RNI No 71129/98 Volume 9 Issue 11 • November 2014 • Rs 75

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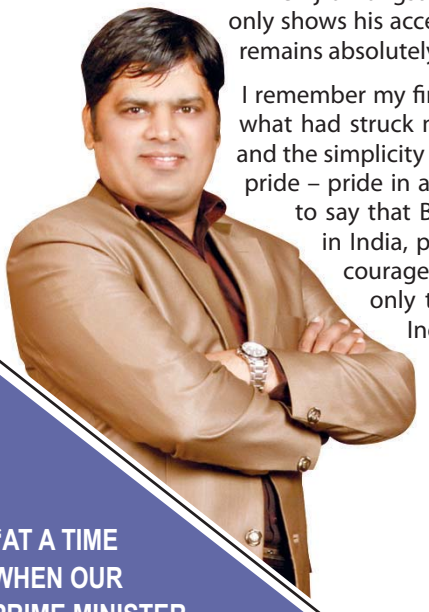
Giving credibility to 'Make in India'

EDITORIAL

When our Prime Minister recently visited Japan with a high-profile business delegation, he chose Dr Baba N Kalyani, Chairman and Managing Director of Bharat Forge Ltd, as the Co-Chair of the India-Japan Business Leader's Forum from the Indian side. The forum also included Reliance Industries Chairman Mukesh Ambani, Bharti Enterprises head Sunil Bharti Mittal, Essar Group's Chairman Shashi Ruia, Adani Group's Chairman Gautam Adani, and Wipro Group's Chairman Azim Premji amongst other leaders. That Kalyani was chosen to lead this delegation only shows his acceptability and respectability amongst his peers. Yet, the man remains absolutely unassuming.



I remember my first time with him at the Bharat Forge headquarters in Pune; what had struck me most about his personality was his straightforwardness, and the simplicity that comes with it. But behind this simplicity is also a certain pride – pride in and for Indian manufacturing. It will not be an exaggeration to say that Baba Kalyani made the manufacturing business respectable in India, perhaps even gave it glamour. With a rare foresight and the courage as well as the competence to translate it into reality, he not only transformed the fortunes of his organisation but also took Indian manufacturing to great heights. At a time when our Prime Minister wants manufacturing to play a key role in India's growth story, the endeavours and accomplishments of leaders like Baba Kalyani lend a solid credibility to 'Make in India'.

"AT A TIME WHEN OUR PRIME MINISTER WANTS MANUFACTURING TO PLAY A KEY ROLE IN INDIA'S GROWTH STORY, THE ENDEAVOURS AND ACCOMPLISHMENTS OF LEADERS LIKE BABA KALYANI LEND A SOLID CREDIBILITY TO 'MAKE IN INDIA'."

Niranjan. M

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Volume 9 Issue 11 November 2014

Worldwide Media Pvt. Ltd.

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Printed and published by Joji Varghese for and on behalf of owners Worldwide Media Pvt Ltd (CIN:U22120MH2003PTC142239), The Times of India Building, Dr DN Road, Mumbai 400001. Printed at JRD Printpack Private Limited, 78, Resham Bhavan, 7th Floor, Veer Nariman Road, Churchgate, Mumbai - 400 020. Editor: Niranjan Mudholkar. Published for November 2014.

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10am. - 6pm.

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NEWS

PM takes steps to end draconian 'Inspector Raj' with transparent inspection scheme

Taking ahead his mission of bringing reforms across the sectors, Prime Minister Narendra Modi has taken steps to put an end to the draconian 'Inspector Raj' system. He said the transparent Labour Inspection Scheme for random selection of units for inspection, would end undue harassment of the 'Inspector Raj', while ensuring better compliance.

The PM said that in the nation's development, the phrase 'Shramev Jayate' had as much significance as 'Satyamev Jayate'. Modi said the Government must trust its citizens, and a big step had been taken in this direction by allowing self-certification of documents. According to the PM, the 'Shramev Jayate' initiatives were an essential element of the 'Make in India' vision, as they would pave the way for skill development of youth in a big way, and even create an opportunity for India to meet the global requirement. The PM lauded the efforts of the Ministry of Labour and Employment in launching a series of schemes simultaneously, which took into account the interests of workers, as well as the employers.

India, Vietnam to trade targeted at US$15 billion by 2020

India and Vietnam have agreed to enhance bilateral trade to US$15 billion by 2020. The agreement was reached during the State Visit of Vietnam's Prime Minister Nguyen Tan Dung to India at the invitation of the Indian Prime Minister Narendra Modi.

The Prime Ministers expressed their satisfaction on the steady progress made in enhancing trade and investment through fruitful interaction between business leaders from both sides. They agreed to take measures to significantly expand and diversify bilateral trade for mutually beneficial results and agreed to enhance the trade targets to US$ 15 billion by 2020. Both PMs welcomed the strong growth in bilateral trade in recent years particularly after the implementation of India-ASEAN Trade in Goods Agreement and noted that the conclusion of India-ASEAN Trade in Services and Investment Agreements would boost cooperation between India and ASEAN in general and Vietnam in particular.

Pratt & Whitney to build training centre at Hyderabad

Pratt & Whitney, a unit of United Technologies Corp. has announced the ground breaking of its customer training centre in Hyderabad. The facility is expected to be operational by mid-2015. It will train aircraft engineers and technicians of Pratt & Whitney's customers on current and new engine models. This training centre will be the third such facility in the world. "We recognise India's potential as a major aviation hub. This centre will make world-class aerospace training available in India," said Bruce Hall, GM – Customer Training, Pratt & Whitney.

'Steel Research & Technology Mission of India' soon

Ministry of Steel will set up a 'Steel Research & Technology Mission of India' (SRTMI) to promote collaborative research programmes in steel sector. The Union Minister of Steel, Mines, Labour & Employment, Narendra Singh Tomar accorded in-principle approval for setting up SRTMI, in a meeting with senior Ministry officials. Tomar remarked that SRTMI will be steel industry's contribution to 'Make in India, Made in India' initiative. Investment on Research & Development in the steel sector must increase from present level of 0.2-0.3 % of turnover to international benchmark of 1-2 % of turnover by the leading companies, he added. SRTMI will be governed by a Governing Board of CEOs of steel and associated companies, domain experts of national and international repute, and one nominee from Ministry of Steel. SRTMI will carry out R&D in priority areas of national importance covering best usage of available raw materials and conservation of natural resources, optimum energy conservation and minimum emissions.

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Come, Make in MP, says CM Shivraj Singh Chouhan

Adding an interesting dimension to the PM's call of 'Make in India', the Chief Minister of Madhya Pradesh (MP) to Shivraj Singh Chouhan is now inviting investors by saying 'Come, Make in MP'. "MP is no more backward state and we are now racing towards becoming a developed region," he said during the inauguration of the 'Global Investors Summit 2014' in Indore yesterday. "We have all that is required for new businesses to start and progress in MP: a healthy land bank of 20,000 hectares, 24/7 power supply, sufficient water, institutes to create skilled workers, strategic location, proactive administration and much more. I and my team are personally endeavouring to ensure that there are absolutely no bureaucratic hurdles."

For good manufacturing practises the permission will be required once in 5 years and to add new products the permission will be granted in 2-5 days.

Investment worth US$100 billion has applied for visa to India: Prime Minister

Prime Minister Narendra Modi has declared that the Centre would stand shoulder to shoulder with all states, irrespective of political affiliation of the state government, to facilitate investment and economic growth.

He said he wanted the Centre and each state government to work together in the spirit of 'one and one - eleven.' Delivering the inaugural address at the 'Invest Madhya Pradesh - Global Investors Summit – 2014' at Indore, the PM said that following his recent summit level interactions with Japan, China and the US, "investment worth US$100 billion had applied for a visa to India." He said he stands for Team India - a team consisting of the Prime Minister and all Chief Ministers. If this team works together, a lot can be accomplished, he added. Complimenting the MP Government and Chief Minister for rapid strides in development, the PM said that the team of Shivraj Singh Chauhan deserves full credit for it.

Saint-Gobain opens its World Glass Complex in Rajasthan

Saint-Gobain has inaugurated the World Glass Complex at Bhiwadi, Rajasthan at the hands of Chief Minister of Rajasthan, Vasundhara Raje. With an investment of over US$185 million, the World Glass Complex at Bhiwadi is India's Largest and world's most modern manufacturing facility. The plant has a capacity to manufacture close to 1000 tons of Glass per day and is a fully automated, futuristic, integrated glass facility. The plant features several innovative features that are being deployed for the first time in the Indian Glass Industry.

"I am happy to note that 'Make in India' is the new direction of the Indian Government. As Saint-Gobain, we not only agree with this, but strongly support this initiative," said Pierre-André de Chalendar, Chairman and CEO, Saint-Gobain.

Focus on SMEs at Siemens Answers Executive Forum 2014 at GIS in Indore

A highlight at the MP Global Investors Summit 2014 was Siemens Answers Executive Forum, an initiative of Siemens Industry Software aimed at providing a platform to facilitate interaction and provide insights that could help drive new initiatives, particularly relevant for India. The theme for the 2014 edition of this forum was "India's Manufacturing Excellence". This Executive forum, held on at Indore, on the eve of Global Investor's Summit (GIS) hosted by Government of Madhya Pradesh, was a thought leadership session attended by the Chief Minister. "Usually, this forum is organised at the big cities like Mumbai or Delhi, but I am glad that this edition is being held at Indore." Other eminent speakers and senior industry executives also discussed strategies to achieve India's Manufacturing Excellence, with special emphasis around MP. At the event, Siemens Industry Software launched an in-depth assessment report on India's small and medium manufacturing segment, an industrial development backbone for every economy. "We stand committed in our support to the SMEs of India," said Suman Bose, MD, Siemens Industry Software. The report called out the current challenges and gaps that exist in infrastructure, policy, finance, technology, research and development, and skilled workforce availability. This launch was followed by a panel discussion on 'Industrie 4.0' presenting an insight into the emerging industrial revolution, and another panel discussion centered around the emergence of MP as a preferred manufacturing destination.

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Mark your diary

A list of key events happening between November 2014 to October 2015, both nationally and internationally

KnowledgeExpo

November 20-22, New Delhi
www.ciiknowledgexpo.in/Default.aspx

PLASTINDIA 2014

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

International Mining and Machinery Exhibition (IMME)

December 3-6, Kolkata
www.immeindia.in

India Automation Technology Fair

February 26-28, 2015, Mumbai
www.iatf.in

EITS 2014

December 9-10, Metz, France
eits2014.moselle-developpement.com

ACMA automechanika

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

India Rubber Expo and Tyre Show

January 15-17, 2015, New Delhi
www.indiarubberexpo.in

ProMat 2015

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

Imtex 2015

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

Hannover Messe 2015

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

SPS Automation India 2015

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

EMO MILANO 2015

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

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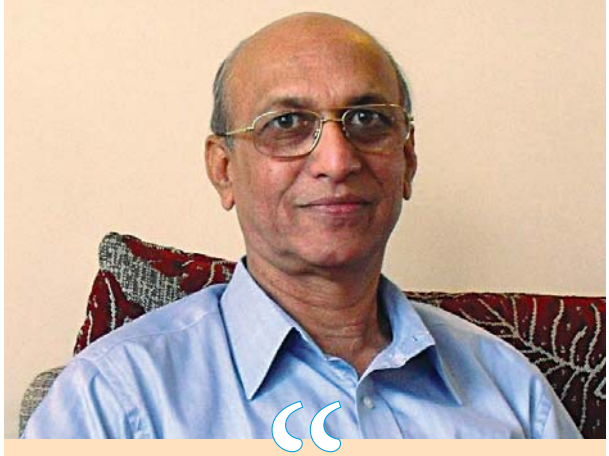
Opportunities and Challenges

With India's defence budget growing year after year, to Rs2,290 billion for 2014-15, the opportunities for MSMEs have also grown, leading to increased focus of policy makers and MSMEs on this sector.

By G. Raj Narayan

The Union Budget 2014-15 indicated a significant thrust for the growth and development of MSME (Micro, Small and Medium Enterprises) sector. MSMEs contribute 40 percent to the gross industrial production in the country and constitute the largest workforce after agriculture. Globally, MSMEs in all sectors are known for their distinctive features, such as low cost, unique skill sets, innovation, flexibility and agility. They are today perceived as competitive and focused, reducing the gap between them and the large industries.

In India, the last decade has witnessed active participation of the private sector including MSMEs, in the defence arena. They have proved their capabilities in producing high quality products at highly competitive prices. MSMEs have played a significant role in the entire ecosystem by manufacturing sub-systems and components. With India's defence budget growing year after year, to Rs2,290 billion for 2014-15, the opportunities for MSMEs have also grown, leading to increased focus of policy makers and MSMEs on this sector.



"It has been estimated that the Indian defence sector currently comprises over 6,000 MSMEs which are fast integrating themselves into the supply chains of national and international majors including the PSUs."

The Opportunities

The Defence Procurement Policy 2011 had encouraged indigenous manufacture of defence equipment. This has now been further amended in DPP 2013 to give preference to 'Make in India' over all other categories.

India is today the world's largest military equipment buyer. This situation can be converted into a multifold business opportunity if indigenous design and manufacture is taken up as a challenge by Indian enterprises. This would transform the country from dependence on imports to self-reliance. This process will also yield technology spin-offs to many other areas such as the automobile and consumer sectors.

It is estimated that nearly 50 per cent of the defence equipment held by the Indian armed forces is almost obsolete and needs either replacement or upgradation to extend its useful life. An estimated US$10 billion opportunity exists in this segment alone. Obsolescence management is thus a key area where the MSMEs can play a major role. A few MSMEs have developed indigenous technology as part of obsolescence management of equipment and components for the defence forces as well as defence PSUs. However, these are few and far between. Let us look at a few possible solutions.

Need for an A&D classification for MSMEs

It has been estimated that the Indian defence sector currently comprises over 6,000 MSMEs which are fast integrating themselves into the supply chains of national and international majors including the PSUs.

The recent announcement by our Union MSME Minister, Kalraj Mishra, of the decision of the Centre to bring out a new policy for the Micro, Small and Medium Enterprises (MSME) sector will open up new doors to relevant stakeholders. The next six months will see the Committee formed by officials from Ministries of Finance, MSME and RBI address all issues

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relating to the sector and chalk out a comprehensive policy. This policy will also revise the definition of an MSME which will reflect the changing business environment and levels of capital investment.

In this context, the following suggestions may be worth considering to ensure the growth and success of MSMEs in the defence sector:

- Specialised funding schemes to be created exclusively for MSMEs in the Aerospace and Defense sector, taking into account the long gestation period as well as long cash flow cycle time, from order to realisation of sale proceeds.
- MSME with aerospace/ defence skills, experience and proven track record, should be given weightage in the procurement process of PSUs and armed forces.
- MSME with proven track record in a particular field (such as machining or electronics or hydraulics, etc.) but lacking experience in the A&D arena, to be given exposure to specialised processes and requirements of this sector, either in related PSUs or other defence organisations.
- Creation of a Raw materials bank, operated and managed by NSIC or similar organisation, that procures commonly used materials and standard parts (For example, fasteners) of approved grades and quality, that either need to be imported or manufactured within the country.

> "India is today the world's largest military equipment buyer. This situation can be converted into a multifold business opportunity if indigenous design and manufacture is taken up as a challenge by Indian enterprises."

A&D MSME Clusters – the way forward

Creation and nurturing of MSME clusters (on the lines of the CDP and ESDM programs (initiated by DeitY of GoI) specifically for the high technology A&D sector, is to be facilitated. These clusters need to be encouraged, promoted and nurtured by the Government, through appropriate funding, training and support schemes. These could also be virtual clusters which form a supply chain for the PSUs or defence organisations. A virtual cluster is one where the members need not be co-located to be classified as a cluster, but only need to be able to interact and share business and ideas mutually. The members of the cluster would then be able to use the various skills available with other members, to design or manufacture the different parts of equipment. The pooling of complementary domain expertise would increase the success rate and therefore the growth, of each member of the cluster. This would go a long way in establishing the eco-system that is essential for the successful and holistic implementation of indigenisation programs.

The Challenges

The constraints faced by a majority of MSMEs with reference to the A&D sector are:

- Lack of awareness and exposure to stringent performance requirements such as high quality, reliability, efficiency and ruggedness to perform in harsh environments.
- Lack of knowledge of military systems and platforms.
- Lack of design skills for development of these products or their components.
- Lack of training facilities for skilling the workforce, including engineers, in this specialised domain.
- Lack of access to specialised raw materials and testing facilities associated with this sector.
- Lack of funding to tide over the long gestation period characteristic of this sector.

For indigenous defence industry

As an extension of the cluster model described in the preceding paragraph, a PSU such as HAL or BEL, or the maintenance wings of the armed services could financially partner with a cluster for mutual benefit. This could be a successful implementation of the PPP model that many governments have talked about in the past. This PPP model would be able to address many of the problem areas elucidated above, including the issue of exposure and training in specialised domain areas of A&D. The PPP eco-system will provide the much required impetus to the MSME sector.

While the new PM's objective of turning the country from a major defence importer to an exporter opens up a much larger opportunity for the MSMEs, going far beyond the cause of self-reliance, there are challenges aplenty. However, these are not insurmountable if all the stakeholders come together and synergise for the common good.

A view of the successful launch of sub-sonic cruise missile 'Nirbhay' from Interim Test Range, Balasore, Odisha on October 17, 2014. MSMEs have played a significant role in the entire ecosystem by manufacturing sub-systems and components.

The author is MD, Radel Advanced Technology, an MSME based in Bangalore. Radel has successfully indigenised and manufactured many specialised A&D equipment. This article has been written from a holistic viewpoint taking into account his deep understanding of the ground realities and empathy for all the stakeholders namely, the Defense Services, the defence PSUs and the MSMEs.

