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ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

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of Quality!**

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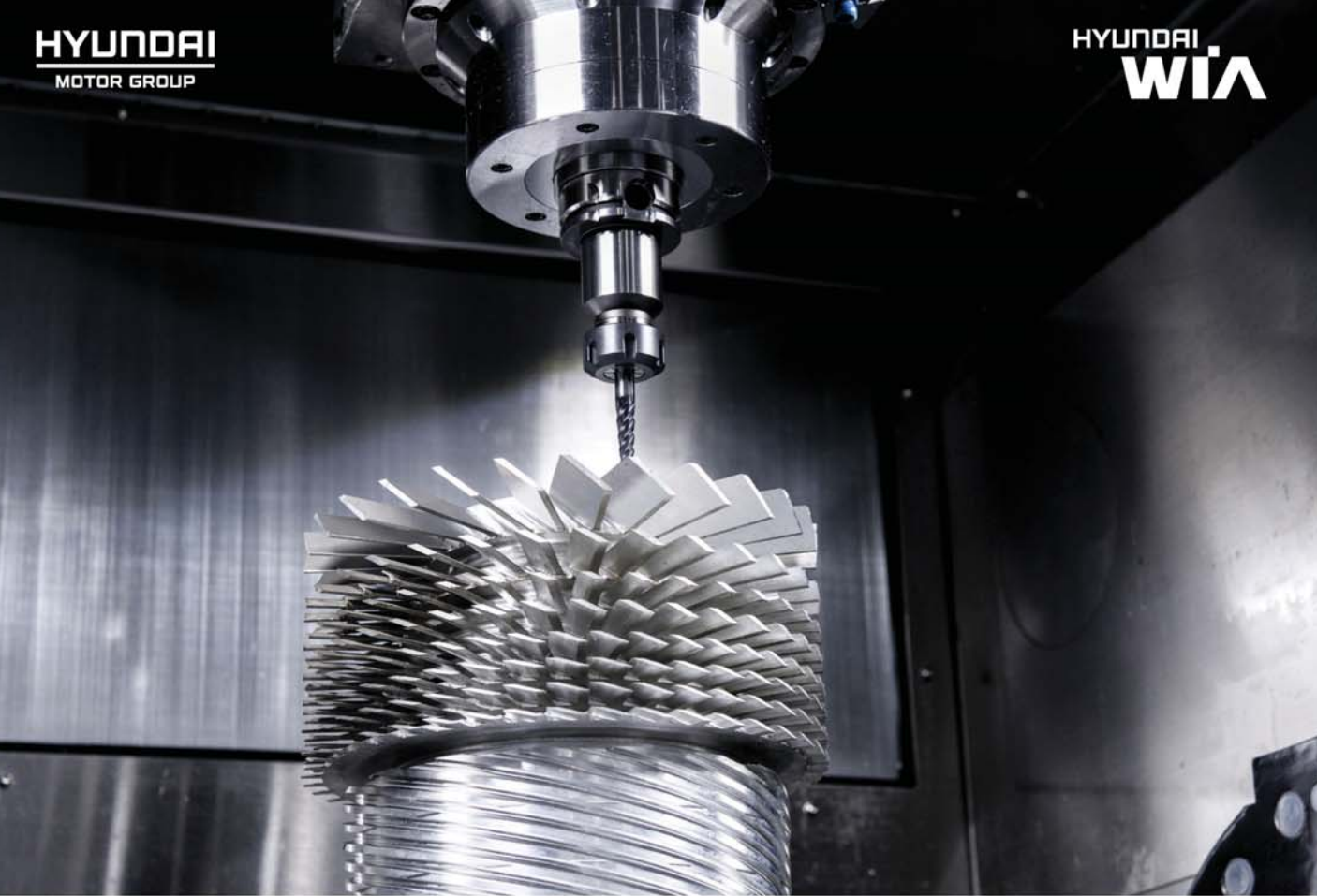


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## Wonder material!

**C**ars and commercial vehicles have completely changed the way we travel or transport. While these vehicular marvels have been around for many decades now, the innovation by auto makers have made them not just more comfortable, more safe, more fast and more fuel efficient but also greener and smarter. And one material that has played a huge role in this transformation is plastics. Little wonder that plastics today accounts for 50 percent of the total material (by volume) used to manufacture a car. I am sure that many people do notice this fact. However, what many people may not realise is that plastics comprise only ten percent of the car's weight!

**“TODAY’S CAR MAKERS ARE DRIVEN BY THE OBJECTIVES OF ENHANCING EFFICIENCY AND REDUCING EMISSION LEVELS. AND THEY VERY WELL RECOGNISE THAT ONLY LIGHT WEIGHTING CAN GIVE THEM THESE DUAL BENEFITS.”**

According to the Plastics Division of the American Chemistry Council, this ten percent equals to 377 pounds of plastics and composites used in an average car. This number was 286 pounds in 2000 and 194 pounds in 1990. In fact, in 1960, plastics accounted for less than 20 pounds in a car.

Today's car makers are driven by the objectives of enhancing efficiency and reducing emission levels. And they very well recognise that only light weighting can give them these dual benefits. Of course, they need to achieve light weighting without compromising on the vehicle's performance and the passenger's safety. The wonder material, which can help them achieve this is obviously plastics.

