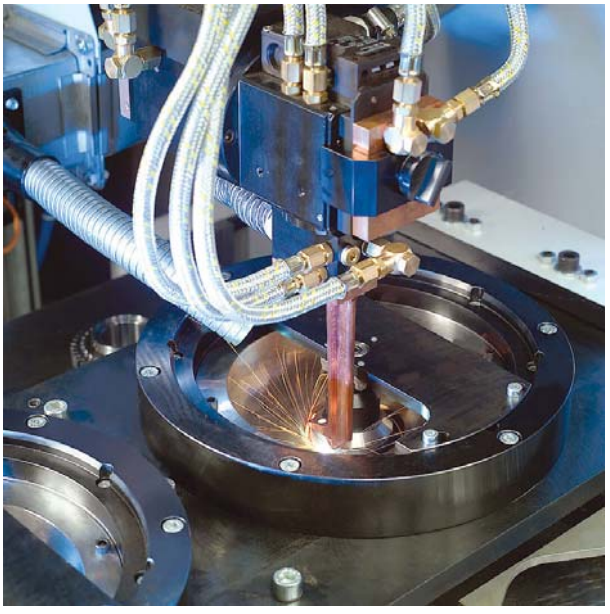
nx II series
NX 4500 II / 5500 II / 6500 II
High-pricision, High-speed
Vertical machining center

DVM series
DVM 500 II / 650 II
High precision die & mold
Vertical machining center

VM series
VM 750 (L) / 960 (L) / 1260
Large, high-speed, high-precision machining center

Doosan Machine Tools
http://www.doosanmachinetools.com

How modular machines simplify production



The newest modular automation system from EMAG for fast and efficient linking to complete manufacturing systems as well as the new modular machine platform for processing large components will show not only how modularity simplifies production, but how it can also increase productivity.

Today, the range of EMAG modular machines continues to expand, from the classic VL vertical turning machines for chucked parts and the VT series for shafts, to the VL 4 H vertical gear hobbing machine, the VLC 100 C vertical chamfering machine and the VLC 100 GT vertical turning and grinding center, as well as induction hardening units in the MIND series from eldec, the laser welding systems in the ELC series and ECM machines – EMAG can supply the perfect modular concept for almost every application and technology.

Standard, flexible, modular: The basic thought behind the modular concept was to develop a machine type that both enables production planners to develop manufacturing lines easier than ever before while also delivering the familiar EMAG precision and productivity.

Standard design – simplified processes: EMAG modular machines all share the same basic design based on a strategy to use identical components in all of them. Even machines which feature different machining technologies can often use identical components, which, of course, drastically reduce warehousing costs for spare parts. The compact design of the machines is also standardized, creating a small footprint due to the integrated automation system. The modular machines are also supplied with an integrated pick-up automation system enabling them to load themselves directly with workpieces from an integrated parts storage facility using a pick-up spindle.

The included automation also makes it possible to implement comparatively simple, yet highly effective automation concepts between machines. This is where all the benefits come together: the compact machine design allows them to be installed close together, the integrated pick-up automation system only requires the parts to be transported between the machines and the standard transfer height between the machines makes this transport even easier. Naturally, EMAG can also supply the automation system to link the production line matching the customers' requirements.

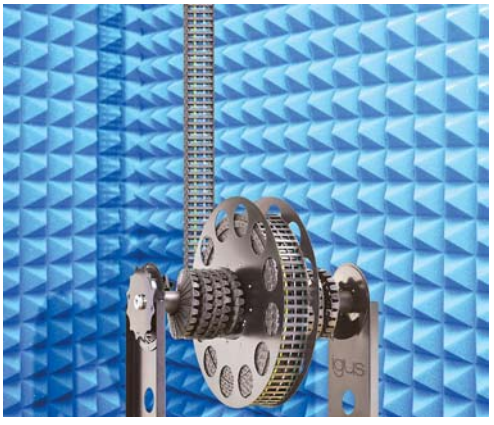
Perfectly coordinated automation systems: The way the machines are linked differs from case to case, the customer can choose from a wide range of automation modules perfectly tailored to the modular machines. Making this a straightforward process is the uniform transfer height, which makes linking any number of machines comparatively simple using conveyor belts, pick-and-place units and changers. There is no need for sophisticated robots, although they can be integrated at any time (for example, for unloading onto pallets).