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New horizons

With the impetus on 'Make in India' and recent developments indicating manufacturing to be in focus, IMTEX 2015 will witness large number of visitors from newer manufacturing sectors leading to higher business momentum, says **L. Krishnan,** President, Indian Machine Tool Manufacturers' Association (IMTMA)

By Niranjan Mudholkar

Q. With just about three months left for the grand event, how's IMTMA gearing up for IMTEX 2015?

IMTEX 2015 will be the biggest IMTEX so far, more so, as it is focusing on metal cutting technology and will feature participation from 25 countries. This show will be held between 22-28 of January 2015 at the sprawling Bangalore International Exhibition and Conference Centre in Bangalore and the entire exhibition will be over 48,000 sq m in five halls. South and Southeast Asia's largest Machine Tool Expo- IMTEX 2015 will be an event to reckon. All preparations are going in full swing to make this flagship event of IMTMA a grand show.

Q. What will be the highlights of the 2015 edition?

With the impetus on 'Make in India' and recent developments indicating manufacturing to be in focus, I believe we will witness large number of visitors from newer manufacturing sectors leading to higher business momentum.

Q. How many exhibitors will be participating? Which are the partner countries this time?

IMTEX 2015 will see more than 900 exhibitors from India and abroad showcasing their latest technologies and products on offer. We have group participations from countries like China, Czech Repub-

"IMTEX 2013 indicates a figure of about Rs8,000 million worth of orders booked and close to Rs1,41,440 million worth of enquiries generated. Let us wait till January 28 next year and I am sure we will be surpassing this figure significantly."

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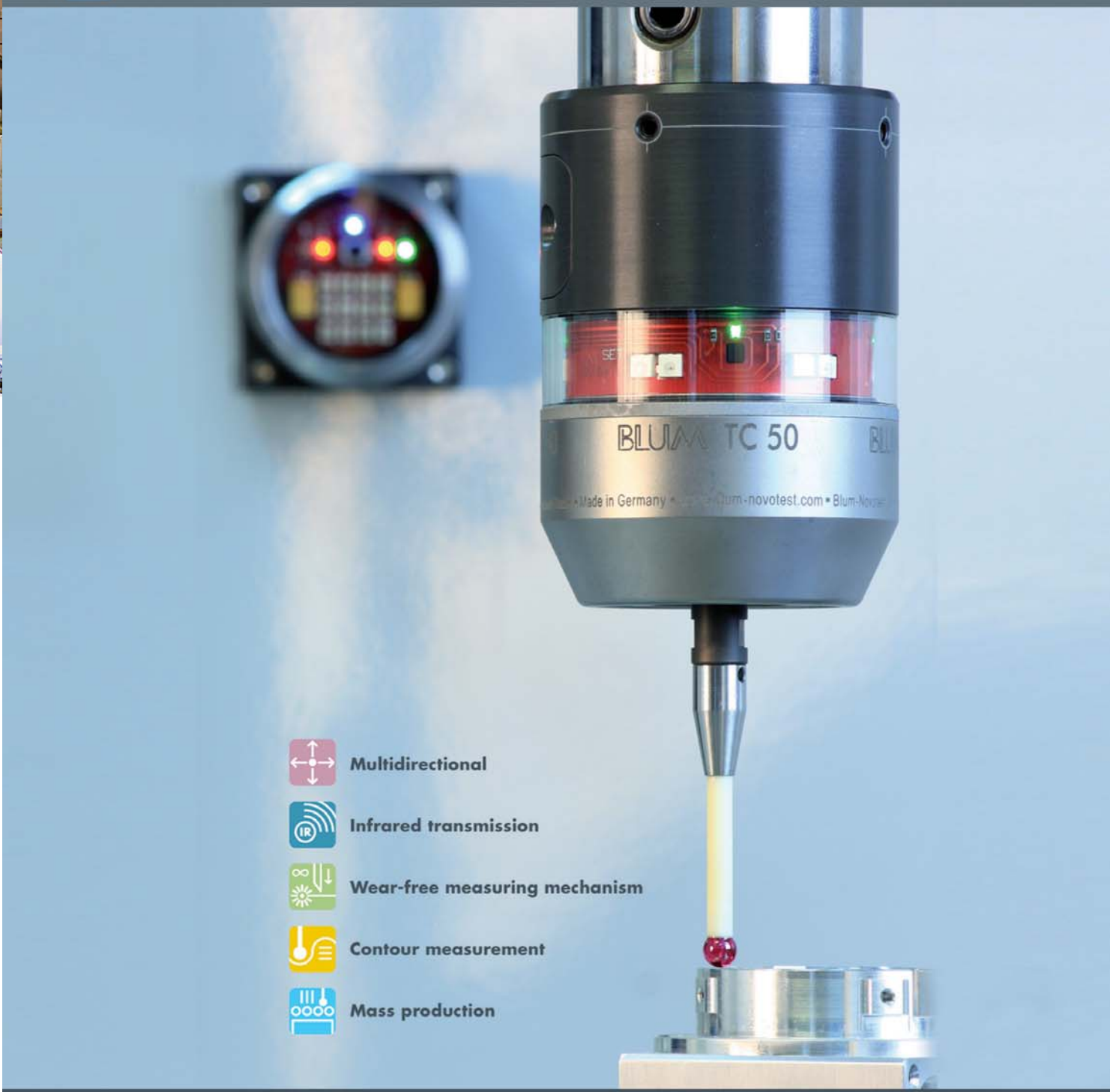

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How many business visitors are you expecting for IMTEX 2015?

Looking at the present market scenario and growth in the manufacturing sector we estimate 100,000 footfalls this year.

IMTEX is considered as a barometer of Indian manufacturing industry's health. With clear indications of revival on the horizon, do you expect to see this reflected in the contractual value of the business deals happening at the 2015 edition? What numbers are you looking at?

IMTEX 2013 indicates a figure of about Rs8,000 million worth of orders booked and close to Rs1,41,440 million worth of enquiries generated. Let us wait till January 28 next year and I am sure we will be surpassing this figure significantly.

While big trade exhibitions like IMTEX and IMTEX Forming are definitely business platforms for buying and selling machines, these shows have also acquired a new dimension of technology exchange and transfer through collaborations / JVs / M&As. What impact do the above exchanges and collaborations have on the industry?

Joint ventures are one of the common routes to technology transfer. Many Indian companies have benefited by it in developing latest features and adding to their product basket with minimum gestation. M&As and JVs are sure pointers that the industry is right back on track.

In terms of technological trends, what new can we expect from the exhibitors at IMTEX 2015?

IMTEX has always been the place to witness latest technologies and solutions for manufacturing from world over. In 2015 as well, visitors will be enthralled by some of the emerging technologies that will take the front stage. Many companies may take this opportunity to 'launch' their new products and ranges this year, again for the benefit of Indian buyers. The accent will be on productivity, precision and automation.

> "During FY-2014 share of domestic production has reached 40 percent of machine tool consumption in India. We need to grow strong from this position and reach 60 percent in near future."

Despite the increasing focus on innovation, technology and performance by domestic players, the machine tool industry still remains dominated by imports? Do you see this trend starting to change?

We see a positive trend here that the import component has come down in the recent years. During FY-2014 share of domestic production has reached 40 percent of machine tool consumption in India. We need to grow strong from this position and reach 60 percent in near future. Recent studies have indicated Indian manufacturers are producing smarter and frugal machines to cater to domestic demand which will give confidence in relying on domestic products. The industry is working closely with many user industries to promote the use of Indian machines and reduce reliance on imports.

The Indian machine tool industry clocked Rs 11,300 crore in FY13 and last year, IMTMA had envisaged the industry to grow to Rs 23,000 crore by 2020. Do you see any change in the numbers now?

FY 14 was a challenging year and the demand for machine tool has decreased considerably, both in India and worldwide. Industry watchdogs are taking 2013-14 as an year of aberration. The encouraging signs from first quarter indicate that demand for machines has increased in the current fiscal year and the orders have picked up. Our long term projections remain intact and we expect the machine tools industry to grow to be worth close to Rs23,000 crore by the year 2020.

International Seminar on Machining Technologies

In conjunction with IMTEX 2015, IMTMA is scheduling an 'International Seminar on Machining Technologies' (6th in the series) on January 21, 2015, with the underlying theme 'Powering Manufacturing Growth and Competitiveness'. This event is recognised as an international platform for global interactions on latest trends in metal cutting manufacturing solutions. The objective of this International Seminar is to present latest technological developments in Machining, which users can adopt in their production process successfully. Through this International Seminar, IMTMA intend to cover the more pertinent aspects of metal-cutting processes, its requirement in the manufacturing industry and the technology gaps that can be bridged.

Concurrent event Tooltech 2015

Tooltech is a premier event concurrent to IMTEX 2015 showcasing machine tool accessories, metrology and CAD/CAM cutting tools, tooling systems and current trends in the tooling industry. Tooltech manifests recent innovations in technology, design and product development to achieve competitiveness and excellence in the machine tool industry. It highlights recent innovations in technology, design & product development with the aim to bring cost competitiveness in all metal working operations. Tooltech 2015 will unveil yet again the explicit range of cutting tools from the stable of the world's leading brands.


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Pumped up with energy

Dinesh Patidar, CMD, Shakti Pumps, sees his Company playing a leading role in the renewable energy sector by offering solar pumping solutions.

By Niranjan Mudholkar

Do you think 'life cycle cost analysis' is being accepted as a key parameter for the evaluation for pump buyers? How do you as a pump manufacturer view this issue? Are you helping your customers understand the importance of this subject?

The concept of product life cycle cost (LCC) analysis is a good idea and should be considered as a key parameter before buying products especially those with a longer life cycle and higher initial costs. However, when it comes to buying products, Indian buyers in general do not take into account LCC possibly due to lack of adequate knowledge and awareness about the impact of lifecycle costs.

As a manufacturer of durable engineering products like pumps, we feel it would be sensible to calculate the LCC before a buying decision is made as it will help buyers ascertain the long term cost benefits of one product over the other. We try to educate our customers about the significance of lower LCC of our products. Energy costs are the major contributors to LCC as far as pumps are concerned and this can be reduced by choosing energy efficient pumps.

"We have already forayed into the industrial pump segment and we are growing at an impressively rate. We believe that the addition of new pumping products for industrial applications will help us to boost sales of industrial products."

What kind of pumping innovations has your company introduced in the recent times? Typically, how important are R&D activities at your organisation? Can you share the percentage of your R&D budget in terms of the annual turnover?

We have recently developed solar pumps which work perfectly on solar energy even in the remotest locations of rural India. This is a revolutionary initiative which has the power to transform the Indian agricultural landscape. We believe this will in the long run prove to be breakthrough in an energy starved country like India which can save huge amount of grid electricity.

Moreover, these pumps can function 24x7 as they can work on both solar energy as well as electricity from grid\non-grid sources. R&D is integral to our organisation with a team of dedicated professionals who work exclusively on the development of new products. Our annual budget plan for R&D is about five percent of the turnover.

India's trillion dollar infrastructure development - from roads & highways to seaports & airports, from dams & irrigation projects to homes & factories, from nuclear & thermal power plants to electricity grids - requires a pump of some kind or other. How would you evaluate the situation being a manufacturer of pumps? Are you catering to all of these sectors?

The government has allocated huge amounts for basic infrastructure like roads, ports, power, homes etc. which will definitely generate new demand for pumps as well. Further industry, agriculture and irrigation are focus segments where a large number of pumps are used across the country and these will be our thrust area for future growth. With steady growth of all the above sectors will drive the business in the coming years for the pump industry in India.

The Indian market for industrial pump is estimated at Rs 8,000 crore. What is your share in this market and how fast are you growing? Where do you see your firm in the five years in terms of market positioning?

We have already forayed into the industrial pump segment

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and we are growing at an impressively rate. We believe that the addition of new pumping products for industrial applications will help us to boost sales of industrial products. We are committed to working on R&D to enhance and upgrade our product portfolio for industrial applications. Our vision is to be among the best brands in this segment in the next five years.

To what extent do Chinese products affect the growth of the pumps segment?

When it comes to Chinese products, Indian manufacturers in general view them sceptically from a quality perspective. However, as of now we do not find Chinese products as a threat to Indian industry as far as the pump industry is concerned. Our only concern is about poor service support network.

What are the other key challenges faced by your industry and how are you tackling the same?

Pump industry in general is extremely fragmented with many players in both organised as well as the unorganised space. The unorganised players in pump industry collectively hold a major part of the total market share and organised players hold relatively less share of the market. This is due to the short term approach and lack of awareness about the quality by end users.

Secondly, the farmers and rural buyers in general look for relatively cheaper pumps manufactured by unorganised local manufacturers. Such pumps consume high energy and their overall life cycle cost will be higher than that of an energy efficient stainless steel pump. We are constantly striving to convince customers about the quality and energy efficiency of pumpsets that will prove beneficial in the long term to the buyers.

Tell us about your manufacturing capabilities and capacities. Any plans for expansion?

We have a state-of-the-art manufacturing facility strategically located in the central Indian state of Madhya Pradesh with a capacity of five lakhs pumps per annum catering to various customer segments for diverse applications. We use high tech advanced fabrication technology with robotic aid to manufacture superior quality pumps and motors to maintain consistency in quality and durability.

Our world class manufacturing facility is equipped with modern Mazak CNC Machines and other precision equipment to meet the benchmark quality and productivity standards. Current installed capacity is more than enough to cater to market demand in the domestic as well as international markets.

Shakti Pumps' manufacturing facility located in MP has a capacity of five lakhs pumps per annum

> We have recently developed solar pumps which work perfectly even in the remotest locations. This revolutionary initiative has the power to transform the Indian agricultural landscape.

Tell us about your forays into the overseas market?

We were the first pump manufacturer to introduce stainless steel pumps in India with the help of advanced fabrication technology which transformed the pump manufacturing process. The stainless steel pumps have their own advantages in terms of being light yielding higher energy efficiency, stronger antirust properties and longer life. As far as general market is concerned, the dynamics is same in domestic or overseas.

The overseas markets have been familiar with SS pumps much longer than Indian customers. Realising the great potential for SS pumps overseas, we looked for opportunities and began exporting in 1996. At a time, when Indian consumers were quite sceptical over the performance and durability of SS pumps it was overseas customers who supported us and enabled us to grow the business. Therefore our focus was largely on exports only during the early days.

Gradually over the years, Indian customers also realised the benefits and advantages of SS pumps and the domestic market now contributes substantially to our overall revenues while export still remains major contributor. We now have an established network of dealers and distributors in India as well as in more than 125 countries around the world.

What is your vision for the company?

We see ourselves as a company that innovates further and offers energy and cost effective solutions to our customers particularly the farmers. We see ourselves playing a leading role in the renewable energy sector by offering solar pumping solutions. We plan to garner a substantial market share in the pump industry and solar pumping systems.

Industry at Crossroads

Indian pump manufacturers are gearing up for global growth. But it is essential that they get their house in order by building robust processes.

By Shripad Ranade and Siddhartha Deb

The Indian economy appears poised for its next phase of growth. A stable government at the centre with a clear intent to increase investment in industry and infrastructure will go a long way in boosting the economy.

The Indian pump industry is amongst the fastest growing in the world. Indian and International pump manufacturers have taken note, leading to intense competition in the market. Increasing penetration in agriculture and domestic sectors along with infrastructure and industrial growth is expected to drive the growth of the industry going forward.

> Our discussions with industry players reveal that succeeding in global markets will require increased focus on quality along with low cost positioning and active marketing."

The Indian Opportunity

The Indian pump market demand is estimated to be about Rs8,500 crore, having doubled over the past five years. It is expected to grow at 10 percent annually up to FY17 (Fig 1). Up to 90 percent of the demand is met by local manufacturing. The main manufacturing clusters are around Coimbatore, Ahmedabad and Rajkot.

Pumps are classified into centrifugal and positive displacement pumps, with centrifugal pumps being 95 percent of the market, within which single stage radial flow pumps and submersible pumps together make up 70 percent. Rotary positive displacement pumps account for the largest share of positive displacement pumps.

By end use (Fig 2), the agricultural segment makes up nearly a third of the demand. Submersible pumps are the main type used, along with monobloc and jet pumps.

Pump manufacturing varies in complexity and customisation (Fig 3). Very few players in India have a presence across all three types.

India exports pumps to nearly 70 countries. In FY14,

exports stood at Rs1,280 crore having more than doubled over three years (Fig 4). As much as 16 percent of Indian pump manufacturing capacity is geared for exports. Key export destinations are the Middle East, North Africa and other more developed economies such as USA, Germany and Russia. The emerging markets of China and Latin America also provide attractive opportunities.

Our discussions with industry players reveal that succeeding in global markets will require increased focus on quality along with low cost positioning and active marketing. India is well positioned to grow into a much larger manufacturing base for pumps driven by attractive factor conditions. It is very likely that India will be a significant exporter of pumps in the coming years.

The Indian opportunity

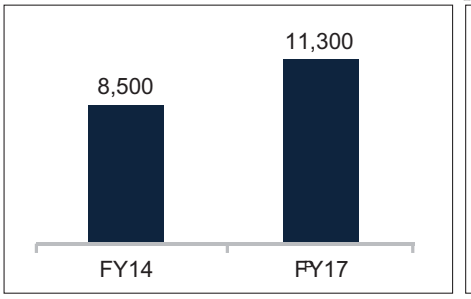


Figure 1: Indian pump market (INR Cr)

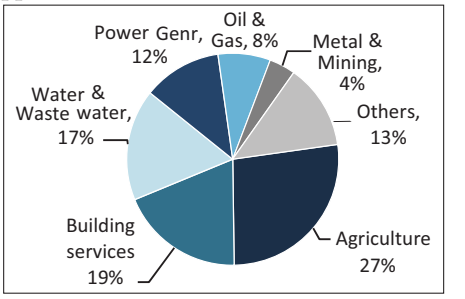


Figure 2: Sector split of pump demand (FY 14)

Increasing degree of complexity and customisation

	Made in Stock	Made for Order	Engineered to Order
Definition	Off-the shelf products for basic pumping needs	Standardised solutions for critical/large industrial applications	Custom designed pumps for specific end user needs
End use segments	Agriculture, Residential, Building services, Basic industry applications	Power, Chemical, Mining, Water and waste water, Industrial applications, etc.	Specific applications in Oil & Gas, Defence, Nuclear, etc.
Segment presence of companies in India (Examples)	KSB, C.R.I. Pumps, CG, Shakti, Aqua Group, Smaller players	KSB, Kirloskar, CG, Sulzer, WPIL Limited	Sulzer

Figure 3: Complexity in pump manufacturing

> "The Indian pump industry is highly fragmented with over 800 pump manufacturers in the country, mostly serving the domestic and agricultural space with only a few large players having revenues over Rs100 crore."