The Economic Times Polymers (ET Polymers), which is a sister publication of The Machinist, conceptualised the 'Global Conference on Plastics in Automotive' (GCPA) last year. The Conference received overwhelming response with participation from the entire ecosystem – right from the OEMs and Tier 1 & 2 suppliers to the raw material and machinery representatives. GCPA is now back in its 2nd edition at The Westin in Pune. If plastics in automotive is something that you care about then do join us by registering at [gcpa.themachinist.in](http://gcpa.themachinist.in)

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Nishant Arya



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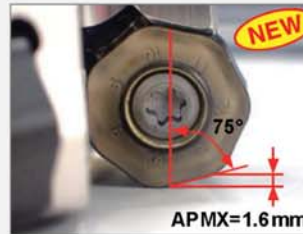
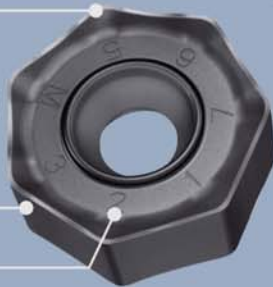
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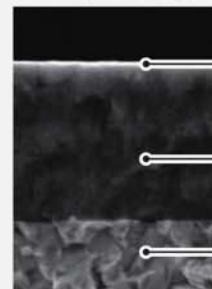
Tool Holder Number	IC	APMX
<b>AHX475S</b> NEW	13.4	1.6

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# NEWS

## ADB sees improved growth prospects for developing Asia

**ECONOMIC GROWTH** prospects in developing Asia for 2017 have improved on the back of stronger-than-expected export demand in the first quarter of this year, according to a new Asian Development Bank (ADB) report.

In a supplement to its Asian Development Outlook 2017 report, ADB upgraded its growth outlook in the region from 5.7-5.9 percent in 2017 and from 5.7-5.8 percent for 2018. The smaller uptick in the 2018 rate reflects a cautious view on the sustainability of this export push.

“Developing Asia is off to a good start this year with improved exports pushing growth prospects for the rest of 2017,” said Yasuyuki Sawada, ADB’s Chief Economist. “Despite lingering uncertainties surrounding the strength of the global recovery, we feel that the region’s economies are well-placed to face potential shocks to the outlook.”

Combined growth for the major industrial economies is forecast to remain at 1.9 percent in 2017 and 2018. Improved forecasts for the euro area and Japan due to robust



domestic demand have offset the slight growth downturn in the US to 2.2 percent from the previously projected 2.4 percent as a result of disappointing first quarter results in 2017.

South Asia will remain the fastest growing of all sub-regions in Asia and the Pacific, with growth on track to meet original projections of 7.0 percent in 2017 and 7.2 percent in 2018, according to the report. India — the sub-region’s largest economy — is expected to achieve previous growth projections of 7.4 percent in 2017 and 7.6 percent in 2018, primarily from strong consumption.

## GST will benefit transport sector: Gadkari

**THE TRANSPORT SECTOR** stands to benefit from the recently rolled out GST in several ways. Pre-GST, the complex tax structure and paper work forced the transport industry to spend a lot of resources on tax compliance and deposit of interstate sales tax.



Monitoring and collection of sales tax at interstate check posts led to major traffic congestion at these points, resulting in slower movement of freight and passenger, and consequently higher costs and pollution. An average Indian truck covers only about 50,000-60,000 km a year as against 3 lakh km done by a truck in US.

The unified tax regime has obviated the need for inter-state check posts. This will result in reducing the travel time of long-haul trucks and other cargo vehicles by at least one-fifth.

This, coupled with the proposed E-way bill that will require online registration for movement of goods worth more than Rs 50,000, will ease the movement of freight further, and bring in more transparency in the whole process. Efficient freight movement will also boost the demand for high tonnage trucks, which will in turn reduce the cost of transportation of freight.

According to Nitin Gadkari, the Minister for Road Transport & Highways and Shipping, India’s logistics sector would gain the most from the Goods and Services tax as costs would fall by almost 20 percent.

## Big jump in CII-IBA Financial Conditions Index for Q2 FY 2017

**THE CII-IBA FINANCIAL CONDITIONS INDEX** for Q2 FY 2017-18 recorded a substantial change from 56.9 in the first quarter of FY2017-18 to 71.4 in the current quarter owing to expectation of improvement in the overall financial conditions in the economy. There seems to be substantial optimism across most of the sub-indices leading to improvement in the Financial Conditions Index in this quarter as compared to previous quarter. Among the sub-indices, the cost of Funds Index has recorded the highest level (77.6) followed by Funding Liquidity Index (72), External Financial Linkages Index (68.1) and Economic Activity Index (68.1).

A total of 29 banks and financial institutions participated in the Survey including 11 Public Sector Banks, 05 Private Sector Banks, 04 Foreign Banks, and 02 Cooperative Banks. Representing other financial institutions, 07 leading NBFCs participated in the Survey with a combined Total Assets of over 58 Lakh Crore.

Releasing the Index for the second quarter of 2017-18, Chandrajit Banerjee, Director General, CII said “GST is one of India’s most significant and ambitious reforms ever attempted and it is believed that the positive impact of GST on Indian Economy is going to be significant. Apart from the GST, implementation of various reform measures by the government including promulgation of amendment to the Banking Regulation Act giving special powers to RBI to tackle bad loans has raised the expectations of substantial improvement in the financial conditions”.