TrackMotion – transporting parts as if they were on rails: The new TrackMotion automation system is another new development from the EMAG Group which combines the previous concept of conveyor belts, pick-and-place units and changers in an automation solution. Put in simple terms, the TrackMotion automation system is a track system with a gripper system mounted on it positioned behind the machines to transport the parts. This gripper system, known as TransLift, replaces the conveyor belt, pick-and-place units and turnovers and requires very little space. This system is also completely modular, of course, and can be expanded as required. There is no limit to the length of the track and the number of TransLift grippers, allowing them to be tailored perfectly to each production scenario. Furthermore, the TrackMotion automation system is extremely fast, clocking impressive horizontal speeds of 150 m/min and vertical speeds of 25 m/min.

For details, visit: http://www.emag.com/

Cable reel for energy chains proves its worth on the stage

With the space-saving e-spool, energy, media or fibre optic data cables can be run together in a single system, as it requires no slip ring.



Tests conducted in the 2,750 square metre test lab demonstrated the low noise emissions of the e-spool. Thus, the cable reel without slip ring qualified for low operation noise in the stage sector. *(Source: igus GmbH)*

The igus twisterband is used in the e-spool: Thus rotations can be implemented economically and with low wear and low maintenance in a confined space, while reliably guiding energy, data and media. *(Source: igus GmbH)*

The Cologne-based motion plastics specialist igus operates the largest testing laboratory in the industry with a floor area of 2,750 sq m, where all products have to pass various tests. There, more than 3,000 basic and user-specific tests are performed annually for energy chain systems alone in 180 test facilities under real conditions. These include tests at various temperatures and pressures, or even in contact with chemical substances. Tests are, for example, also conducted in the special noise chamber. It was here that the e-spool from igus was subjected to an intensive test for its noise emissions during operation. e-spool is an alternative to conventional cable reels for very tight radii and installation spaces. In the tests, the cable-friendly energy, data and media supply system of the latest generation has been proved extremely quiet. In particular the absence of slip rings minimises the noise development significantly in this special reel. An e-spool equipped with 'anti-vibration matting' was able to reach levels below 46dB (A) in these tests.

The tests in the igus test lab also proved the performance of the e-spool with respect to its service life. In addition to the noise emissions, this special insulated option was tested for compliance with the service life expectancy for a customer. This result was amazing: at full extension to twelve metres, the integrated return spring held the required tension of the pull-out e-chain at all times, and a maximum rotational movement of the used igus twisterband the e-spool has surpassed the required 24,000 double strokes by far, completely trouble-free. The twisterband works as the rotating link through which the cables are routed smoothly for the chain and which allows the rotation of the reel. igus offers e-spools with one or two twisterbands, depending on the number of cables to be routed. The achievable life is dependent on the application and execution of up to about one million movements. For the model with spring reel, the spring must be replaced after 75,000 double strokes. In the e-spool power with motor drive, that is not necessary.

Suitable for noise-sensitive applications

The latest test results prove that the e-spool is ideal for use in noise-sensitive applications such as stage installations. Finally, moving stage elements must be moved as smoothly and quietly as possible, at the same time the energy supply system needs to be as compact as possible in order to manage with the limited space. Similarly, factories or logistics centres, where noise emission limits are increasingly becoming a norm, are suitable areas of its application. But there are even more features such as the strain relief of the cables, the variable guiding in all directions, as well as halogen-free components support the use of an e-spool. The latter is particularly important in order to achieve the required fire safety standards. For this purpose, igus offers the appropriate chainflex cables with TPE outer jacket for moving applications.

The e-spool energy supply system is available in standard catalogue sizes of four to 14 metres. For special projects which are either particularly compact or for very long extension lengths up to 50 metres, igus also offers customised special solutions. All components together according to customer requirements with completely pre-assembled cables and optional installation.

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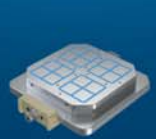

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