Imports account for less than 10 percent of pumps sold in India, with the USA, Japan, China and Italy being the largest sources. Chinese pump imports into India have not been pronounced due to the presence of adequate local low cost players and also the need to have a good after sales service network to succeed in this product in India.

Competition

The Indian pump industry is highly fragmented with over 800 pump manufacturers in the country, mostly serving the domestic and agricultural space with only a few large players having revenues over Rs100 crore. Only some of the larger players have the capability of serving the industrial sector. The unorganised small players account for nearly half the supply to the price sensitive agricultural and domestic segments.

The global context

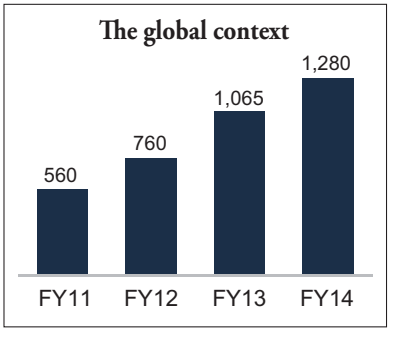


Figure 4: Exports of Centrifugal Pumps, (Rs. Cr)

Sales

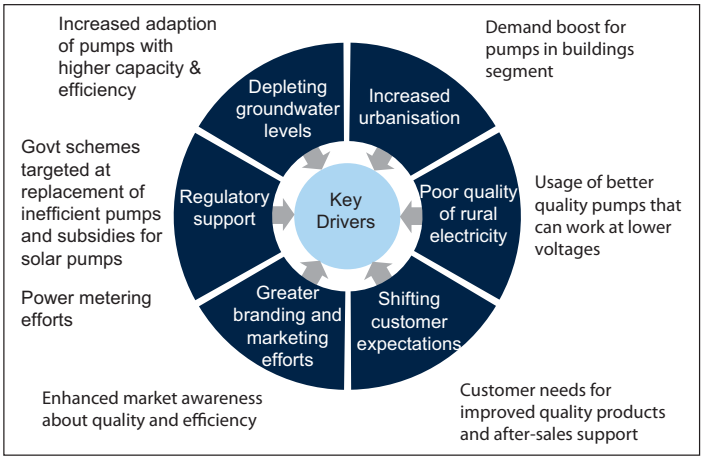
Sales channels used by pump manufacturers vary by end use sector. In the agriculture and domestic sectors, pump manufacturers mainly sell through their dealer network. The dealer and the pump mechanic become key influencers as they also handle after sales service. In the domestic sector, the plumber or the plumbing consultant is one of the key influencers for smaller establishments, while for large building projects the architect plays an important role in influencing the decision of the buyer. In the industrial segment, sales are made either directly by the manufacturers or as part of EPC packages.

Trends in buying behaviour

The buying decision for farmers is guided by upfront price, discharge rate and ability to operate at low voltages. A few interesting trends are emerging with energy efficiency gradually becoming a factor in the decision process due to changing regulations such as power metering. Brand awareness is also emerging as an influencer in the buying decision. Many players in the industry have thus increased their presence in

TV and newspaper advertisements and have started promoting BEE star-ratings.

Builders tend to focus on durability, service and warranty while buying their pumps. Energy efficiency is not a major consideration yet as they the buyer does operate the pump. Nearly half of the total cost of ownership (TCO) of a pump is through energy consumption and maintenance and repairs. Thus energy efficiency along with spares availability and after sales service are the most important buying criteria for the TCO conscious industrial buyers. In addition, in this segment, providing an entire range of products and services is critical for success.



Growth Drivers

Falling groundwater levels, increasing urbanisation and changing customer expectations are expected to drive the pumps market. However, the industrial sector is likely to show subdued demand for the next two years due to an expected lag-in in fresh industrial infrastructure investment as most sectors are operating at low utilisation levels.

Upcoming Trends

Key trends in Indian pumps industry:		
Total cost of ownership:	**Technological changes**	**Service as a differentiator**
Most of the industrial buyers now focus on total cost and not just upfront pump cost in making the purchase decision.	Newer technologies such as 3D printing, IOT and software are changing the way pumps are being designed, manufactured and controlled	Product specifications and performance of pumps are now becoming standardized. Hence, service is now the key differentiator.

Gearing for growth

Indian manufacturers must capitalise on the anticipated growth opportunities that the domestic as well as the export markets presents. With competition rising in the global industry, it becomes imperative for any manufacturer to strive for excellence with both inward and outward focus.

Inward focus: Domestic companies face growing complexity in terms of product portfolio, geographies, customer expectation etc. as they grow in revenue. Differences amongst the end use sectors make it important to have different strategies for each and prioritise which sectors to play in.

Symptoms such as high and erratic lead time, underutilisation of plant and people and tapering of profit margin point to the inability of the current processes to handle business realities. Those companies which embrace evolved business processes in pre-sales, design, procurement, manufacturing and despatch will remain competitive and grow further.

Expansion in the agricultural and domestic markets will require a greater focus on innovative sales strategies to increase penetration and reach as well as channel optimisation involving the rationalisation of the channel structure and realigning channel incentives.

Outward focus: With a substantial part of future opportunities expected to come from the export market, it has become inevitable for the Indian manufacturers to be at par with their global peers. While Indian products fare well on the quality front, there exists a lacuna in branding and service delivery.

To overcome these gaps, domestic players must endeavour towards a flexible and global mind-set, brand building, prompt and responsive sales and services, efficient and transparent transaction processing and should bolster marketing reach by opening overseas sales offices.

> “Differences amongst the end use sectors make it important to have different strategies for each and prioritise which sectors to play in.”

Way ahead

Indian pump manufacturers are looking to flex their muscles in the global market. But before they do so the need of the hour is to improve business processes to ensure quality and on time delivery while also innovating on sales strategies and optimising for costs on distribution network. Companies will have to keep up with technological changes whether with energy efficient pumps or 3D printing or the Internet of things. While a few forward looking companies have already felt the need to address these challenges, a large section of the industry has significant work to do in this regard. There is a need to develop robust processes and build relationships with global customers thereby profiting from global growth.

About the authors: Shripad Ranade is Senior Principal and Siddhartha Deb is Associate Consultant with Tata Strategic Management Group

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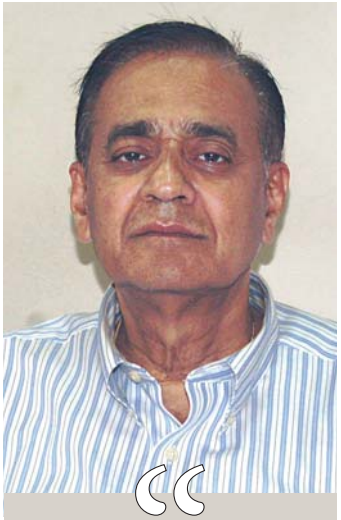
High Temperature Application Pumps

There are various standards available including API 610 which covers general guidelines for design and manufacturing of high temperature liquid pumps but in practice a number of other factors need to be considered to ensure reliable performance.

By AS Joshi

In an oil refinery, high temperature hydrocarbon is involved in many processes like hydro cracking, fluid catalytic cracking, crude distillation etc. Most used liquid are diesel oil, gasoline, naphtha, gas oils etc. The pump handling these liquid above 250 degrees C are generally categorised as high temperature application pumps. There are various standards available including API 610 which covers general guidelines for design and manufacturing of high temperature liquid pumps but in practice a number of other factors need to be considered to ensure reliable performance. The main attributes are as follows:



"Pumps with Top Suction and Top Delivery nozzle orientation can sustain maximum flange forces in vertical direction as compared to nozzles in side or end orientation."

Pump Nozzle Orientation: Pumps with Top Suction and Top Delivery nozzle orientation can sustain maximum flange forces in vertical direction as compared to nozzles in side or end orientation. In case of high temperature application maximum load come on the flange due to thermal expansion in vertical direction while the maximum run of suction and delivery piping is in vertical direction. Moreover, overhead layout of the hot piping is more convenient and less hazardous.

Maximum Allowable Working Pressure: The casing of the pump reduces with the temperature; hence it is essential that the selected pump should have MAWP at maximum operating temperature ≥ maximum discharge pressure developed (under maximum suction pressure and maximum operating speed).

Casing Split and Type of Gasket: Pump casing should be with radial split. Pump with less number of joints will be more reliable e.g. API BB5 design (Between Bearing Double Casing Multistage Pump) shall be more reliable as compared to API BB4 design (Between Bearing Ring Section Multistage Pumps)

Support for Casing: This should be centre-line supported to ensure free radial thermal expansion of casing in all the directions without disturbing the centre of casing.

Free Thermal Expansion of Pump Assembly: As discussed above, the pump casing is centre line supported and hence the free radial expansion in all directions is ensured. However, expansion of the casing in longitudinal direction of the pump need to be separately addressed. Locating lugs are provided at the bottom of casing. Pump support feet are dowelled to base frame in a typical manner so that position of casing and the pump axis in longitudinal direction will not get affected during hot working of the pump.

Free Expansion of Shaft, Impeller and Shaft Sleeves: Pump components viz. shaft, impeller, shaft sleeve etc. which are directly in contact with hot liquid, thermally expand when their temperature reaches to the maximum. If the pump is not properly designed to ensure free expansion of these components, induced thermal stresses are developed in the parts which may lead to premature failure and/or change in profile of the components

Energy Efficient API BB1 Pump

Kirloskar Ebara Pumps Limited (KEPL) has recently introduced an energy efficient BB1 series pump under the model name of KBAD. This new series is designed especially for process industries for various chemical and liquid pumping applications. This 'Between Bearing Axially Split Case Pump Model KBAD as per API 610 latest edition' was launched at the Pumps, Valves & Process Equipments (PVPE) International Conference 2014 in Mumbai. "The launch of BB1 pumps is stepping a foot forward in the progress path of existing pump options. The journey so far with this product has given us further insights in the area of pumps and the motivation to come up with such innovations in near future as well," said Aseem Srivastav, Managing Director, KEPL.

KEPL has not only developed BB1 range pumps but has also supplied first three pumps to Reliance Industries Limited, Hazira, Gujarat, for Quench Water application in their Cracker Plant. Pumps were designed, developed and customised to suit the site requirement and were supplied in a very short period to Reliance.

The BB1 pumps are characterised by side nozzle configuration preferred for fluid transfer applications. Its near-center line mounting design makes the KABD suitable for various refinery applications subjected to ISO or API criteria for flammable or dangerous fluids with specific gravity greater than 0.7 and temperature below 200˚Celcius and 400˚Fahrenhite.

KEPL had also recently launched India's first indigenously developed API steam turbine and has plans to roll out a more products in next couple of years through in-house engineering and R&D.

resulting in internal rubbing, seizure, shaft misalignment etc.

MOC of pump: The metallurgy of main components is suitable for high temperature service. Material with low coefficient of expansion would be ideal. 12 percent Cr. St. is ideal as compared to Austenitic St. St. or Carbon Steel casings. Under Austenitic St. St. material needs special design consideration to avoid maintenance problem which occur due to permanent deformations i.e. due to creep.

Shaft Sealing Arrangement: API 682 standard on seal and seal systems indicate that stationary metal below seals can be used for high temperature applications. Metal below seal have static secondary sealing member and hence flexible graphite can be used. For Human safety and for the clean environment double seals are always preferable.

> "It is advisable to ensure uniform heating of the casing in top and bottom portion of the pump and the temperature difference should not be more than 20 degrees C."

Warming up of Casing: Before starting the pump, it is mandatory to warm up pump casing to avoid uneven thermal expansion. Temperature of casing should be 70 percent to 80 percent of normal operating liquid temperature. It is advisable to ensure uniform heating of the casing in top and bottom portion of the pump and the temperature difference should not be more than 20 degrees C. Sudden starting of pump from cold to hot condition may result in malfunctioning of the pump and sometimes leads to the seizure to some internals critical clearance areas.

Alignment of the pump and driver: Pump casing is centerline mounted, however the pedestal on which pump is mounted become hot due to transmission of heat from the hot casing. Because of the heating of the pedestal, expansion takes place which results in misalignment between pump and driver shafts. To overcome this problem, usually pump supplier recommends offset during cold alignment, this helps in achieving better alignment control during blistering operation. It is advisable to ensure the hot alignment by stopping the pump working at normal high temperature and correcting the alignment if required. Depending on head and capacity requirement of the process, suitable type and size of pump can be selected in single / multistage design and horizontal / vertical position.

The author is an advisor with Kirloskar Ebara Pumps Limited (KEPL).

Driving productivity with the cloud

As manufacturers around the world are discovering, shifting to a more collaborative communication model with the cloud not only cuts waste, it can lead to huge boosts in productivity.

By Mohit Pande

From the steam engines of the 1800s, to the assembly lines of the 20th century, to the bits and bytes of the 'information age', the manufacturing industry is no stranger to radical process changes driven by technology. As the quest to do things better and the industry looks for new ways to improve processes, savvy manufacturers have found that tech-driven innovation doesn't have to stop at the factory floor.

In line with IDC's prediction that information and consumer technology would converge to reshape manufacturing approaches to technology, businesses like EMCO, Voltas, Nilkamal, Whirlpool and Shaw Industries have been supercharging their internal process with the consumer tools like Google Drive.

Google Drive is a cloud based file storage and collaboration service, used by 190 million people around the world to safely store and access files from their phones, tablets and computers. In addition to being the home to productivity apps like Docs, Sheets, Sites and Slides, Drive is also connected with Gmail and Hangouts making it a central hub for communication and collaboration. The business premium service, Drive for Work comes with unlimited storage as well the security features and controls that enterprises need.

On the face of it, cloud storage and a centralized place to communicate and collaborate may not seem like a groundbreaking innovation, but the manufacturing industry understands how much value small changes in process can add more than any other. Consider how much time your employees creating work that requires team inputs, looking for information, or connecting with colleagues across time zones and continents. If your business is still using legacy technology here are four processes that your employees may be wasting time on, when they no longer need to.

Sending attachments via email: Instead of emailing your colleagues files — or worse forgetting to attach the file and having to email the again — you can spare people's inboxes and share files with them with cloud based tools like Google Drive.

Waiting for colleagues to update and send files: How many times have you been stuck back late at the office waiting for someone to send through a file you had to make the next series of edits? With Google Drive you can invite multiple people to edit the same file with you at the same time from any device. It doesn't matter if your colleagues are across the office floor, or halfway across the world, everyone can get cracking on work at the same time editing and chatting within documents, making group work much faster.

Pressing save...or losing work: With your data in the cloud it is automatically updated, you don't have to press save. This means you'll never have to worry about losing a list of potential clients, or your annual report either as your data is always backed-up.

Going to the office or desk to get things done: Whether you're updating documents, sending emails, adding comments to a spreadsheet or put-

ting the final touches on a presentation, Drive gives your employees ability for you to do this right from your phone or tablet so even when people aren't on site, they can still be on the job.

This is just the tip of the iceberg. As manufacturers around the world are discovering, shifting to a more collaborative communication model with the cloud not only cuts waste, it can lead to huge boosts in productivity.

Shaw Industries for example has totally changed how information is accessed and shared within its organisation with Drive. Instead of having to go back to their desks to look things when they spot a problem, plant engineers now access equipment manuals and safety procedures from their mobile or tablet from wherever they are with Drive. This means that they can run their machines more efficiently and safely. Similarly Whirlpool says having all its information in the cloud has helped it to 'collapse geography' and increase the speed at which it develops and implements product ideas because everyone can access their files and discuss them in real time.

Here in India customers like energy transmitter and distributor EMCO Limited are finding that their employees feel better equipped to run projects across country borders since moving to more collaborative tools. Management can access information about project timelines and progress, and employees can respond to customers and partners, across time zones and from anywhere on any device rather than waiting till they were at their desks.

"Management can access information about project timelines and progress, and employees can respond to customers and partners, across time zones and from anywhere on any device rather than waiting till they were at their desks."

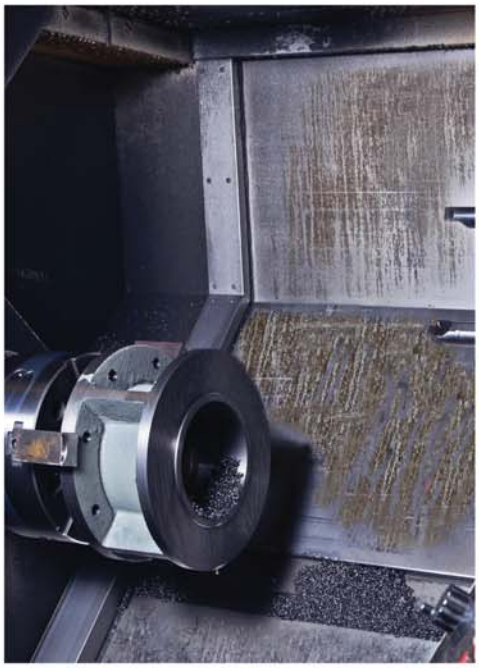
Being able to collaborate more easily with co-workers and customers has been proven to have a real impact on the bottom line. Recent research from Deloitte Australia, has found that companies that prioritise collaboration are twice as likely to be profitable and twice as likely to outgrow competitors. For manufacturers looking to make their next process innovation and reap the productivity benefits, a move to cloud based tools like Google Drive for Work marks a step in the right direction.