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# NEWS

## GST to boost Micro, Small & Medium Enterprises' competitiveness: ASSOCHAM-APAS

**THE GOODS AND SERVICES TAX (GST)** would boost the competitiveness of micro, small and medium enterprises (MSMEs), noted a recent joint study by ASSOCHAM- Ashvin Parekh Advisory Services (APAS).

“From an MSME perspective, GST will bring in many positives compared to the current systems such as easy process of availing input credit, single point tax, elimination of cascading tax system, and simpler taxation,” said the study titled ‘Emerging Mantras for Bankers-Borrowers,’ jointly conducted by ASSOCHAM and APAS.

The report also said that though there is no doubt that GST is aimed



to increase the taxpayer base, and bring majorly MSMEs into its scope and that would put some burden of compliance and associated costs to them. But eventually, it will turn these MSMEs more competitive with a level playing field between large enterprises

and them.

It also highlighted certain pros of GST on MSME sector viz., improved MSME market expansion, lower logistical overheads, boon for MSMEs dealing in sales and services, unified market and purchase of capital goods.

## Kalyani Rafael Advanced Systems joint venture inaugurates its facility

**KALYANI RAFAEL ADVANCED SYSTEMS (KRAS)**, a Joint Venture between Kalyani Strategic Systems Ltd. and Rafael Advanced Defense Systems Ltd. of Israel, inaugurated its state-of-the-art facility at Hyderabad.

In line with the Government's ‘Make in India’ initiative, the Joint Venture will invest in high-end technology and advanced manufacturing techniques to design, develop and manufacture state-of-the-art weapon systems for the Indian Armed Forces. This green field Joint Venture envisages creation of significant direct and indirect employment opportunities, import substitution and foreign direct investments into the country.

KRAS would be India's first private sector advanced defence sub-systems manufacturing entity. Spread across an area of 24,000 sq.ft., the facility will enable production of high-end technology systems for Indian Armed Forces. It will be engaged in development of a wide range of advanced capabilities like Command Control and Guidance, Electro-Optics, Remote Weapon Systems, Precision Guided Munitions and System Engineering for System Integration. The facility will also target to export products to other countries.

During the inauguration ceremony, Maj Gen (Ret) Yoav Har-Even, President & CEO, Rafael Advanced Defense Systems Ltd. said: “Rafael has been increasingly looking at cooperation with India in the Defence and Aerospace arena. We are confident and eager to be a strategic partner in addressing India's Defence modernisation needs. We have, without any hesitations, offered and provide our most advanced Defence Systems to India, with the willingness to transfer technology.

## NITI Aayog approves Rs. 18,000 crore for 200 kmph rail projects

**THE PREMIERE** think-tank of the Government of India, NITI Aayog has approved investments worth Rs 18,000 crore for high-speed rail projects for major routes of Delhi-Mumbai and Delhi-Kolkata, Union Minister for Railways, Suresh Prabhu said at an event held in New Delhi recently.

“We are working on Gatiman Express which is India's fastest train at 180 km per hour and trying for Mumbai-Delhi and Delhi-Kolkata which are major routes with a speed of maximum 200 km per hour (kmph) and that will be an investment of Rs 18,000 crore which has already been approved by the NITI Aayog,” said Prabhu while inaugurating an ASSOCHAM International Conference – RAILTECH 2017.

“When we proposed it, they were apprehensive but now everybody realises importance of it as it is a least-cost option, so we are trying to do that, you can imagine the trains can go at that speed from Delhi to Mumbai and how much travel time will be reduced,” he said.

He also said that Railways Ministry is working with many countries to increase the speed of operations, including France.

“There are a lot of studies which are going on and they are in a very advanced stage, so we will start implementing that in the next few months' time,” the Union Minister said. He added that the Government is working towards introducing cutting-edge technology of future in all aspects of railways with it not only being imported but being co-developed in India.

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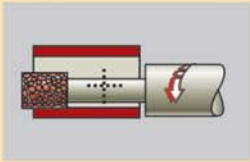


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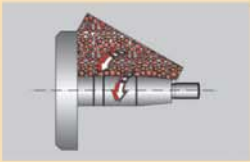


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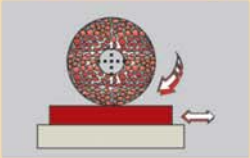


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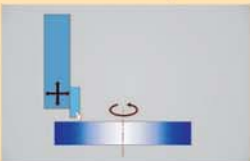


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• MARK YOUR DIARY •

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

<p><b>Tech India</b> September 08–10, 2017 Mumbai <a href="http://www.techindiaexpo.com/">http://www.techindiaexpo.com/</a></p>	<p><b>EMO Hannover</b> September 18–23, 2017 Hannover, Germany <a href="http://www.emo-hannover.de">www.emo-hannover.de</a></p>	<p><b>CeBIT India</b> November 30–December 02, 2017 Bengaluru <a href="http://www.cebit-india.com">www.cebit-india.com</a></p>	<p><b>ArabiaMold Sharjah</b> December 11–14, 2017 Sharjah, UAE <a href="http://www.arabiamold.com/">http://www.arabiamold.com/</a></p>
<p><b>ExCon</b> December 12–16, 2017 BIEC, Bengaluru <a href="http://excon.in">http://excon.in</a></p>	<p><b>IMTEX 2018</b> January 25–30, 2018 BIEC, Bengaluru <a href="http://imtex.in">http://imtex.in</a></p>	<p><b>Auto Expo Components</b> February 8–11, 2018 New Delhi <a href="http://www.autoexpo.in">www.autoexpo.in</a></p>	<p><b>ELECRAMA</b> March 10–14, 2018 India Expo mart, Noida <a href="http://elecrama.com/">http://elecrama.com/</a></p>
<p><b>SIMTOS</b> April 03–07, 2018 Seoul, South Korea <a href="http://www.simtos.org">http://www.simtos.org</a></p>	<p><b>Die &amp; Mould India International Exhibition</b> April 11–14, 2018 Mumbai, India <a href="http://www.diemouldindia.org">www.diemouldindia.org</a></p>	<p><b>Hannover Messe</b> April 23–27, 2018 Hannover, Germany <a href="http://www.hannovermesse.de/home">www.hannovermesse.de/home</a></p>	<p><b>CeMAT</b> April 23–27, 2018 Hannover, Germany <a href="http://www.cemat.de/">http://www.cemat.de/</a></p>



13th September, 2017  
- The Westin, Pune



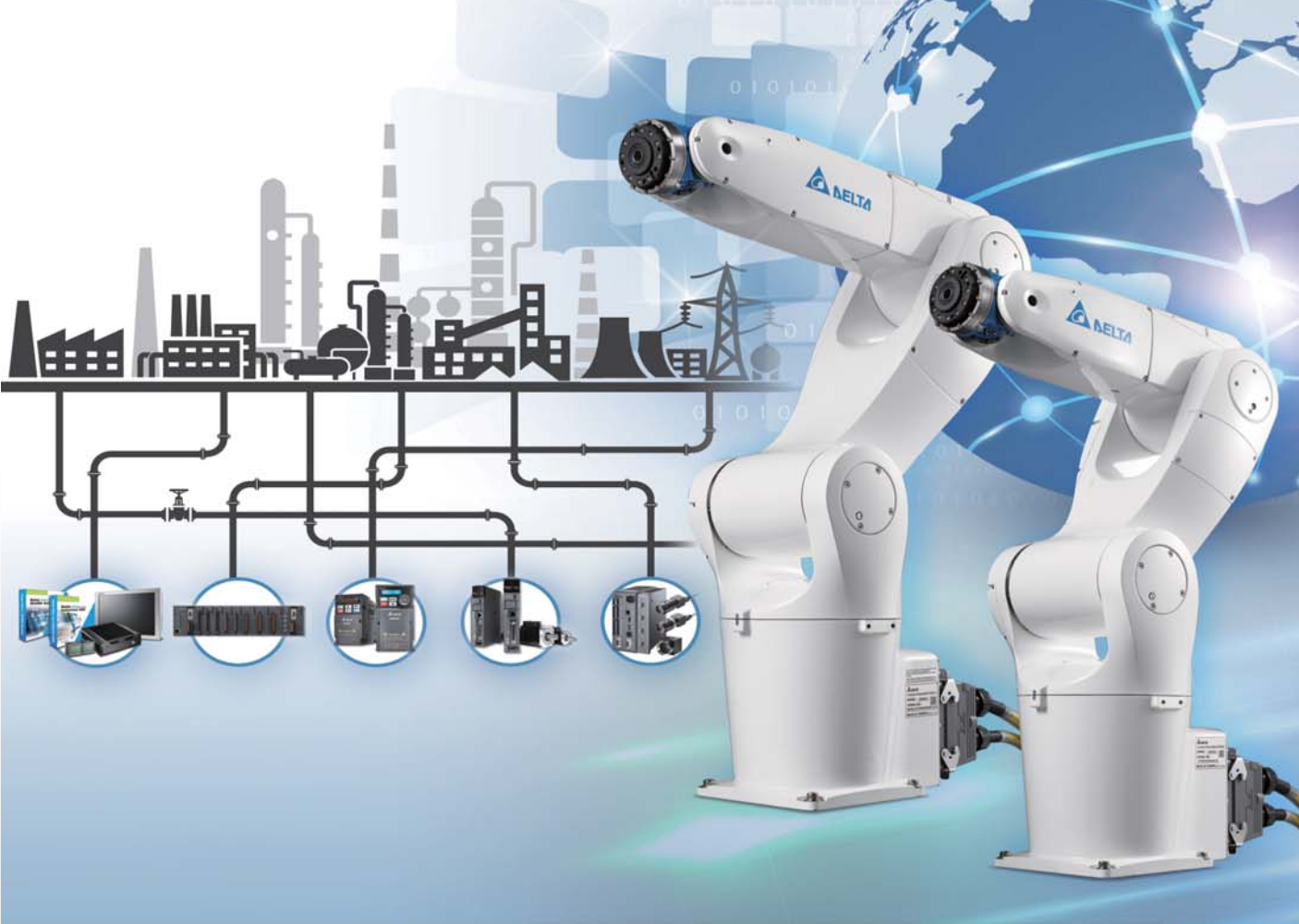
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QUALITY



# The Power of Quality!

Organisations not only need to set-up within themselves a quality culture and systems and processes but also need to take ownership of developing the entire supply chain and service delivery channels to ensure enterprise-wide quality excellence.