The author is Country Manager - Google for Work India.

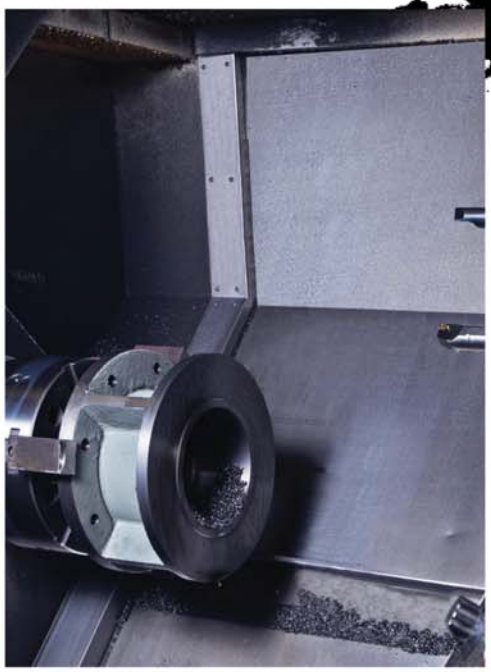
Dirty machines can affect your shop floor productivity and your morale

Machining of Cast Iron, is a tricky and demanding process. Inherent composition and properties of the metal pose stiff challenge to even the experienced machinist. The fine graphite residues generated during the machining process tend to stick on to the machine parts rendering it with an unenviable look.

If unattended, these impurities tend to form a thin oxidized film on surface of the machine parts. Chances of rust formation also cannot be ruled out. These can not only lead to choking of pipelines and nozzles but also significant reduction of machine lifetime. Dirt on the machines is not only a blot to your reputation but can also impede efficiencies. While chances of tool breakage and poor finish increase, the biggest impact is on the morale of the operator!



Scale formation with ordinary cutting fluid



Machine after switching over to Avantin

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Brand Ambassador of Indian Manufacturing

Today, as India stands on the verge of a manufacturing revolution with our PM's call for 'Make in India', Kalyani has already laid the foundation by making 'Made in India' a brand to reckon with in the global market place.

By Niranjan Mudholkar

The year was 1989. India hadn't yet opened the doors to globalisation. And his company's worth was about Rs1.5 billion. But he believed in something that others didn't. He envisaged an industrial revolution in India when others couldn't. So he went ahead and invested Rs one billion for technologically upgrading the Bharat Forge plant. It was a gamble; one of the biggest in Indian industries.

His own father Neelkanth – who had turned to manufacturing in the 1960s after being a farmer – almost thought that his son Baba Kalyani was about to destroy a lifetime's achievement. And industry experts too were ruthless in their criticism. They believed Baba Kalyani had lost his mind with the decision to double the company's capacity in a sluggish domestic market. "He was creating a white elephant," they said. They had a reason to say so. It was a time, when most of his rivals were getting battered by the domestic recession. But he was actually multiplying his capacities in anticipation of a global surge. And he was right. The decision transformed Bharat Forge Ltd (BFL) into a manufacturing powerhouse. And it is this vision that has made Baba Neelkanth Kalyani, Chairman & Managing Director of Bharat Forge Limited, the 'Brand Ambassador of Indian Manufacturing'.

"Recessions are always cyclical in nature in the sense that they affect certain sectors and geographies at a time. That's the reason you need to keep your business interests diversified," he once told your editor. It is this wisdom that has helped him tide over several downturns. "Well, every automotive supplier

Three-pronged strategy

During FY 2013-14, Bharat Forge followed a three pronged-strategy to continue on a growth oriented model for the export markets:

- Growing the business by leveraging technology. The focus for the year remained on partnering customers on product improvements which included lightweighting, enhanced durability and a combination of the two.
- Growing business with existing customers by broadening the product base and offering superior value addition by enhancing metallurgy and developing better processes which led to growth in market share.
- Enhancing the product portfolio by creating capabilities and achieving necessary internationally acclaimed certifications such as NADCAP to serve the aerospace industry.

"Going forward, challenges are expected to surface given the volatility of markets, increasing competition and greater demand for superior products from OEMs. In order to address these challenges, Bharat Forge intends to strengthen its focus on innovation which will enhance value perception of its products on a global scale. Additionally, it will seek newer opportunities in key geographies while continuing to support existing customers through a range of value added, technologically superior product portfolio," says Kalyani.

has to deal with the cyclical downturn. Our strategy is to diversify into the non-automotive business and expand into supplying for large infrastructure projects in the field of railways, shipping and aircraft," he said.

And that's the reason why BFL has always looked at replicating its success in the automotive business in other verticals. "We are exploring further opportunities in high value, high growth sectors, such as Power, Oil & Gas, Rail & Marine, Construction & Mining and Aerospace, among others. The financial resilience of a company signifies the organisation's ability to take advantage of growth and development opportunities as they appear and also to weather economic turbulence," he says.

Of course, this does not mean taking away focus from the automotive business. In fact, far from it. Today, BFL has a more than 35 percent share of the world market for certain products in the auto components segment. All of its 2,000 products are proudly displayed at the Pune headquarters. The range of global customers includes the who's who automotive industry with names like DaimlerChrysler, Ford, General Motors, Volkswagen, Toyota, Volvo, Renault, Dana, ArvinMeritor, Caterpillar, Cummins, and Iveco.

When he took that big decision in 1989, Baba Kalyani's confidence stemmed from the fact that he was looking beyond the Indian market. "People thought I was nuts. Articles were written about this so-called white elephant... In the late 1980s, before liberalisation, I realised we needed to do something different and bring in technology to drive our business forward. It required huge investment, but it was that one decision that took our company from being a non-entity to where we are today," he explains. His father – who retired in 1994 and died in 2013 – could always look back with pride. He knew that his son had not just changed Bharat Forge but had also transformed Indian manufacturing.

Of course, the gamble had paid off handsomely. But for Baba Kalyani, it was just the beginning. He was now geared up to challenge the biggest and the best in the world of manufacturing. And it was only natural that he set his eyes on the North American shores. In 1992, he bagged his first order worth US$ 5 million from ArvinMeritor. Bharat Forge sealed the deal with the guarantee of competitive pricing and high quality.

"Baba Kalyani started his journey to global ascendancy in 2003 with the acquisition of the German company Carl Dan Peddinghaus (CDP) – a bold step at that time for an Indian entrepreneur."

With the automotive industry going through a bad patch both in India and the US in the mid-1990s, the time was ripe for Bharat Forge to venture into other productive world markets. Europe was beckoning; however it was not going to be easy and Kalyani knew it. But he was ready with a plan – dual shoring. A key reason why this concept of dual shoring worked for him is his very own integration technique – something rooted in his home country's culture. Rather than focusing on integration of business processes in two different continents and time zones, Kalyani used the masterstroke of having a people-

Strong global performance

The Company's wholly-owned global subsidiaries have recorded a strong performance on the back of productivity, cost control and introduction of new and innovative products. The total income recorded a growth of 31.7 percent while EBITDA grew by 84 percent. The EBITDA margins also witnessed growth over the previous year, clocking a rise of 190 bps over the previous year. PAT stood at Rs1,167 Million as compared to the previous year when it recorded a loss of Rs370 Million. The discontinuation of operations in China has added positively to the profitability. BFL's global subsidiaries have helped the Company increase its access to new geographies, increased customer penetration and proximity to the customer and enhanced ability to cater to the customers through a dual-shore based model which will reduce any customer's dependency on the number of suppliers for different components, and facilitate exchange of best practices and technology.

focused approach. His logic has been simple - the business side would naturally fall into place if he gets the people side of the operations right. And it works.

After every acquisition, while retaining the local management he starts off a 100-day integration programme during which the top management from both countries meet up and discuss things. This includes even the basics like how to say hello and how to reply to an email! This takes care of any cultural differences that could lead to barriers or mistrust in the future. A regular three-day company integration meeting every year in November, to which managers come with their partners to participate in team-building activities in an informal environment makes the picture complete.

There is indeed a unique Indian approach that Baba Kalyani brings to his global operations and he takes great pride in his Indian roots: "Indians tend to work with very people-led sensibilities. I am pretty sure a very structured and formal business set-up does not have the right effect. An India-led operation has two things going for it: one, by nature Indians are people focused and two, Indians have a tremendous sense of dealing with diversity. We deal with it on a daily basis."

Kalyani's open-door policy at the Mundhawa factory located just outside Pune not only instils confidence in his employees but also keeps him in the know of the day-to-day operations. When your editor visited the factory some time back, he could feel the strong work ethic on the shopfloor of this very Indian factory that has a global edge to it. In fact, there is an army cantonment like feel due to the discipline, the camaraderie, the focus and the determination on the shopfloor. And why not? Baba Kalyani did his schooling at the King George Royal Military Academy at Belgaum, a boarding school. And his vacations were spent at the Pune plant getting his hands dirty in the family business.

"BFL has won 14 new orders in FY 2013-14 across automotive and non-automotive sectors. On the automotive front, BFL has added one new customer on the passenger vehicle front while the rest of the orders have come from the traditional clients on the commercial vehicle side."

Later he graduated from BITS Pilani and did his MSc at MIT in Boston. But the boarding school discipline has stayed with him. "When you are in a military school, there is very little room to manoeuvre the system and I think that discipline has stood me in good stead all my life. It has made me a very simple, straightforward kind of person. That also gets me into trouble sometimes as I am too candid, but by and large I think people appreciate the openness and integrity behind it. And as for machines, I was somehow always very mechanically minded. I liked machines right from my childhood, their feel, to be around them."

The legacy

Baba Kalyani expects his son and heir apparent, Amit Kalyani, to follow the same lesson of working your way up that he himself has followed. Amit has to prove himself worthy if he has to step into his father's shoes; there are no guarantees. And Amit understands this well. An engineer from the Bucknell University, he started working on the shop floor in 2000. Today, he has risen through the ranks to a board-level position becoming Executive Director. Of course, business hierarchy apart, father and son share a healthy relationship and a passion for cars. They love manufacturing and it even becomes the main course at the dinner table many times with both engrossed in discussions and debates. Of course, Amit's wife Deeksha isn't really amused about it although she understands their zeal. Such dinner times and other family times bring out a family well entrenched in Indian values. And Baba Kalyani counts his family as one of his biggest strengths. "They are my support system and I greatly value their love, care, and understanding, without which I would not have achieved even a measure of the success that has come my way," he says.

This love for machines has made him a hands-on leader right from 1972 when he first took to the factory's shopfloor. At that time, it was a small company struggling with labour-intensive operations and primitive technology. Although, he was given the charge of sales, Baba Kalyani's foresight told him that unless BFL adopted advanced technology, procuring new sales orders would be going down the drain. So he turned his focus to manufacturing and that is when it all started. Always to be seen the first and last on the shopfloor, Baba Kalyani propelled a struggling business into a global manufacturing giant. By the way, don't be surprised if you see him on the shopfloor even today in the company uniform just like any other employee.

It is this passion that has enabled Kalyani to take Indian manufacturing to great heights. Today, as India stands on the verge of a manufacturing revolution with our PM's call for 'Make in India', Kalyani has already laid the foundation by making 'Made in India' a brand to reckon with in the global market place. Bharat Forge is today amongst the world's largest forging companies with manufacturing facilities spread across India, Germany and Sweden. It manufactures a wide range of high performance, critical and safety components. In fact, the Mundhawa factory is the world's largest and most technologically advanced forging facility, with a capacity of 365,000 tonnes.

A technology-driven global leader in metal forming with its presence across eight manufacturing locations, the Company has expanded its product offerings across both the automotive and the industrial sectors. The company's global expansion reflects India's increasing manufacturing clout across international borders. "Venturing into new processes and technologies, while experimenting constantly, has been our core strength," he says. The Company has the largest repository of metallurgical knowledge in the region and offers

At the forefront of aluminium components

Bharat Forge Aluminumtechnik GmbH & Co KG (BFAT) has won a prestigious multiyear contract approximately worth Euro 250 Million from a German OEM for supply of suspension components based on unique technology industrialised by BFAT over the past few years. The industrialisation of this unique technology has put BFAT at the forefront of aluminium component industry witnessing huge demand globally. To create capacity for this additional Business, BFAT is increasing its capacity by adding a new press line with all auxiliary equipment including melting which will be commissioned in January 2015. This plant is being set up at a cost of Euro 31 Million funded by way of internal accruals, debt and state subsidies. Going forward, the European subsidiaries will focus on developing more customers and products.

full-service supply capability to its customers from concept to product design, engineering, manufacturing, testing and validation.

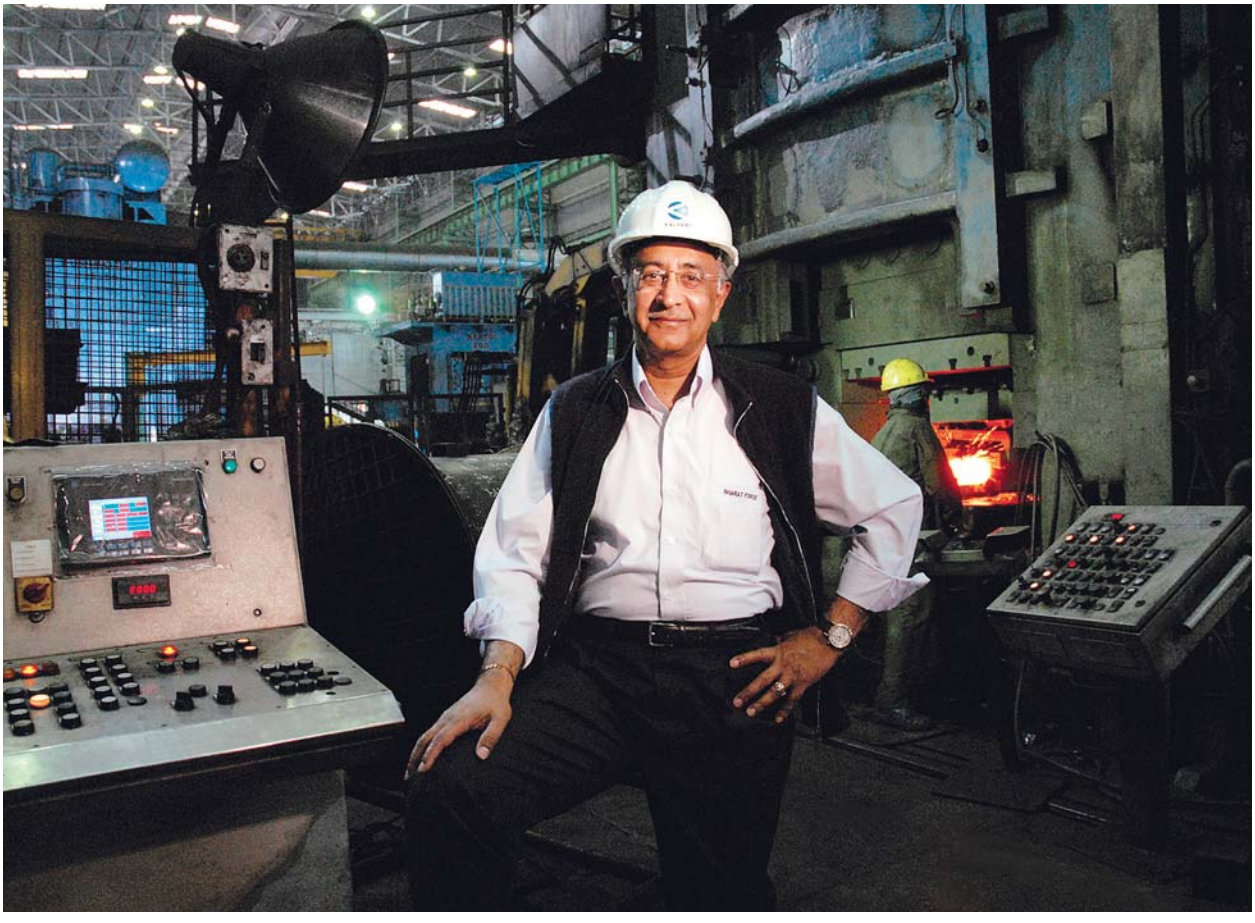
While consolidating the Company's manufacturing reach, Baba Kalyani is equally focused on strengthening its balance sheet. For example, he divested 51.85 percent stake in his Chinese JV operations for US$ 28.208 million and reduced net financial debt, both at the consolidated and the standalone levels. "A strong and robust balance sheet has enabled us to invest in capacities and create full service supply capability, at the same time enabling us to withstand two synchronised down cycles across geographies and segments in the past five years. Diversification and focus on excellence, innovation and customers, have all contributed to our growth and performance," he says.

Today the nation's economic scenario is fast changing thanks to the new government's slew of reforms. "BFL is optimistic of the growth coming in the CV side and an improvement in the industrial capex by the end of the current fiscal year. This would provide a big driver for growth in the Indian revenues. BFL's focus going forward is to increase the content per vehicle by developing new products for the commercial vehicle sector and new customer wins on the passenger vehicles front. This should result in the domestic sales growing faster than the underlying market growth," Kalyani says with certain confidence, now gearing up his organisation for the next phase of growth.

But then, whether it is recession or revival, Baba Kalyani is quite used to it. Perhaps it's got to do with the obsession with machinery and a habit he seems to have developed ever since he was a six-year old. Then, he would pull apart his bicycle only to put it back together again. Now, he is restructuring and transforming organisations and industries.

Focus on education

Baba Kalyani has a strong belief in the power of education and he strives to bring it to the grass root level. A large amount of his time is devoted to Pratham Pune Education Foundation, an educational charity that he founded and chairs. Pratham's aim is to provide primary educa¬tion to needy children in the local community. Education, he believes, holds the key to the country's future. And that's why he also has set up his own engineering school in Pune to develop human capital. Moreover, he has a tie-up with Warwick University in the UK for a master's program, through which over 100 engineers graduate every year.



Ashok Leyland to manufacture EV buses in India

Ashok Leyland is planning to manufacture its UK based brand of Optare electric vehicles in India in the near future. Vinod K. Dasari, Managing Director, Ashok Leyland Limited, shared this information during the visit of Dr. Vince Cable MP, UK Secretary of State for Business, Innovation & Skills, to Ashok Leyland's Head Quarters and later their plant at Ennore in Chennai

Vinod K. Dasari, MD, Ashok Leyland Ltd said, "We are the world's 4th largest manufacturer of buses and the largest provider of electric vehicles. Through Optare's facility in the UK, we are well-placed to help reduce the carbon footprint of the world. With the continued support from the Government of UK, we hope to grow our operations in UK and also bring this technology to India. In line with the honorable Prime Minister's 'Make in India' initiative, we are hopeful of manufacturing these electric vehicles in India, in the near future."

Tata AutoComp Systems and Katcon enter into a JV to provide exhaust systems

Tata AutoComp Systems (Tata AutoComp) and Katcon Global have signed a 50/50 joint venture (JV) agreement to provide exhaust systems and emission after-treatment systems to the Indian automotive industry. The JV will be focused on designing and delivering innovative exhaust systems and emission after-treatment solutions to the Indian automotive industry. The range would cover cutting-edge exhaust solutions for passenger cars, utility vehicles, medium and heavy commercial vehicles, buses, farm tractors and off-road vehicles. The product offering will include solutions for both the hot end and cold end of the exhaust system namely, catalytic converters, diesel particulate filters, selective catalytic reduction, mufflers and silencer modules. The JV will be headquartered in Pune, Maharashtra, India.

Hella India expands its Dhankot facility in Haryana

Global automotive parts supplier, Hella, has expanded its Dhankot facility in Haryana, India for its growing Electronics business division. As part of its aggressive growth strategy, with plans to harness its global technologies and customise them for OEMs in India, Hella has introduced state-of-the-art SMT lines for its key focus

products- Body Control Module and Remote Key Entry for Indian customers.

"This expansion aims at fulfilling the increasing need of our local customers based on business contracts we have won with some of the key Indian OEMs. As market prepares itself for more complex products and customer demands in local market increase, HIA is committed to bring in innovative products and futuristic technology to further localise the product portfolio." says Dr. Naveen Gautam, Managing Director, Hella India Automotive Pvt. Ltd.

Schaeffler opens first plant in Russia

The global technology company Schaeffler has inaugurated its first manufacturing facility in Russia. The Schaeffler Group will deliver high-quality products to domestic and overseas automobile manufacturers and the railway industry from its new production plant in Ulyanovsk.

Production at the new plant is based on the Schaeffler Group's high worldwide occupational safety and environmental protection standards. The plant is currently producing clutches and manual transmission components on two production lines. Production of tapered roller bearings for use in the

'Sapsan' and 'Lastotschka' electric trains is set to begin at the end of 2014. Sergey Morozov, Governor, Ulyanovsk region, said: "A new manufacturing facility also creates new jobs."

In appreciation of the critical role played by Plant Heads in the success of manufacturing organisations, The Machinist has started a section called 'Plant Head of the Month'. We feature some illustrious plant heads in this section giving preference to the ones whose plants have accomplished noteworthy milestones recently.

Empowered by women

Dr. RV Raj Kuumar, the Plant Head of Kirloskar Brothers Ltd's Coimbatore facility has led a team of 100 percent female associates to achieve record breaking feats.

By Niranjan Mudholkar

It is interesting to note that Kirloskar Brothers Ltd (KBL) is the only engineering company in India which operates with 100 percent female associates at one of its manufacturing plants, ably led by Dr. RV Raj Kuumar – the Plant Head. Established in 2011, the plant manufactures different models of domestic pumps and has 70 women between the age group of 19 to 30 employed on the shop floor and who are mostly school drop-outs.

"Under the project Mahila Mission 20, we reduced the cycle time from 60 seconds per pump to 20 second per pump. This has tripled the plant production to 34,000 pumps per line per shift per month."

Dr. RV Raj Kuumar

In the recent past, this KBL Plant located in Coimbatore bagged the ASSOCHAM 'Gold Award' for novelty in Science & Technology Category. Two innovative factors that led to this award are having 100 percent female employees in the manufacturing process and the project Mahila Mission 20. Dr Raj Kuumar explains: "Under the project Mahila Mission 20, we reduced the cycle time from 60 seconds per pump to

The Pros and some Cons

- Ability to network with colleagues.
- Ability to perceive and understand situations.
- Strong sense of dedication, loyalty and commitment to their organisation.
- Ability to multitask.
- Collaborative work style — solicit input from others, with respect for ideas.
- Crisis management skills.
- Willingness to share information (interactive leadership style).
- Sensitivity in relationships (e.g., compassionate, empathetic, understanding).
- Behaving in a gender-neutral manner.

Of course, there are certain disadvantages too as mentioned by the Plant Head: "Retention is the real challenge for us after marriage and migration. Another major challenge is absenteeism."

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20 second per pump. This has tripled the plant production to 34,000 pumps per line per shift per month. The plant has set another benchmark and bagged a prestigious award by the Limca Book of Records for the project 'Mahila Mission 20'. It achieved a milestone of assembling a pump in an amazing time of 17.25 seconds, making it a National record.

So, how did the Plant achieve this feat? The achievement was made possible with the help of TEI (Total employee involvement). The Mahila Mission 20 project was initiated by the Plant Head himself. Total employee involvement was made possible by giving them guidance and motivation as well as by monitoring and reviewing the entire mechanism.

"Base for the achievement was made through 53 major process improvements in the assembly and rigorous training for our associates," says the Plant Head. The Coimbatore Plant has designed a dedicated skill matrix training program for its associates for internal skill development and for fulfilling the required competency. It follows an on job skill development programme to develop the skill levels of the associates. "Also, we have trained our associates under the Skill Development Initiative (SDI) developed by Ministry of Labour & Employment under the MES framework.

Besides Skill, another S that is given immense importance at the KBL Coimbatore plant is Safety. "At KBL, safety is always at the top of every process. As an EHS certified company we follow the all three elements not only in the process but also till the completion of the final end product. It is noteworthy that, in the project Mahila Mission 20, we brought down the Risk level by RL6 to RL2 in six types of safety hazards."

> "A plant head must motivate his team, delegate responsibilities and empower his associates. While there has to be monitoring and review of the work done on the shopfloor, the associates must be supported through out and they must see the plant head's involvement in all activities."

Plant information

Location: **Kaniyur Village, Coimbatore**
Plant Size: **4.14 acre**
Technological highlights: **ATP plant with semi automated assembly line**
Key products manufactured: **Domestic Self priming mini mono bloc pumps**
Annual capacity: **5 lakh units**
Key clients: **domestic customers**
Manufacturing principle followed: **Lean manufacturing process**
Recent milestones: **Mahila Mission 15**
Plans of expansion: **Working for MM 6**

With increasingly intense competition, quality plays a key role in differentiating manufacturers and their products in the market. While metrics like productivity and efficiency play a key role within a manufacturing organisation, what the customer values most is quality. But many times quality is sacrificed to cut costs or to ensure productivity. In this light, what is the KBL Coimbatore plant doing to build quality management within the manufacturing system? "We strongly believe that productivity improvement can only be part of quality; in the sense that quality is inbuilt in man (woman in our case!) machine, material and method. At the same time, a customer focused approach driven by the top level is required to meet the basic needs in every aspect," Dr Raj Kuumar says.

According to Dr Raj Kuumar, to be successful in today's world, a plant head must focus on team building and training. "A plant head must motivate his team, delegate responsibilities and empower his associates. While there has to be monitoring and review of the work done on the shopfloor, the associates must be supported through out and they must see the plant head's involvement in all activities," he explains.

And how does he perceive the role of supply chain partners?" The supply chain has also played vital role behind the success of the project. We collaborate with them through regular meetings and training."

On the verge of transformation

Continued economic reforms can be transformational and significantly improve the domestic and international competitiveness of Indian manufacturing firms, said the latest India Development Update of the World Bank.

As economic reforms gain momentum, India's growth is likely to accelerate towards its high long-run potential. Measures such as a national Goods and Services Tax (GST), accompanied by a dismantling of inter-state check posts, can be transformational and significantly improve the domestic and international competitiveness of Indian manufacturing firms, said the latest India Development Update of the World Bank.

According to its estimates, simply halving the delays due to road blocks, tolls and other stoppages could cut freight times by some 20-30 percent and logistics costs by an even higher 30-40 percent. This alone can go a long way in boosting the competitiveness of India's key manufacturing sectors by 3 to 4 percent of net sales, thereby helping India return to a high growth path and enabling large scale job creation.

According to the Update, India's economic growth is expected to rise to 5.6 percent in FY15, followed by further acceleration to 6.4 percent and 7.0 percent in FY 2016 and FY 2017.[1]

"With economic reforms gaining momentum, long-term prospects for growth remain bright for India," said Onno Ruhl, World Bank Country Director in India. "To realise its full potential, India needs to continue making progress on its domestic reforms agenda and encourage investments. The government's efforts at improving the performance of the manufacturing sector will lead to more jobs for young Indian women and men."

Highlighting some of the significant trends in the Indian economy, the Update said growth has rebounded significantly due to a strong industrial recovery. Capital flows are back, signaling growing investor confidence as inflation has moderated from double digits, exchange rate has stabilised, and financial sector stress has plateaued.

Growth is expected to strengthen over the medium-term. WPI inflation is expected to moderate to 4.3 percent in the current fiscal, from 6.0 percent in the previous year while the FY2014 current account deficit of 1.7 percent is expected to widen marginally to 2.0 percent as import demand picks up and capital inflows rise. Fiscal consolidation is expected to continue through expenditure restraint, although there is room for revenue mobilisation to strengthen, the Update cautions.

> "The government's efforts at improving the performance of the manufacturing sector will lead to more jobs for young Indian women and men."
>
> **Onno Ruhl,**
> World Bank Country Director in India

"Implementing the GST will transform India into a common market, eliminate inefficient tax cascading, and go a long way in boosting the manufacturing sector," said Denis Medvedev, Senior Country Economist, World Bank, India.

According to the Update, India's longer term growth potential remains high due to favorable demographics, relatively high savings, recent policies and efforts to improve skills and education, and domestic market integration. Improved growth prospects in the US will support India's merchandise and services exports, while stronger remittance inflows and declining oil prices are expected to support domestic demand, the Update added.

Domestically, the risks include challenges to energy supply and fiscal pressures from weak revenue collection in the short term, the Update said. However, risks could be mitigated to a large extent by focusing on reforms that help the manufacturing sector.

The Update said supply chain delays and uncertainty are a major, yet underappreciated, constraint to manufacturing growth and competitiveness. The GST offers a unique opportunity to rationalize and re-engineer logistics networks in India, given the inherent inefficiencies with taxes based on the crossing of administrative boundaries. It will free up decisions on warehousing and distribution from tax considerations so that operational and logistics efficiency determines the location and movement of goods, it added.

[1] The financial year refers to fiscal year ending March 31, 2015.

Engine of Growth

Jaguar Land Rover's recently opened Engine Manufacturing Centre in UK will see engines being produced in-house for the first time in a generation.

Jaguar Land Rover recently marked a seminal moment in its history with the official opening of its new Engine Manufacturing Centre. Announced in September 2011, this facility represents a significant step in Jaguar Land Rover's strategic investment programme and will see engines being produced in-house for the first time in a generation.

Located near Wolverhampton in the West Midlands (UK), the Engine Manufacturing Centre is home to the Ingenium engine family which will power a new generation of Jaguar Land Rover products designed, engineered and manufactured in the UK. This starts with the 2.0-litre diesel, which rolls off the production line early next year, destined for the new Jaguar XE.

When operating at full capacity, the £500 million Engine Manufacturing Centre will employ 1,400 people with a further 5,500 jobs created in the supply chain. Through an unrelenting commitment to training, Jaguar Land Rover is developing the skills required to future-proof its engineering capability and provide a sustainable foundation for continued business growth.

Precise Engineering - The Machining Hall

"Almost half the total investment on the project was made on these machines," says Paul Blackman, Production Area Manager. This area represents the cutting edge of manufacturing technology, utilising 150 state-of-the-art machines working across three lines. Everything from assembly robots and lasers to drilling and high-pressure wash machines operate here, representing an investment of more than £150 million.

Top 10 details about the facility

- ✓ **£500 million** investment.
- ✓ **100,000 sq m** in size - the equivalent of 14 football pitches.
- ✓ **6,500 m3** of topsoil excavated from the site.
- ✓ **4,400 tonnes** of hot-rolled steel used in the construction.
- ✓ **32.1 miles** of trenching for ducts and drainage.
- ✓ **21,000** photovoltaic panels on the roof, providing the same amount of energy required to power 1,600 UK homes.
- ✓ **£650,000** - the average cost of one of the high-tech machines in the Machining Hall.
- ✓ **0.003 millimetres** - the detailing on a crankshaft is polished to be less than the width of a strand of human hair.
- ✓ **245** - approximate number of parts in each engine derivative.
- ✓ **90 seconds** - time taken to perform a cold test on a single engine.

The first line is where the aluminium block begins its transformation from a simple chunk of metal to the technologically advanced heart of the Ingenium engine. It is heated in an oven before undergoing a series of machining operations, always punctuated by high-pressure washes to filter debris away. The second line contains the cylinder head, which undergoes a similar process.

The crankshaft line differs as it is machining forged steel, not aluminium. Here, the steel is milled, turned and drilled. Both automated and manual tests take place throughout each line, ensuring that each component is made to the highest standard of quality possible. This area represents the precision of technology, driven by human craftsmanship. It is where the very first parts of the engines are made, containing within them the DNA of Ingenium.

Piece by Piece - The Diesel Assembly Hall

"The assembly line is the birth of the engine," says John Turner, Assembly Area Manager. This is where approximately 245 separate parts come together to form an engine derivative. It is also where Jaguar Land Rover's commitment to people is most evident; more than 150 associates currently work here, across a total of 17 zones.

More associates will join the team when the petrol Assembly Hall also becomes operational. The aluminium block, cylinder head and crankshaft move through the zones, each one bolstered by additional components and rigorous testing, before finally joining together. The engine is then cold tested; an eco-friendly procedure that ensures the highest

quality standards are met, before leaving the assembly line.

If the Machining Hall is where the journey of the engine begins, then the Assembly Hall is where it is given life, going from a disparate assemblage of components to a finished engine, the first member of the Ingenium family that will power a new generation of Jaguar Land Rover products.

Logistics - Everything in its Place

The logistical challenge that a facility of this scale represents is immense, and the logistical department is every bit as vital to the success of the centre as the manufacturing process itself.

The Engine Manufacturing Centre has 71 suppliers, approximately 30 per cent of which are based in the UK. Hundreds of individual parts will be required when both diesel and petrol divisions are operational. These will be delivered to two main receiving areas - five bays in the Assembly area and two in the Raw Materials area. Once inside the facility, the parts will be transported on specially adapted cargo trains, making 133 movements a day, facilitating a huge volume of engines while never compromising on quality. This process has an inherent capacity for flexibility, allowing logistical operations to keep up with the rapidly evolving demands of the modern automotive industry.

The Assembly Hall is where human craftsmanship really comes to the fore, with more than 150 associates playing a key role in the construction of every Ingenium engine

"The logistical challenge that a facility of this scale represents is immense, and the logistical department is every bit as vital to the success of the centre as the manufacturing process itself."

The Assembly Hall is where human craftsmanship really comes to the fore, with more than 150 associates playing a key role in the construction of every Ingenium engine.

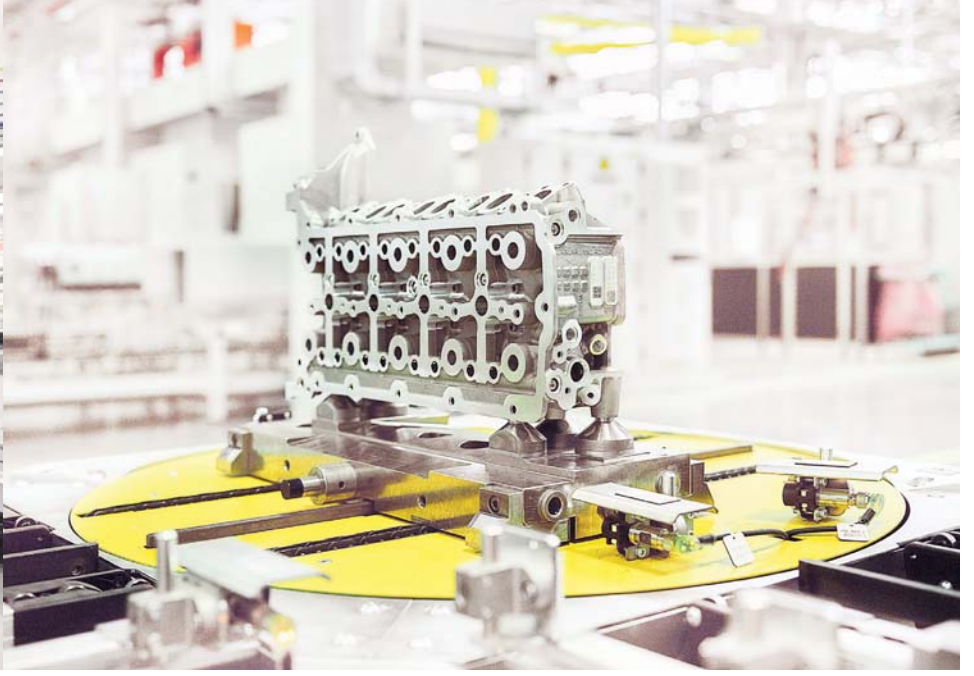
Alive With Technology - Ingenium

"Customers are increasingly demanding cleaner running, more efficient vehicles that maintain or even enhance performance attributes. Our Ingenium engines deliver this to a new level," says Dr. Wolfgang Ziebart, Jaguar Land Rover Group Engineering Director. These engines will be Jaguar Land Rover's most advanced ever. This new family of premium, lightweight, four-cylinder units will utilise the most flexible engine architecture ever produced by Jaguar Land Rover, making them efficient, powerful and capable of producing up to 300Nm of torque while emitting as little as 99g/km of CO2.