By CV Raman

“A customer is the most important visitor on our premises. He is not dependent on us. We are dependent on him....”  
Golden words said by Mahatma Gandhi, so true even in this modern, digitised and ever changing world. And, there is

ample evidence of organisations and economies gaining success as super powers based on their ability to focus on customers and quality.

This article explains the rising economic power of quality, it's relevance to Indian manufacturing, and some key learnings from the Maruti Suzuki experience.

## The rising economic power of Quality: A Global Perspective

According to a recently published report by Forbes Insights and ASQ — a global community of quality professionals — top executives and quality professionals see a direct connect between the success of their organisations and the continuous improvement and performance excellence

initiatives. The report brings out the importance of customer experience in today's competitive economies.

The report surveyed 1,869 senior executives and quality professionals around the world including India. There are compelling links between quality efforts and corporate performance as well as the evolving business value of quality.

Thirty-six percent of enterprises surveyed said that they regard themselves as an established quality organisation while 39 percent reported that they are still developing their quality programs and 25 percent said they are struggling to implement quality in their companies.

The report finds that those industry organisations that are considered world-class and a benchmark, demonstrate the following key characteristics that set them apart from their competitors:

- They recognise quality as a strategic asset and competitive differentiator;
- They have strong metrics in place to measure costs and benefits;

“Benchmark organisations understand that because of customer demand, responsiveness and change is vital to competitiveness.”





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## About the Author



C. V. Raman is Senior Executive Director of Engineering, Maruti Suzuki India Limited. He is responsible for Product Design & Development. He has headed various product development teams as project manager right from concept to SOP. The most successful of these is the Vitara Brezza, (where he was the Chief engineer) which is runaway success in Indian market. He is also responsible for setting-up

up a world class R&D center for Maruti Suzuki. He also has extensive experience in Vendor Development & Supply Chain Management including supplier upgradation through Joint Ventures & Technical Collaboration.

- Their continuous improvement or performance excellence efforts are directly tied to customer satisfaction and;
- Their business performance; training and education are widespread across the organisation and available to all employees, contractors and partners.

Benchmark organisations understand that because of customer demand, responsiveness and change is vital to competitiveness. They also transform regularly to design and build products quickly to meet the needs of their customers. Once products are sold, the relationships with customers continue through ongoing engagement and service delivery.

In today's fast-moving, increasingly digitised economy, continuous improvement must pervade all activities across organisations. By following the steps of incorporating performance excellence into business, creating a quality culture, keeping the customer at the core of organisational focus, running an open no-fault environment and preparing for digital disruption, organisations will be assured of the growth and enhanced profitability that quality will deliver.

### Indian Auto industry – The Growth Engine of India's manufacturing

The Indian auto industry today contributes to 49 percent of manufacturing GDP and provides employment to more than 32 million people directly and indirectly. India today is a destination of choice for global auto investments both in the vehicle and component sector. Considering the fact that India still has a very low car penetration of 21 per 1,000 people, compared to more than 600 in developed countries, an aspiring and growing middle class and a growing economy, the Indian auto industry is poised to become the third largest in the world by 2026.

The "Make in India" for the world campaign, launched by Prime Minister Shri Narendra Modi in 2014 is a clear direction for transforming the manufacturing paradigm in India.

Government of India is making concerted efforts in this direction by increasing investment in infrastructure, increasing the labour pool through the 'Skill India' initiative, establishing tax reforms through the 'one nation-one market-one tax' (GST) regime and attracting more foreign investments, especially in the area of defence and electronics. All this signals a major growth potential for manufacturers who are poised to make the most of this new terrain and make India a manufacturing base for the world.

Leveraging this opportunity will require a multi-faceted and innovative approach, but the central theme will still revolve around the customer and global quality. The Indian economy is integrating with the world. Travel and Internet are exposing Indian customers to world class quality standards. Indian customer aspirations are changing very fast and quality standards of yesterday are no longer acceptable today. Organisations need to keep abreast of these developments on a real-time basis and adjust/improve their quality standards

**"Understanding the needs of Indian customers and the usage conditions requires the highest level of commitment from management and the entire organisation."**

quickly to remain relevant for the market. Leadership needs to ensure quality processes are in place across the organisation to meet these evolving business requirements.

The good news is that quality management does now extend across the enterprise from production floors to front offices, according to the ASQ report. Two in five see quality as a cross-enterprise initiative. Almost 60 percent of all survey respondents report their quality management efforts involve operations, and 52 percent say customer service is part of their quality efforts. Nearly half the respondents say quality is part of their production efforts, the traditional home of quality management over the years.

### Learning from the Maruti Suzuki experience

Maruti Suzuki India Ltd. is one such Indian manufacturer that has transformed itself over the past three decades to fulfil the changing needs of the customer. From four products in 1990 to a strong portfolio of 16 brands today, the company enjoys a market share of more than 45 percent in the Indian market. In the annual survey conducted by a renowned market research firm, consumers have rated Maruti Suzuki No. 1 in customer satisfaction consecutively for the last 17 years. Notwithstanding its scale and reach, no other OEM in the world has been able to achieve this feat.

**Build a Strong Corporate culture and processes:** Incorporated in 1982 with the mission of modernising the Indian automotive industry, Maruti, from day one, implemented Japanese manufacturing practices and quality culture. The

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key ingredients of this culture are Kaizen, Pokayoke, Suzuki Production System and involvement of shopfloor associates through suggestions scheme and quality circles. This strong quality culture, which starts at the highest level of management and percolates down to shopfloor associates, helped Maruti maintain its leadership in the Indian market despite the presence of 18 global automobile giants in the country. The current mantra of top management is 'Zero Defect' and all processes and systems are being aligned towards achieving this goal.

**A Product Development program focusing on Indian customer needs:** One of the key aspects of Maruti Suzuki's successful journey is its ability to produce small cars of high technology at affordable prices for Indian customers. The market, environment and road conditions pose a set of quality challenges that require design and quality solutions that are very specific to the Indian market. Understanding the needs of Indian customers and the usage conditions requires the highest level of commitment from management and the entire organisation. Maruti Suzuki product development is focused on aspirational design, affordable technology and providing an exciting experience to delight the customers. Maruti has set in place processes to capture these requirements accurately and supports Suzuki research and development in Japan in developing products that meet these unique Indian requirements. Maruti Suzuki has also set up a dedicated R&D center in India to help augment Suzuki's global R&D.

**Strong Supplier Development Program:** With about 70 percent of value add being bought out from suppliers, a close collaboration is required between the OEM and its supplier base. Besides providing support to suppliers for technology collaboration with global players, one of the key quality initiatives of Maruti Suzuki to develop the supplier quality and

"In today's fast-moving, increasingly digitised economy, continuous improvement must pervade all activities across organisations."


manufacturing capabilities is a program called Vendor Upgradation. This program involves developing guidance manuals, handholding the suppliers to improve their shopfloor quality control systems and practices including maintenance of dies, moulds and equipment. The company has set up the Maruti Center for Excellence for conducting training programs on quality and excellence for supplier employees and to support them in developing their tier-2 and tier-3 vendors.

**Service delivery Excellence:** The key strength of Maruti Suzuki in the Indian market is the reach of its service network to the remotest areas for service delivery. More than 3,000 service outlets covering 1,500 cities ensures that customers have an on-demand post sales experience. To ensure uniformity of service, service quality standards have evolved to ensure all aspects of service delivery. Regional training centers ensure theoretical and practical training. Using the latest available technologies for distance learning also helps in providing virtual training to the technicians at their respective service centers. To address the non-availability of skilled manpower, Maruti Suzuki has adopted the government run Industrial Training Institutes (ITI) across our vast nation to provide assistance in developing them into modern training institutes. Maruti provides them with the latest equipment and teaching techniques to upgrade the level of their teaching staff.

#### ***Delighting the Customer Experience:***

Maruti has been continuously innovating product and service offerings in line with the changing customer aspirations of the digital era. Its newest Sales Channel NEXA (New Exclusive Automotive Experience) gives each customer his/her own relationship manager. The relationship manager ensures that the customer has a delightful pre and post sales experience. The relationship manager is a single point contact for the customer during the entire lifespan of the product. The new channel uses extensive digital infrastructure to enhance customer experience. An IT enabled customer interface, dealer management system and ERP ensures smooth integration of customer information across the value chain for fast and seamless response.

All these initiatives and many more are an integral part of the transformation journey of Maruti Suzuki to its Mission 2.0— to produce 2 million cars annually by 2020. Top management's focus on being attentive to the aspirational needs of the customer is transforming the whole organisation.

To sum up, the Maruti Suzuki experience demonstrates that in countries like India, organisations not only need to set-up within themselves a quality culture and systems and processes but also need to take ownership of developing the entire supply chain and service delivery channels to ensure enterprise-wide quality excellence. 

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# Progress through research

Rashmi Urdhwareshe, Director, The Automotive Research Association of India (ARAI) talks to The Machinist about different aspects of the Indian automotive industry.

By Swati Deshpande

**Q Can you please tell us about ARAI and its functional areas?**

ARAI is research association of the automotive industry with Ministry of Heavy Industries and Public Enterprises, Government of India. It works in harmony and complete confidence with its members, customers and the Government of India. ARAI has been playing a crucial role in assuring safe, less polluting and more efficient vehicles by providing technical expertise in R&D, testing, certification, homologation and framing of vehicle regulations.

Along with the government, we also support the industry's research programs by helping them with testing and validation for their new products. Additionally, ARAI undertakes their supplier development or Tier 1 development for optimising the technology.

**Q Can you please tell us about ARAI's state-of-the-art laboratories?**

We are really proud of our labs and equally competent people working in it. As our customers are wide spread—right from material developers to tier 1 or tier 2 component manufacturers—we have expertise in each of the specific areas. ARAI is

For a country like India, hybrid is looked at as a viable alternative while we migrate to complete EVs.

well-equipped with 15 state-of-the-art infrastructural facilities catering to variety of needs including Emission Certification, Automotive electronics, Automotive materials lab, NVH, etc.

Apart from the Kothrud, Pune facility, ARAI has a campus in Chakan, Pune where we have established new crash laboratory. Power train, fatigue and structural lab are also located in this campus. Moreover, considering the emphasis on electric vehicles, ARAI has established a Centre of Excellence for EVs in the same campus.

**Q Plastic plays an important role in light weighting the vehicle. How do you look at the use of plastics with regard to safety aspects?**

Plastic has always been an attractive material for the automotive industry, as and when it has replaced metal parts. Fuel tank would be a good example of such replacement. However,



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plastic is not the only alternative for light-weighting. Plenty of alternatives have emerged in last few years. Along with light-weight, strength and durability are other two important aspects. Also temperature cycle is another key factor for material selection. Automotive environment needs different kinds of materials. Composites have come as a very good alternative. For this, we have worked on a data bank of these materials. This bank becomes a useful tool for the designers.