The core of Ingenium is comprised of extremely strong and compact aluminium blocks, which will allow a range of engines to be developed, both quickly and efficiently, to meet the rigorous regulatory and competitive requirements of the future.

All variants will be equipped with high-tech turbochargers that improve performance, and help reduce CO2 emissions. Their modular design enables petrol and diesel engines to share many common internal components.

This reduces complexity, raises quality and simplifies manufacturing. Despite adding features and increasing power output, Ingenium engines weigh as much as 80kg less than equivalent engines of today. The Engine Manufacturing Centre will allow Ingenium engines to deliver outstanding low-end



The layout of the Machining Hall has been designed around a range of automated processes that combine to produce a series of precision components, such as crankshafts

torque, effortless acceleration and class-leading emissions performance with low consumption.

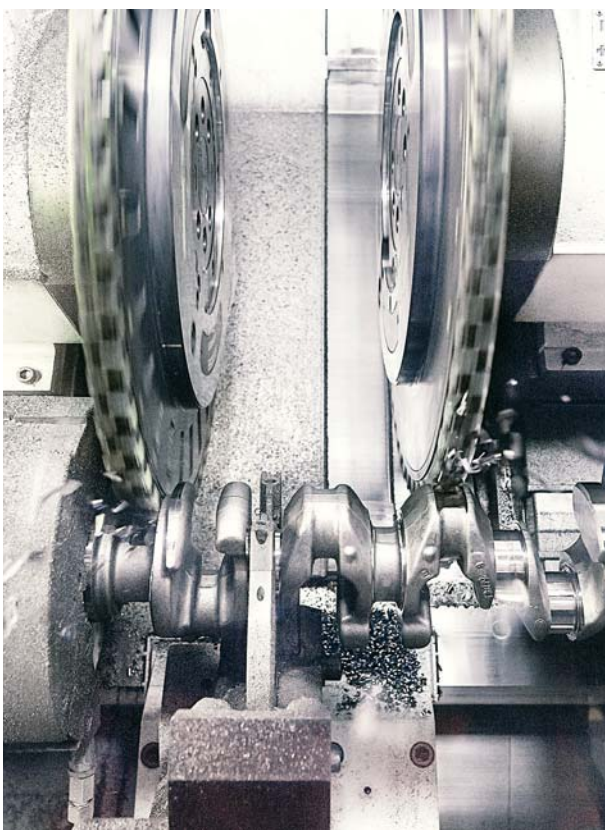
Before the first Ingenium engine leaves the factory, it will have already undergone the equivalent of more than eight years of the toughest, most punishing testing that Jaguar Land Rover engineers could devise. These include more than 72,000 hours of dyno testing and 2 million miles of real-world testing.

"Energy monitoring facilities in the plant continually analyse the amount of energy being used and identify opportunities to reduce electricity and gas consumption."

The Engine Manufacturing Centre Vision

Amongst the first objectives of the Engine Manufacturing Centre operations team was the establishment of a Vision and Values by which its entire workforce would live. These values will ensure that each and every employee plays their part in delivering the flawless standards required to set a new global benchmark for excellence in engine manufacturing.

When at full capacity the engine manufacturing centre family will be 1,400 strong, with each member showcasing world-class skills and expertise in the UK's automotive heartland, creating a legacy for generations to come. To deliver this, a bespoke two-week training programme called 'The Powertrain Way' was developed to teach all employees, from HR consultants to machine operators, the lean engineering principles at the heart of the engine manufacturing operation.



The layout of the Machining Hall has been designed around a range of automated processes that combine to produce a series of precision components, such as cylinder heads

Clean and Green - Sustainability

To date, more than 20,000 training hours have been completed by 254 associates, driving quality standards forward. The Engine Manufacturing Centre has been designed with sustainability embedded throughout and has recently been awarded a rating of 'excellent' by BREEAM (Building Research Establishment Environmental Assessment Methodology), for sustainable buildings.

The centre has the largest rooftop solar panel installation in the UK, comprising no fewer than 21,000 individual panels. It is estimated that these panels will generate more than 30 per cent of the site's energy, reducing its CO2 footprint by more than 2,400 tonnes per year.

Debris from the manufacturing process is filtered away and prepared for transport off-site. This is an environmentally friendly process, and the recycled aluminium briquettes created from it bolster the facility with additional revenue.

The production halls are 'clean room' environments, ventilated by a positive air system. Energy monitoring facilities in the plant continually analyse the amount of energy being used and identify opportunities to reduce electricity and gas consumption.

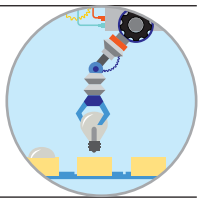
Source: Jaguar Land Rover

TEN HOT Megatrends

KPMG's 'Industrial Manufacturing' Experts Panel has identified and analysed ten overall megatrends, which are seen as most important in today's manufacturing world. The Machinist presents interesting glimpses from this very useful report.

As a consequence of the recent economic turbulence, manufacturers have been forced to increasingly review their financial management processes – especially focusing on risk management and the financial exposure during crisis situations. This should, however, not lead to companies disregarding the importance of a sustainable growth strategy. Even in times of volatile and uncertain economic conditions, the world still continues to change around us: Markets, business models, manufacturing processes and other challenges along the value chain are all changing at an increasing speed in an increasingly interconnected world where new opportunities and threats appear constantly. Some of the drivers behind these changes are so-called megatrends, which result in far-reaching processes of transformation across regions and industries. More value is added by KPMG expert opinions who present crisp, quick and relevant reflections on these hot trends. "The manufacturer of the future must take these megatrends into account in order to remain competitive, create value for its investors and secure its position as a partner of choice for its customers and other stakeholders," Dr. Gerhard Dauner, Partner, Head of Industrial Manufacturing Europe, Middle East and Africa

Trend 1
Factory of the Future



Manufacturing companies are adapting more and more digital technologies to network and transform their manufacturing processes. The "factory of the future" can be broadly defined as a future view of an interconnected manufacturing value chain, involving information and communications technology (ICT) and automation technologies: Software will holistically interconnect and manage distributed factory assets. Embedded data collectors in processing centers will be linked to cross-functional enterprise systems, enabling real-time two-way data exchange and full production quality control. In the "factory of the future", the adaption of various digital technologies will also enable the data exchange from R&D (CAD, virtual simulation tools, rapid prototyping) to the factory floor (automation/robotics, control technologies, product lifecycle management (PLM), additive manufacturing) to distribution partners (analytical applications) and back, from suppliers to OEMs to customers, and vice versa.

"Through IT information systems that are fully-integrated from customers to suppliers, future factories and their supply chain will be directly driven by the customer. Transparent measurement of all significant process steps will allow a fast reaction to all deviations. The factory has to deliver reliable processes and highly skilled people who are able to follow the fast-changing demands of customers and markets."

Michael Bremicker, Partner,
Consulting – Supply Chain Management & Procurement

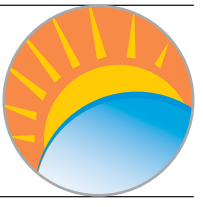
Trend 2
Near Shoring

Sourcing closer to end markets or "Near-shoring" is emerging as a megatrend. This sourcing trend refers to moving a business function to a country that is closer in either geography, time zone, cultural characteristics and empathy, quality of work, or economic structure to the company's home country as a means of cutting costs and improving services. North America and Eastern Europe are some of the key regions experiencing this shift. Manufacturers are rethinking more often their overseas manufacturing positions because the offshore advantage of labour arbitrage is decreasing. And a growing number of manufacturers are now realizing that the physical location of supply and manufacturing operations can have a significant impact on the overall competitiveness. Near-shoring offers the opportunity to maintain a high level of control while mitigating the cost of doing business.

"Supply chain risk management continues to be a key issue at board level for manufacturing companies. Many of them are already using near-shoring as a strategy to manage aspects of that risk. However, in our experience, very few companies have a fully integrated supply chain risk management process addressing all the elements of supply chain risk: supplier failure; continuity of supply; counterparty risk and regulatory risk."

Volker Zieske, Partner, Assurance Services

Trend 3
Demand Shift to the East

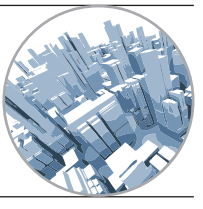


The global manufacturing sector is undergoing a change as major shifts in demand can be noticed. The accelerating shift of powers from West to East has moved the engine for growth in the global economy from developed to emerging countries. Large and growing populations, a rising middle-class consumer society as well as increased urbanization will drive demand in Asia. Major established Asian economies (e.g. China, India) and new upcoming markets (e.g. Indonesia, Vietnam, etc.) are driving global growth. Over the past few years, the share of these economies in the global "Gross Domestic Product" (GDP) has been increasing rapidly while mature markets like the US and Europe continue to witness slower recovery.

"New customers often require very different products to meet their needs, with different features and price ranges, forcing manufacturers to offer a wider range of products and services. This will also drive the growth of both production as well as research in Asia."

Tim Löbig, Partner, Consulting – Strategy & Operations

Trend 4
Cluster Manufacturing



Cluster manufacturing relates to the regional concentration of interrelated companies operating along an entire value chain, including manufacturers, service providers, suppliers, key customers, research institutes, universities and trade associations. These business clusters are often established in a particular geography to network and benefit from physical proximity, core competencies, skilled workforce and specialists, activity base, specialized (physical, and knowledge) infrastructure, and industrial organisation. The geographic concentration of a cluster provides a unique environment for accelerating technological innovation, stimulating new start-up firms and attracting investments. The critical mass effect often attracts further companies, investors, services and suppliers, as well as creating a pool of skilled labour and increasing innovation through the exchange of ideas.

"When business partners are located close to each other, it becomes easier for companies to exchange information, communicate and share input and/or output and to achieve a mutual benefit (joint development, alliances, joint ventures, etc.). The more links and networks spanned between companies, the more innovative and effective they become."

Thomas Hillek, Partner, Consulting – Strategy & Operations

Trend 5
Energy/Resource Efficiency

Manufacturing firms across the globe rely on the efficiency of their manufacturing processes to remain competitive in the market. Companies are actively researching, testing and implementing new energy sources, materials, processing technologies and logistics strategies to become more energy efficient and also reduce their carbon footprint and cost of materials. Manufacturers constantly seeking ways to counteract effects from the rising demand and the drastically increasing competition for energy and raw materials. With continuous incremental improvements and extensive investments, companies are also reducing their environmental impact to meet legal requirements. The introduction of energy saving technologies and processes and the optimised relationship between resource input and product output should enable efficiency and sustainability at every stage of a product's lifecycle, from production to operation to recycling.

"Commodity prices, energy usage and logistics management are already important for manufacturers to maintain their competitiveness today. However, these factors will become even more crucial in the future given the challenges of the energy market all over the globe and uncertainties about the energy supply as well as customer expectations associated with it."

Dr. Götz Wehberg, Partner, Consulting – Strategy & Operations

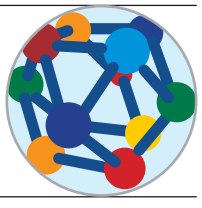
Trend 6
Talent Challenge

The global manufacturing landscape continues to evolve, driven by factors like globalisation, technological advancements and demographic shifts. These factors are in turn driving the demand for higher skills in the manufacturing sector. Both mature and emerging economies are facing talent shortages. In mature markets, despite the high unemployment rate, companies are struggling to fill manufacturing jobs with the right talent. Whereas, in the emerging markets, availability of a skilled talent pool is low. Know-how is a competitive advantage and innovation is a growth driver. The lack of a highly skilled, flexible workforce is impacting on the competiveness of manufacturing firms and preventing them from delivering innovation.

"Attracting and retaining appropriately qualified and motivated staff remains a top-of-mind issue for manufacturing companies. Many fear that labour shortages will retard long-term business growth."

Dr. Michael Geke, Partner, Consulting – Strategy & Operations

Trend 7
Nanotechnology/ Nanomanufacturing



Nanotechnology is defined as the combination of material science and technology for manipulating the structure of matter at the molecular level. Nanomanufacturing is the production of materials and manufacturing of parts either from the "bottom up" from nano-scaled materials or "top down" in nano steps for high precision. Both nanotechnology and nanomanufacturing are providing new capabilities and products to industries like automotive, aerospace, electronics, power, chemical, biomedical and health. Advancements in nanomanufacturing are helping to create new markets for nanoparticles, nanostructures and nanodevices. Scientists and engineers will develop materials at the nanoscale to take advantage of their enhanced properties such as lighter weight, higher strength, increased control of light spectrum and greater chemical reactivity than their largerscale counterparts. A key understanding of nanotechnology is that it offers not just better products, but a vastly improved manufacturing process.

"Nanotechnology presents the research-based industries with significant challenges and opportunities in risk management. Central to these are the relatively unknown environmental, health and safety exposures arising from nanomaterials through their lifecycle."

Andreas Bartels, Director, Transactions & Restructuring

Trend 8
Service Driven Business Models

> "Insights into your customer needs will be the most critical success factor in the service arena."
>
> **Markus Deutsch,** Senior Manager, Consulting – Strategy & Operations

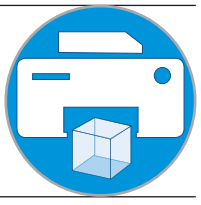
In particular companies from the developed markets respond to the challenge to extend or redeploy the initial core competency of a firm to increase their return with a shift in their business model. These companies expand their role in the value chain and start to offer advanced services or complete solutions which are closely coupled to the manufacturer's products. They evolve their product-focused business model to a client-centric model. Therefore, they have to deploy competencies and solutions that address their clients' engineering and product lifecycle needs. To deliver more tailored solutions and services, manufacturers aim for a closer ongoing collaboration with customers. To get closer to the customer, companies are taking control of activities in the outbound supply chain which are otherwise carried out directly by customers or third parties.

Trend 9
Sourcing Governance

> "Sourcing governance ensures the alignment of purchasing activities within the company's strategy. The visibility of a multi-tier supply chain will be the cutting edge for the future."
>
> **Dr. Lars Immerthal,** Director, Consulting – Supply Chain Management & Procurement

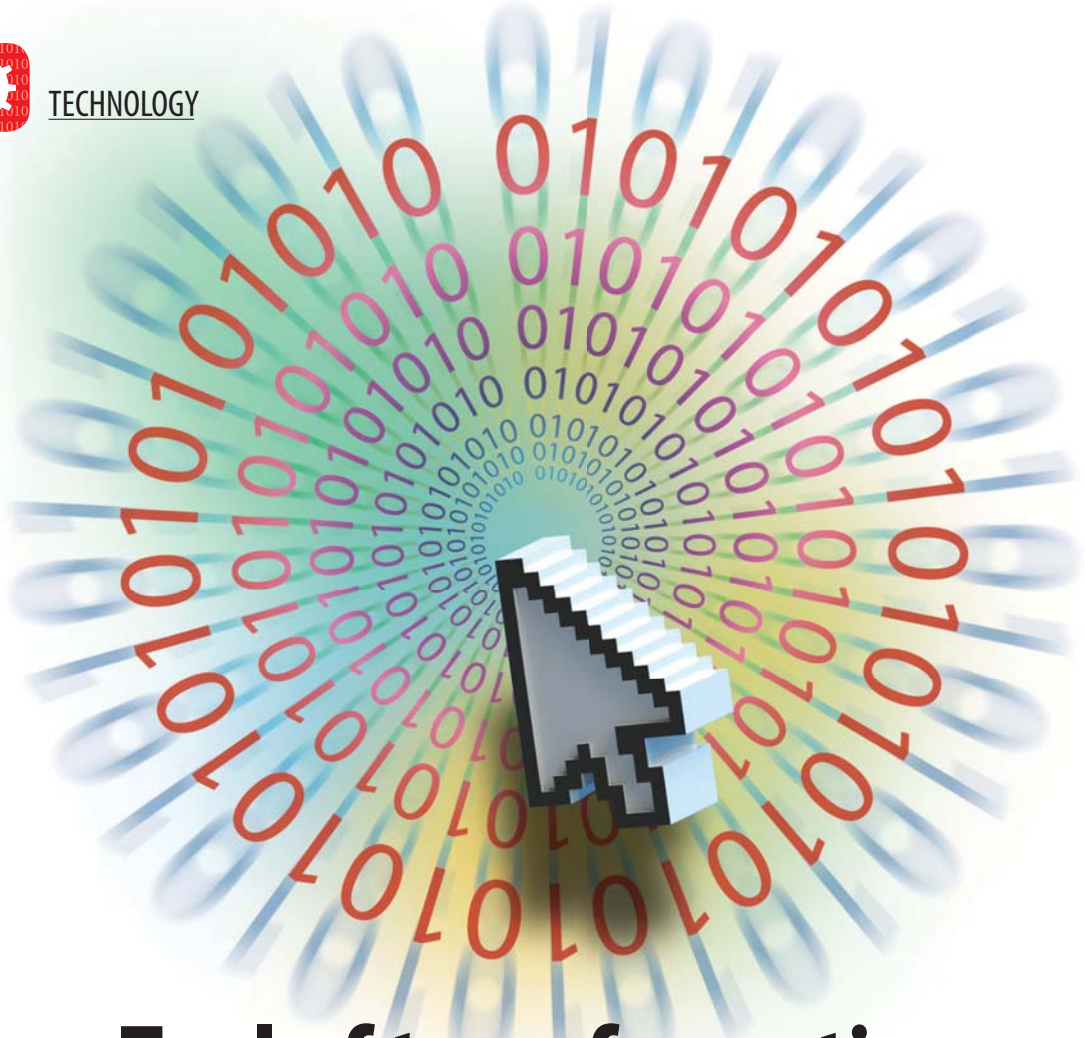
Traditional compliance focuses on the internal corporate governance, but tangentially more and more of added-value takes place outside the company. Sourcing governance is the responsible management and controlling of the company's external value chain. It is intended to achieve the leadership of the company's value network in order to minimise possible risks. A manufacturer's risk management has the task of safeguarding the competitive environment and guaranteeing the security of supply. It implies the identification and control of risks in terms of suppliers, commodity groups and regions within global markets. The sourcing governance approach focuses on the company's entire external supply chain – suppliers and presuppliers are therefore a part of corporate responsibility. This approach provides a global control matrix for sustainable supply chain management.

Trend 10
Additive MFG/3D Printing



> "Additive or 3D manufacturing is a new kind of production. This technology can significantly change the way we produce. Companies should foster this challenge."
>
> **Wolfgang F. Grassl,** Partner, Consulting – Supply Chain Management & Procurement

Additive manufacturing (3D printing) describes the technologies of making a three-dimensional solid object of virtually any shape from a digital model. This production method is achieved using an additive process, where successive layers of material (e.g. plastic, metal, ceramics) are laid down in different shapes. Parts are built up from a large number of very thin two-dimensional cross sections (layers). The layer's particles are bound by heat or chemicals. 3D printing is considered distinct from traditional machining techniques, which primarily rely on the removal of material by methods such as cutting or drilling (subtractive processes). This layered manufacturing process is moving from an expensive niche tool for rapid prototyping to rapid manufacturing for a wide range of industries (e.g. aerospace and defence, automotive, medical technology). Industrial and consumer 3D printing will become one of the next revolutions along the entire supply and value chain.



Tool of transformation

In a report sponsored by Verizon, Harvard Business Review Analytic Services find out how businesses really view technologies such as cloud, mobile, M2M, social and analytics.

Technologies such as cloud, mobile, M2M, social and analytics are high on corporate agendas worldwide. But how do businesses really view these new technologies? And, more importantly, what effect are they having on how companies operate? In a report sponsored by Verizon, Harvard Business Review Analytic Services surveyed 672 professionals about their views on technology. The respondents represented all key organisational functions, a broad range of business sizes, many countries around the world, and seven key vertical sectors. The graph* in the following page focuses on the 80 respondents from the manufacturing industry.

Cloud: Not committed fully

While many manufacturers have started using cloud, fewer than one in five say they use it extensively. Aside from the IT function itself, cloud has primarily had impact on marketing, sales and customer engagement (44 percent). It's not yet playing a significant role in the manufacturer's core functions — like R&D, supply chain and production. Why? Security is definitely a contributing factor: 63 percent of manufacturing respondents say that cloud weakens data security, compared to 54 percent of all organisations. Yet other security-sensitive industries, such as energy and utilities and healthcare, make much more extensive use of cloud. We believe ROI is the real issue: 33 percent of those manufacturers not using cloud cited lack of proven ROI, compared to 14 percent of all respondents.

> "Cloud has primarily had impact on marketing, sales and customer engagement. It's not yet playing a significant role in the manufacturer's core functions — like R&D, supply chain and production."

Mobility: Broad impact

Manufacturing has fully embraced mobility,

but in a different way to most sectors. Manufacturers were much more likely to say that mobility had affected how the company itself is managed (39 percent vs 28 percent average), marketing and sales (57 percent vs 50 percent average) and the supply chain (24 percent vs 14 percent). Yet manufacturers were less likely to say mobility has affected customer service (29 percent vs 38 percent average) or product offerings (20 percent vs 29 percent average). This suggests a conflict: manufacturers are using mobile in sales but not in service; they're using it in the core of how the business is run but not in core products and services. Greater cross-functional integration would help resolve this tension.

"This suggests a conflict: manufacturers are using mobile in sales but not in service; they're using it in the core of how the business is run but not in core products and services. Greater cross-functional integration would help resolve this tension."

Social: Affecting product offerings

One in five manufacturers (21 percent) don't yet use social or collaboration technologies at all, internally or externally. Three barriers emerged: 53 percent cited cultural resistance to change; 29 percent said it wasn't appropriate for their customers or market; 24 percent said it was too risky. Those that do use social, naturally use it in marketing and sales (52 percent). However, just as we saw in mobile, manufacturers were much less likely to use it for customer services (28 percent vs 38 percent average). This may reflect more regimented support channels for B2B sales, or that support is handled by retail channel partners instead of directly.

Analytics: Driving marketing and finance

While manufacturers are today laggards in adoption of analytics, we expect that to change soon: 29 percent of those not using it today said they didn't know why. More than half of those using analytics were using it for marketing and sales (53 percent vs 45 percent average) — this we believe is conventional applications such as buyer profiling and campaign tracking. But the real picture emerges when we look at other applications for analytics: manufacturing respondents were ahead of the average in using it for supply chain (28 percent vs 17 percent), finance (34 percent vs 29 percent) and production (22 percent vs 16 percent) — it's the back office that's starting to benefit from data. But only 17 percent say that analytics has affected product and service offerings (vs 31 percent across all industries) and only 22 percent said it affected R&D, vs 26 percent average — again, manufacturers are reluctant for technology to change what they actually produce or how they produce it.

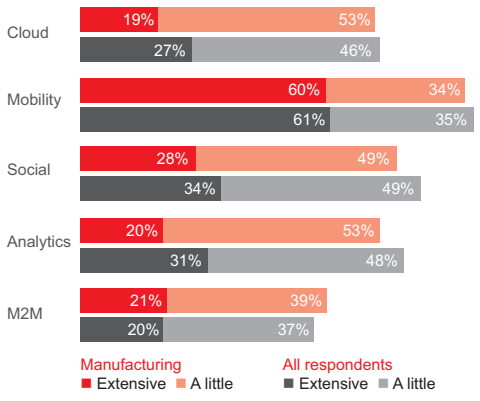
M2M: Important contribution to production

Manufacturers are already marginally ahead in adoption of M2M, and we expect that lead to accelerate. 64 percent of those respondents not using M2M didn't know what was stopping them, compared to 36 percent across all industries. And manufacturers are much more aware of M2M: only 10 percent said they didn't know what effect M2M was having on their business, vs 23 percent across all industries. Those manufacturers using M2M today are primarily applying it in the production function of the business (46 percent vs 25 percent average) — probably in areas such as production line monitoring, facilities management and asset tracking.

WHICH TECHNOLOGIES THEY ARE USING AND WHY

When it comes to adoption of specific new technologies, manufacturing seems to be at an earlier stage than other sectors, except in adoption of M2M

To what extent has your company adopted the following technologies?



OF MANUFACTURING RESPONDENTS SAID THAT CLOUD COMPUTING WEAKENS DATA SECURITY

Next Steps

This research makes it clear: across all sectors, technology pioneers outperform their competitors. If you're in the same position as many of the manufacturers surveyed in this study, you're unlikely to be a technology pioneer today, and you may hold a cautious view of the contribution that technology has for your business. If that's to change, you have a number of barriers to overcome. 34 percent of our respondents in manufacturing said that legacy technology gets in the way, 31 percent said that their company is risk-averse, and 21 percent said their company's attitude to IT security discouraged them. But this sector is not afraid of change. Manufacturers are more likely than other sectors to have recently expanded into new market segments, new geographies and new products.

Bosch bets big on India

The Company sees India as a key pillar of its growth strategy in Asia Pacific

The Bosch Group is forecasting further strong growth for India over the next few years, and expects to see positive economic development in the country over the medium and long term. Accordingly, the company sees India as a key pillar of its growth strategy in Asia Pacific. "Over the past ten years, Bosch has doubled its sales in Asia Pacific to 11.1 billion euros in 2013. By 2020, we are aiming to double our sales in the region again," said Dr. Volkmar Denner, the chairman of the Bosch board of management, in Bangalore recently. Denner forecasts that after registering projected economic growth of around 4.8 percent this year, India will likely grow by 6 percent in 2015. This makes the country one of the global engines of growth alongside China. "We expect to see India establish itself as the world's fifth largest vehicle manufacturer by the end of this decade," Denner said.

Bosch facility in Chakan, Maharashtra

The Bosch Group has been active on the subcontinent since 1922. In 2013, the company generated sales in India of approximately 1.2 billion euros, a three-fold increase over ten years ago. Bosch currently employs 27,000 associates at ten production sites and seven R&D locations in India. Since 2010, the Bosch Group has invested around 680 million euros in the expansion of manufacturing and research facilities there, of which some 160 million were invested in the current year alone.

> "We expect to see India establish itself as the world's fifth largest vehicle manufacturer by the end of this decade."
>
> **Dr. Volkmar Denner,** Chairman, Bosch Board of Management

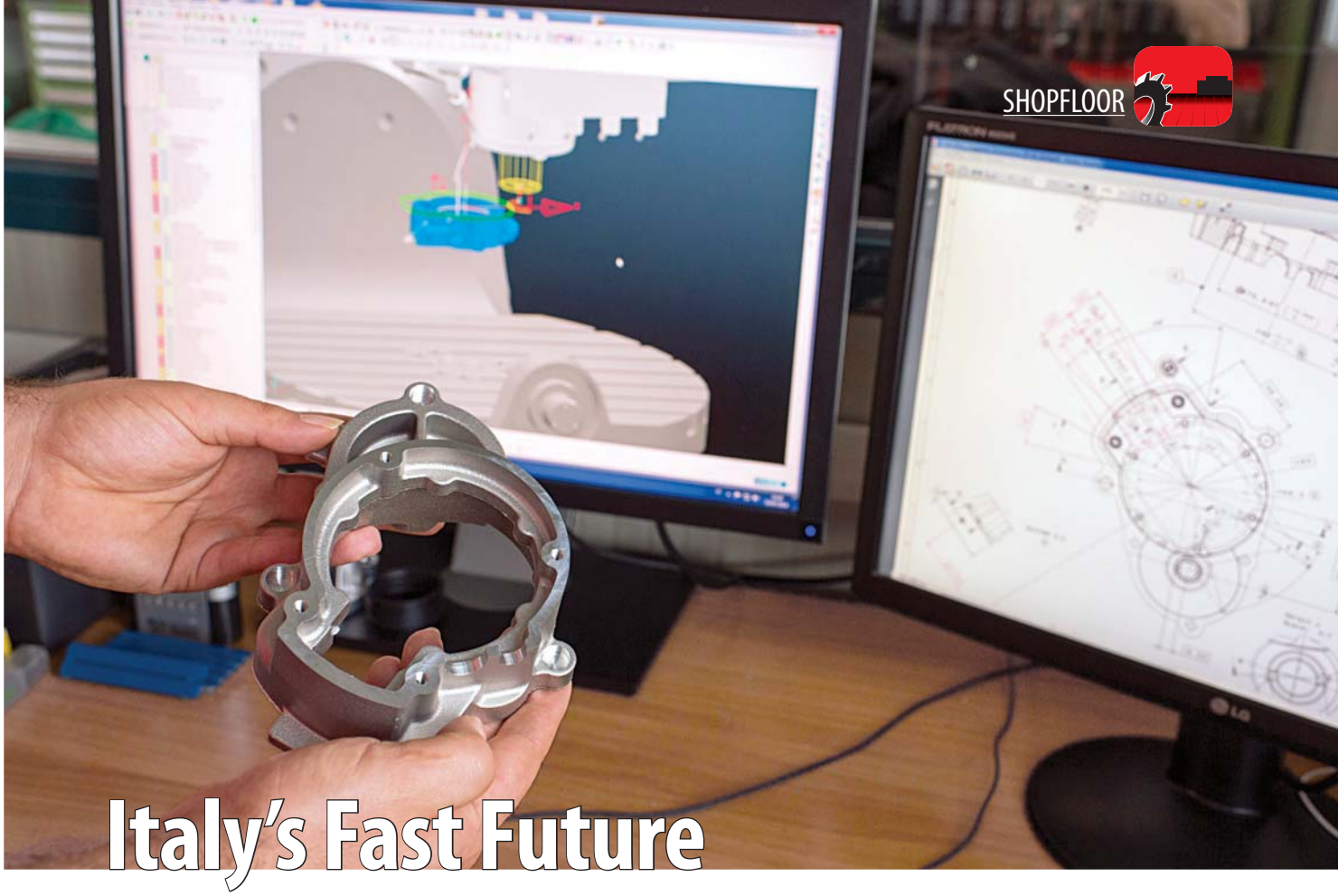
India is home to the technology and services company's largest development center outside Germany, employing 10,500 engineers. "We develop innovative solutions there which are used in products around the world," said Steffen Berns, president of the Bosch Group in India. The rising number of patents filed testifies to the successful work at the center: from 20 registered innovations in 2008, this figure rose to 220 last year. "That's a more than ten-fold increase within five years," Berns said.

Dynamic growth in two-wheeler market

Bosch also sees excellent opportunities in the booming two-wheeler market: last year it registered a growth rate of 14 percent, making it one of the most dynamic markets in India. "We predict that the number of two-wheelers sold annually on the subcontinent will reach 27 million by 2020," Denner said. Worldwide, the number of motorbikes and electric e-scooters sold is expected to increase from 100 million today to 150 million by the end of the decade. By comparison, Bosch forecasts that some 110 million new cars will be sold worldwide in 2020.

Against this backdrop, Bosch is also entering the global motorcycle market with new powertrain systems. Especially in Asia and India, efficient powertrains can play an important part in reducing environmental impact. For this reason, Bosch has developed an affordable and robust engine management system that is specially designed for the Indian and Asian markets. Currently, many machines in Asia are still fitted with carburetors. It is precisely here that Bosch believes its technology offers a decisive advantage: "Compared with the mechanically controlled carburetor, and depending on situation, the electronically controlled fuel-injection system can reduce fuel consumption by up to 16 percent," Denner said.

This also significantly reduces emissions and conserves valuable resources. In addition, Bosch already supplies safety solutions for two-wheelers including ABS and the new MSC motorcycle stability control, which improves safety when braking and accelerating, even when the rider is leaning into a bend.



Italy's Fast Future

Having invested in the right kind of CNC machine tools, Italian firm Vamec is now benefitting from new levels of speed, accuracy and efficiency.

Vamec srl is based near Bologna in a region famed for its motorsport heritage. The city of Modena, the birthplace of Enzo Ferrari and home to Maserati and Lamborghini, is just up the road, while the legendary Imola F1 circuit and the Torro Rosso F1 team are both neighbours.

The Vamec office walls are adorned with photos of young karting stars – one time customers of the firm, who went on to become World Championship winning F1 drivers, including Michael Schumacher and Ayrton Senna no less.

Racing is in the blood at Vamec. In his day, founder Vincenzo Vannini was a passionate kart competitor who first took to the track in 1968. After subsequently becoming a preparer and mechanic for various international teams, he established Vamec in 1994 with the intention of manufacturing purpose-designed components for a sport that had previously relied on non-specific parts such as those found on motorcycles, tractors and lawnmowers.

Some 20 years later, with Vincenzo's sons Matteo and Fabio running the workshop and business administration functions respectively, Vamec has become a world leader in the development and manufacture of components, accessories and equipment designed specifically for competition. Its Tryton carburetor series, for example, is used by both national and international kart racing teams. In recent years, the sport of karting has moved up several gears to become as competitive and professional as the upper echelons of motor racing to which its drivers aspire. The potential rewards for talented young drivers who reach F1 are there for all to see. It's a shot at fame and riches in which many are prepared to invest heavily.

Vamec has also invested with the sport, purchasing numerous CNC machine tools and adding components to its catalogue, including various engine and chassis parts, pit stands, jigs and tools, which are supplied to teams and individual racers all over the world. More recently, the company also made engine parts for Moto 3 motorcycle racing, and has even remade parts for a collectable Ferrari F1 car owned by a Californian enthusiast.

Vamec's goal, according to its founder, is to be as close to the customer as possible. This approach is an insider's strategy, after all, Vincenzo knows what it's like to race and to run a team – he understands how valuable good support can be. "There are lots of companies that make and sell standard, replacement parts, but we want to develop our relationship so we can support customers as much as possible," he says.

For many years, Vamec bought well-known, far-eastern CNC machine tools, until in 2013 Vincenzo placed an order for the newly launched Haas UMC-750 universal machining center. "We couldn't believe the value offered by the UMC,"

he says. "We'd heard very good things about Haas machines, so we placed an order even though we knew the machine had only just been launched and the delivery date was quite a way off." In the meantime, Vamec looked at other Haas machines to see if they also offered similar value and performance. The company quickly decided to invest in a VF-2SS super speed vertical machining center, mostly for one-off, three-axis work.

"All of our other machines were busy, so we needed another," says Matteo. "Again, the price and claimed performance of the VF-2SS were very attractive. As soon as it was installed we moved one or two jobs from the adjacent Japanese machine. We had to make some very minor modifications to the program so it would run on the Haas control, but that was straightforward. The first part we made, well, we just couldn't believe it! The Haas did the job better than a machine that cost a lot more. The surface finish was better and the cycle times were shorter."

A little later, in July 2013, the company took delivery of its UMC-750, and soon, Matteo says, the machine was making 70-80 different parts, mostly one-offs.

"Thinking in five axes was new to me," he recalls, "so I took it slowly to start with. It's not that the machine is difficult to use – on the contrary, the control is the same as the VF-2SS, so it was immediately familiar. It's the CADCAM part of the process that is different and took a little longer to understand. Of course, our need for accuracy and capability will only increase over time, but we are in a very good position now that we have access to an affordable, very good machine like the UMC." Despite Vamec's successful efforts at diversification, karting will for the time being remain its core business. The company has an impressive roster of 250 clients worldwide, with countries such as the USA and Brazil providing more recent opportunities to grow its business.