**Q Bharat Stage VI is proposed to be come into effect by 2020. How do you look at implementation of Bharat Stage VI?**

It is definitely a challenging task for each player in the industry. There is a philosophical difference between BS IV and BS VI. BS IV is more or less confined to the laboratory level approvals. In addition to this, what is required to be done in BS VI is manufacturers must comply in-service checks. That's a big change. Additionally, what is new for us is compliance of these norms for commercial vehicles segment. It's a huge uphill task to shift from mechanical control systems to electronic control systems in the commercial vehicles segment. Passenger cars even at BS IV level are equipped with electronic control systems. Another challenging area is two and three wheels vehicles. We are gearing up ourselves for it so that we can help the government as well as the industry in a better manner.

**Q Hybrid and E-vehicles seems to be an emerging sector. How do you look at it?**

Hybrid was always looked at as an intermediate step between IC conventional engine and fully electric vehicle. For a country like India, hybrid is looked at as a viable alternative while we migrate to complete EVs. The level of hybridisation is something that we should be addressing. Small benefits can be achieved through mild hybrids. However, in order to get the benefit to the cost ratio better, we should look at strong hybridisation. That is possible for higher-end, higher capacity vehicles.

The government has already announced the plan to adopt complete EVs by 2030. It's going to be a humongous task.

**Profile**

Rashmi Urdhwareshe took over as Director ARAI on 1st July 2014. Before taking over this top position, she has a long career of over 3 decades in ARAI, the prestigious R&D and Homologation Institute located in Pune. Additionally, Urdhwareshe is the Chairman of Transport Engineering Division Council (TEDC), constituted by Bureau of Indian Standards (BIS), New Delhi.

Also, she is the Chairman of AISC (Automotive Industry Standards Committee), which formulates Safety Standards in India. Urdhwareshe was Vice Chair to Working Group on Pollution Energy (GRPE) under WP.29 at Geneva from 2014 – 2017.



ARAI has been playing a crucial role in assuring safe, less polluting and more efficient vehicles by providing technical expertise in R & D, testing, certification, homologation and framing of vehicle regulations.

The government has already announced the plan to adopt complete EVs by 2030. It's going to be a humongous task. There are multiple issues that we need to address with regard to this. Battery management, electronics development, the eco system development, etc. are the areas where we need work upon. For full adoption of EVs energy security is a major concern. The target would only be achievable when we will have energy security.

**Q As the automotive companies in the country are going global. Does ARAI plan to expand its horizon?**

ARAI has no borders. We work cross borders and we for our international clients. The international clients approach ARAI not because they want do the business in India but because kind of services we offer. ARAI provides services for products developed for global markets. In fact, ARAI is recognised by many countries as a service provider for mandatory homologation testing. We also work closely with other government bodies and research laboratories. Exchange programs with other countries research labs such as Japanese, European research labs is one of such initiatives. Rather than building a lab outside India, we take our expertise there. We have tie-up with some of the labs for joint projects.

Additionally, for the ease of doing the projects as per the clients' requirement, we have representatives in two countries – China and Korea. Also, we work very closely with government agencies of Bangladesh, Nepal & Sri Lanka.

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# ACE list

Vision of the management is what defines roadmap of the company and ultimately its success. Hence, it was compelling for us at The Machinist to understand the mindset of those whose contribution in the automotive industry is immense. We started the ACE List couple of years back featuring some of the leading entrepreneurs from the automotive industry. This year we have a next-generation in the list. These guys have taken their respective legacy to the next level in true sense. On the hand veterans in the list throw light on the transformation of the industry and way forward.

By Swati Deshpande



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**OEM UPDATE**

## Deepak Chopra

CEO, Anand Group

**D**eepak Chopra has been associated with Anand Group for four decades. Under his management, the company has reached new heights and expanded horizons. Speaking on the company's performance during last year, Chopra said, "We registered double digit growth and were able to grow ahead of average growth of the industry. The group recorded sales turnover of Rs. 84 billion in 2016." He further explained that the last year was not easy for the industry as a whole. "The industry had some hic-ups after demonetisation. When we started 2017, the hangover of demonetisation was still felt. Additionally, GST implementation has also affected the business adversely, although this impact is expected to be short

term." In this scenario, how is Anand Group coping with the market conditions? "We were conscious about these impacts while budgeting for this year. According to me, most of the segments of the industry such as passenger vehicles, tractors, two-wheelers are bouncing back. Considering this, we expect this year to be good for the group and hope to record 8-10 percent growth."

### Norms and regulations

The other aspect that impacted the industry lately was adoption of BS IV. Explaining its effect on the industry, he said, "In April commercial vehicles shifted from BS III norms to BS IV. This changeover had some issues as the clarifications came much later." Looking forward, he said that the group

is getting ready for BS VI norms, as the government plans to adopt it by 2020. Elaborating further, he mentioned, "This jump from BS IV to BS VI is certainly a challenge. Although the automotive industry was keen to go through BS V stage, the government realised that the only way to cut short the time of catching up with the developed world was by jumping straight to BS VI. To enable this, lot of efforts are needed by the whole industry including OEMs, Tier 1, Tier 2 and Tier 3. There is a huge investment that is involved in this. We are also gearing up for it and shall be ready by the deadline." Further he explained that the group works on a joint venture model. "The advantage of this model is our joint venture partners already have know-how of BS VI as they have implemented Euro

"Jump from BS IV to BS VI is certainly a challenge. Although the automotive industry was keen to go through BS V stage, the government realised that the only way to cut short the time of catching up with the developed world was by jumping straight to BS VI."