"Karting has gone from being a low cost, amateur sport to being technology led and very well financed," says Matteo. "It's certainly not the industry my dad started in, all those years back." Indeed, it's not even the industry in which the likes of Senna and Schumacher began their careers. Today karting is regulated by the FIA, which means new products must be homologated. Of course, this adds cost, just like US medical companies making products under the watchful eye of the FDA, for example.

"Fortunately, Haas machines give us the technology to do what we want to do, quickly and cost effectively," concludes Matteo. "Furthermore, there's no need to lease the machines or get a big loan from the bank; these machines are affordable and reliable."

Matteo may have studied electronics, but he has steadily nurtured his passion for mechanics; the latest Vamec carburetor is all his own design. He's self-taught and a good example of how ingenious, hard-working individuals can be vital to the health and success of an industrial nation's economy, providing they have access to the right technology.

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>
> **Vincenzo Vannini,**
> Founder of Vamec

Italy has a long and distinguished heritage in motor racing and high-performance road cars, which began with passionate and talented individuals. With Haas CNC machine tools in their workshops, the latest generation, like Matteo and Fabio Vannini, could ensure the country's motorsport industry also has a long and distinguished future.

Source: Haas Automation Inc

Big data and profitability

To achieve faster and more effective decision-making, companies will need to increase their access to business intelligence data in real time.

By Anish Kanaran

In a Chief Information Officer (CIO) survey conducted by Epicor in India, the Middle East and Africa, an overwhelming 90 percent* of respondents agreed that speed, reinvention, agility and innovation are critical to the success of any organisation serious about optimising performance and gaining a competitive advantage.

The feedback from the survey validates the complexities of today's business environment. Many companies, including manufacturers, face difficult business challenges, from volatility in raw materials to currency fluctuations, rising customer expectations and demands, and a globally competitive marketplace. To achieve faster and more effective decision-making, companies will need to increase their access to business intelligence data in real time. In fact, companies that can successfully leverage their data to gain greater business and consumer insight, are able to set themselves far apart from competitors.

> "It is imperative for manufacturers to start analysing the reservoir of data that reside with them. Big data should ideally be viewed as a business strategy for capitalising on information resources, not just as a technology."

Lean manufacturing and data analysis

The most effective way for manufacturers to achieve agility, harness collaboration and drive innovation is through the analysis of data so that they can understand the intricacies of process from start to finish. This helps to identify weaknesses, optimise production and solve problems before they negatively affect the business. The crux of lean manufacturing lies in the ability to do more with less and the only way to achieve this is through the use of data.

What is Big Data?

The term "Big Data" has received a lot of attention the past several years; simply put, it is a compilation of data gathered from both traditional (structured data) and digital (unstructured data) sources from within and outside of an organisation. Think of all the data that resides in a company's business systems, add to the mix the plethora of data coming from the web and social networks -- sources of information that have to be sifted through and analyzed before any meaningful action can take place.

IDC has found that by 2020, India will see a 25-fold growth in useful information that will make the adoption of big data technologies and practices a significant opportunity for enterprises. The study also estimates that India's digital universe, digital bits captured or created each year, is expected to grow by 50 percent every year from 127 exabytes (EB) to 2.9 zettabytes (ZB) between 2012 and 2020.

2.9 zettabytes (ZB)
Size of India's digital universe expected to grow from the current 127 exabytes (EB) between 2012 and 2020.

It is imperative for manufacturers to start analysing the reservoir of data that reside with them. Big data should ideally be viewed as a business strategy for capitalising on information resources, not just as a technology.

"The most effective way for manufacturers to achieve agility, harness collaboration and drive innovation is through the analysis of data so that they can understand the intricacies of process from start to finish."

Big data in manufacturing

Let's take a look at the sheer volume of data sets generated during manufacturing processes, so vast and complex that it is impossible to analyse using ordinary data processing tools. Collating and extracting critical information relating to any and all aspects of this process ensures that you have full visibility of operations. The availability of precise real-time data means that manufacturers no longer need to make crucial decisions based on gut feel or past experience; they get a dynamic view of the intricacies of their business from end-to end. This is driving a revolution in the way that leading manufacturers use complex data to gain competitive advantage and streamlines processes.

To facilitate reporting capabilities, and summarise expenses for accurate quoting and allocation of resources, a large East African distributor realised that its decentralised system was not consolidating data to ensure accurate planning and project management. Headquarters required accurate data that reflected the work they were doing but they were unable to supply it in real time. Often they were only able to identify problem areas when they were discovered at the end of the financial year. This had a direct negative effect on their bottom line. This highlighted the need for a consolidated system that would help them to mine data with a view to improving efficiencies and ultimately to gain a competitive advantage.

Advantages of harnessing big data

Improved visibility into the manufacturing process makes it possible to track trends, identify problem areas such as wastage, facilitates precise quoting, accurate procurement and better planning, all of which have a direct impact on your customers ensuring that you meet their needs promptly and more efficiently. Big Data allows for ever-narrower segmentation of customers and therefore much more precisely tailored products. Big Data can also be used to develop the next generation of products and services. For instance, manufacturers can use data obtained from sensors embedded in their products to create innovative after-sales service offerings such as proactive maintenance or upgrade options.

Using data to improve business intelligence is crucial for quick decision making based on real facts. Leveraging technology and data makes it possible to organise data based on facts and focus areas so that you can make the most of resources and maximise profitability.

Big data can bring with it complexity but the rights tools can help manufacturers to organise, prioritise and extract critical information. This makes justifying the expense of implementing a solution simple, as the benefits it offers directly impacts the bottom line.

Capitalising on big data

For many manufacturers, the data they collect doesn't have sufficient value because it is not delivered in real-time to the correct decision makers in a format that is easily digestible. The critical first step for manufacturers that wish to capitalise on big data benefits is to consider how much data the company has at its disposal. Most companies collect vast troves of data but typically use it only for tracking purposes, not as a basis for improving operations. The second step is to invest in the right systems and skill sets that will allow them to organise and interpret data in order to use the results to their advantage. For instance, centralising data from multiple sources so it can be analysed faster and more easily, and train staff to spot patterns and take actionable insights.

**Information source: IDC study sponsored by EMC. The "Big Data, Bigger Digital Shadows, and Biggest Growth in the Far East – India". The author is Channel Director for Epicor in the Middle East, Africa & India.*

Meet the Robots!

At the Hannover Messe, world's leading robot manufacturers will demonstrate how industrial robotics enhance competitiveness and flexibility

With a lot happening in the robotics industry, it is imperative that factory owners keep up to date with the latest developments. And there's no better place to do this than in Hannover, Germany. Marc Siemering, Deutsche Messe's Senior Vice-President responsible for Hannover Messe: "At Hannover Messe 2015, the world's leading robot manufacturers will demonstrate that robotics is the key to enhanced competitiveness and flexibility in industrial production. Big names like Fanuc, Güdel and Kuka will be showcasing the latest generation of robots and highlighting the key role played by robotics in the fourth industrial revolution."

While industrial robots are mostly still large, heavy items of plant designed to rapidly process repetitive tasks from behind safety barriers in big factories, they are now also making their way into smaller factories, where they are more compact and versatile and are able to work alongside their human "co-workers" without any safety barriers. This proliferation of new application areas, coupled with burgeoning worldwide demand, is driving strong growth in robotics sales. The International Federation of Robotics (IFR) reports that its members sold around 170,000 industrial robots in 2013, an increase of 12 percent on 2012, and that 2014 is headed for similar growth.

Fanuc will be presenting its latest robotics and control/servo-drive solutions in what will be its first appearance at Hannover Messe since 2003. "We will make extensive use of the fair to profile our multidisciplinary robotics and factory automation technologies," said Fanuc Germany CEO Olaf Kramm.

> "Big names like Fanuc, Güdel and Kuka will be showcasing the latest generation of robots and highlighting the key role played by robotics in the fourth industrial revolution."

Fanuc, Güdel and Kuka will be presenting their products and solutions at Hannover Messe's Industrial Automation show, as will Comau, Kawasaki, Stäubli, Mitsubishi, Epson, IBG, ABB and several other leading

Partner Country – India

India has been designated the official Partner Country at Hannover Messe 2015, putting it squarely in the spotlight at the world's leading industrial exhibition. "India is an emerging economic giant which is going to open up enormous sales potential for our German and international exhibitors at Hannover Messe," said Dr. Jochen Köckler, member of the Deutsche Messe Managing Board. "At the same time we will be offering even more exhibitors from India access to new global markets. Ultimately all our exhibitors and visitors as well as the trade fair venue of Hannover will benefit equally from the participation of this attractive Partner Country."

There were three main reasons for the selection. These include India's fast-growing economy, the many years of good relations between German and Indian enterprises, and the positive experience of having India as the Partner Country at Hannover Messe 2006.

India's most recent participation as Partner Country at Hannover Messe 2006 inspired some 350 Indian exhibitors and 5,700 Indian attendees to make the trip to Hannover. Last year's event attracted the participation of 122 exhibitors and 2,400 visitors from India. "Having India as the Partner Country will allow us to greatly expand those figures," remarked Köckler, citing a further motivation for India's selection as the featured country.

"Industrial robots are now also making their way into smaller factories, where they are more compact and versatile and are able to work alongside their human "co-workers" without any safety barriers."

providers of robot-assisted automation technology. Among the innovations on show will be robots that are wonderfully simple to program and feature intuitive touchpad control technology. There will be robots that are capable of taking on a much greater range of tasks than conventional machines thanks to the latest sensor technology. ABB, of instance, will be launching YuMi, a two-armed collaborative assembly assistant that can see and feel its way around. Its soft, padded arms ensure that it can interact safely with its human counterparts. Siemering: "These latest robots give factories the flexibility to accommodate today's steadily growing demand for customer individualization in series production. They are also much more affordable and simpler to program, which puts them within reach of small and medium enterprises."

The exhibition area at Industrial Automation will be supported by an array of amazing special displays and shows. At the Robotics, Automation & Vision display area, for example, system integrators will demonstrate their applications and solutions for robot-assisted automation in a range of industries. Mobile Robots & Autonomous Systems is another must-see special display. It will feature the latest technologies and innovations in mobile industrial and service robotics.

The year 2015 will also be the fifth time that the Robotics Award is offered by the organisers of Hannover Messe. The Award honours companies that develop products, projects and technological advancements that make an innovative contribution to robotics-based solutions in the areas of industrial automation, mobile robots and autonomous systems. Olaf Lies, the Lower Saxony Minister for Economics, Labour and Transportation, with present the winners with their prizes at a special ceremony at the Automation Forum on 14 April 2015.

But before then, there's the 4th Robotics Congress, which will be held in Hannover on Tuesday 9 December 2014 and will explore current trends in applied robotics. Among the discussion topics will be the move towards robots which are easy to operate and integrate and hence open up new areas of application. One such area is human-machine collaboration – as reflected in the congress's lead theme of "Human-Robot Collaboration." The program includes technical presentations and discussions, not to mention keynotes from such notables as Dr. Norbert Elkmann, Director Robot Systems, Fraunhofer Institute for Factory Operation and Automation (Fraunhofer IFF). Dr. Elkmann's address is titled "Safe Human-Machine Collaboration – Current Developments and Projects." The congress will be held in the Convention Center (CC) at the Hannover Exhibition Center.

Make IT easy – Standard Data Center Solution

Rittal a global specialist in Data Centers introduces CeBIT-2014 RiMatix S standard Data Center Solution, which opens up a brand new perspective for the IT world.

New technologies and business processes are pushing Data Center Managers to implement Data Center design with increased energy efficiency and availability. The key drivers in the current business ecosystem include more users, more devices, more applications, more workloads and exponential increase in data. The main trends being cloud computing, mobile data usage, global networking, big data, Internet 3.0 and a greater need for security.

The data centers designed 7 to 10 years back were in the range of 2.5 kW to 4 kW per Rack, these traditional Data Centers are inadequate to address current requirements, neither in terms of energy or in terms of space. Energy cost/ operational cost of a data centre is a big worry for all IT Managers as this both affects the profit of the company and makes a specific business environment less competitive.

Also the traditional data centers need a significant amount of time for planning and deployment, which could be anywhere from 3 month to over a 1 year or above, this could be a major factor which could affect the business processes and hence the profits of the company.

In order to be able to meet clients' needs for flexible solutions for new challenges, complete standardization and faster deployment is indispensable when designing a data centre.

Rittal a global specialist in Data Centers introduces CeBIT-2014 RiMatix S standard Data Center Solution, which opens up a brand new perspective for the IT world.

RiMatix S module starts with Single/Double 6 (60kW/120kw) & Single/ Double 9 (90kW / 180 kW). All RiMatrix S modules may be scaled to almost any output between 10 kW to 450 kW. These Standardise Data Centers are designed to deliver significant benefits over a traditional design. RiMatrix S is the revolutionary alternative to individual data centre construction.

Main objectives of the Standard Data Center

Simple planning, modules of 60kW, 120 kW, 90kW, 180kW and Scalable.
Defined parameters for scalability, availability, efficiency and performance.
Low investment and very low operating costs.
Calculable & guaranteed PUE (Power Usage Effectiveness), ROI (Return on Investment).
Optimized use of space & Ease of expansion.
Short delivery time with rapid deployment in 6-12 weeks time. Traditional DC could take from 3 months to 1 year from planning to deployment.
Scalability, future-proofing.
Data centre automation through monitoring and controlling.
Certification of the ready-to-use data centre.
Tested characteristic curves and data sheets.

MD speak

The Machinist caught up with Ajay Bhargava, MD, Rittal India, for the bigger picture, at Automation 2014 in Mumbai

"We are a German company and we have been present in India for 17 years now. We position ourselves as a complete value chain provider for industrial automation - right from engineering software to enclosures and wiring. For example, if you have to wire up the cabinet, then you can do the software through EPLAN, the cabinet can be done through Rittal and even wiring can be done through our latest offering which is Kiesling. That's the value chain that we have. And in fact, it is aligned to the next level of industry which is Industry 4.0 – the next level of industrialisation happening in Europe. It is still to come to India but globally we are already positioning ourselves as a key partner to this industrial revolution. In fact, we are part of the core committee back in Germany which defining the standards for Industry 4.0.

Our industrial products are very strong; enclosures, cooling and power are the three product baskets that we have and together these form Rittal – the system. One of the new solutions that we are very optimistic for India is the water based cooling solution called industrial LCP. It is a very new product and we believe it will be a game changer, especially for high-heat management loads.

Few months back Rittal started a well equipped training center in Bangalore and there has been good progress on that front as well. The training center is being utilised not just by our employees but also by our customers and channel partners."

Threading Line Available for QuadRush

TaeguTec's QuadRush line, known for high accuracy and surface quality, is now available for external threading applications. Furthermore, the QuadRush insert's unique, multi-corner four cutting edges have been expanded to 60 degrees and 55 degrees partial profiles. The new line includes the latest GoldRush coating – TT9080 grade – for maximum protection against tool wear and better surface roughness during operations on titanium; titanium alloys; stainless, non- and low-alloy steels; and cast iron. The QuadRush insert's unique chip former enables machining in multiple applications providing excellent chip control, outstanding performance and repeatability. The addition of the threading line from the Asian metalworking giant's highly popular QuadRush brand expands the family beyond grooving, parting, lateral turning and chamfer machining. A further benefit of the new addition to the four corner family of tools is that all QuadRush threading inserts are compatible with QuadRush standard cartridges and holders.

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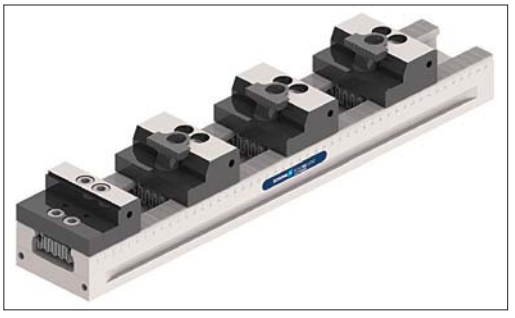
A flexible multi clamping vise with system

The SCHUNK multi clamping vise KONTEC KSM2 is a reliable and precise all-rounder for stationary workpiece clamping. In order to efficiently use 3, 4, or 5 axis machines, it can clamp several parts at the same time which are located next to each other. Slim jaws without protruding, interfering contours thereby allow a particularly high part density, and an optimum accessibility. Its performance during large workpieces clamping together with other KSM2 multi clamping vises is convincing. A hardened and ground fine serration provides for maximum robustness, precision, and dimensional stability. A system, based on wedge clamping elements ensures that the workpiece is pulled down during the clamping process, no matter how big the workpiece is, and even in case of high feed rates, a safe and precise machining is ensured. One single actuation key is sufficient setting up the vise's actuation for clamping the workpieces, to completely remove the chuck jaws per quick-change, or to convert the clamping system quickly and flexibly onto another workpiece. The latter has also been facilitated with the lasered scale. Equipped with adapter plates and standardized interfaces, the KONTEC KSM2 seamlessly fits into the world's largest modular system for stationary workpiece clamping from SCHUNK. If combined with the SCHUNK quick-change pallet system VERO-S NSE plus 138, any gauges for bore holes can be adjusted within a grid of 2 mm along the multi clamping vise within seconds. For machining dynamically balanced parts however, the multi clamping vise can be equipped with a manual ROTA-S plus 2.0 lathe chuck from SCHUNK. The KONTEC KSM2 is available in five or four lengths between 260 and 650 mm at jaw widths of 65 or 90 mm. It achieves clamping forces up to 25 kN, and can be combined with a wide range of chuck jaws for the first and second set-up.



KSM2: Multi clamping in confined spaces: If slim chuck jaws are used on a KONTEC KSM2, several parts can be clamped, which are located next to each other.

KSM2 deviding attachment: One system for all: The SCHUNK multi clamping vise KONTEC KSM2 provides different clamping solutions, and can be converted in no time at all.

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