VI regulations in other parts of the world such as Europe, US, Japan and Korea."

### R&D

Adoption of advanced technologies demands for robust R&D facilities. "The investment that happens in India on R&D is much lower than what we know happens at the global level. And again, companies claim to put in money for R&D but the question is how much of it is actually invested in the real R&D meaning for developing new products technologies rather than application engineering," noted Chopra.





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Today, the group has 19 companies spread across 62 locations. With this, the Group recorded a sales turnover of Rs. 84 billion in 2016 and is further targeting to achieve Rs. 150 billion by 2020.

Speaking on the group's perspective, he mentioned, "As far as we are concerned, we are definitely in a better position because of our long standing JV partnerships. Majority of our partners consider their JV with us as part of their own set-up and happily pass on the technologies seamlessly."

"We have also set-up Design Engineering Services Centres that work for our JVs in India as well as for JV partners abroad. JV partners outsource lot of work to the Design Engineering Services Centres as it is much cheaper for them to get it done from India. Outsourced work includes, designing services, prototype manufacturing, etc. In this way, we are working on the model that creates win-win situation for both the partners," Chopra added.

### **Skill Development**

In the midst of catching up with the high-end technologies and norms, the other area that has to be upgraded is skills of labour. According to Chopra, the whole industry is facing this issue and each company has its own way to deal with it. "For us, we have an in-house corporate university named as Anand U. This institute is focused on four major areas of people development - Operational Excellence, Talent Development, Technical Interventions and the Development of the large force of Operating

Engineers across the group."

The institute is instrumental in advanced training programs such as six sigma.

Speaking further he stated, "The Group has pioneered a number of human resource practices including 'Operating Engineers' model for its shopfloors. Anand Group lays great emphasis on the development of its employees through training." The group hires diploma engineers from various polytechnic institutes to work on the shopfloor. The company policies further allow them to climb the ladder to a managerial positions or even higher levels.

"The Group has pioneered a number of human resource practices in the industry including the 'Operating Engineers' model for its shopfloors. Anand Group lays great emphasis on the development of its employees through training"

### **Looking ahead**

Over the last six decades, Anand Group has formed alliances with leading global automotive companies from USA, Europe, Japan and Korea. With the wide range of solutions, it has established multiple joint ventures and technical collaborations. It offers products and solutions in steering, suspension & braking parts, engine parts, emission control systems, safety products, thermal management, filtration, engineered fluids, drivetrain, etc. "Today, the group has 19 companies spread across 62 locations. With this, the Group recorded a sales turnover of Rs.84 billion in 2016 and is further targeting to achieve Rs. 150 billion by 2020." 





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## Sudhir Mehta

Chairman & Managing Director Pinnacle Industries Ltd



The Government of India and the automobile industry will have to together devise a two way road map to encourage the next generation of opportunities, to make the Make in India campaign a real success

**P**innacle Industries Ltd. was set up in 1996 in Pithampur, Madhya Pradesh. How has been its journey since inception? “Over the last several years we have continuously invested in and expanded our technology partnerships, manufacturing systems, product range and clientele to emerge as India’s largest commercial vehicle, bus seating and interiors company. Today, Pinnacle Industries has the largest engineering and development team focused on commercial vehicle seating and interiors. Our vision is to be the preferred seating and interiors systems partner for our

customers by providing a full range of solutions starting from product design to manufacturing,” informed Sudhir Mehta, Chairman & Managing Director, Pinnacle Industries Ltd.

Elaborating on the company’s manufacturing facilities, he mentioned, “Our manufacturing facility is based in Pithampur, MP and is certified for ISO/TS 16949, ISO 14001 and OHSAS 18001. Our production capacity has grown manifold over the years with current installed capacity standing at 24 lakh seats per annum. The plant, sprawling over 18 acres possesses Injection moulding machines ranging from 60 T to 650 T, Multi axis CNC tube bending machines, press for stamping of sheet metal parts using 10–400 T mechanical and hydraulic presses, a fully automated powder coating plant with conveyor speed of five meters per min, two oval carousals for flexible Polyurethane foams and rigid integral skin PU foams for steering and grab handle etc. We have high-tech ‘Polyol’ blending plant to back up the Flexible PU foam manufacturing. The state-of-the-art factory also houses ultra-modern facilities for upholstery stitching and facility for PU moulding dashboard. Modern Robotic welding facility is setup to ensure consistent quality and improved productivity.”

He added, “We are one of the largest manufactures of extruded ABS sheets – having thermoforming capacity along with 5 axis CNC routers for trimming. Additionally, we also have in-house demo centre and a customer support centre. We have been manufacturing hi-tech quality products for both national as well as global markets in compliance with all the international safety and quality norms.”

Elaborating on the year gone by, Mehta said, “We saw two major economic decisions taken by the government, one being the GST and the second being the demonetisation. The BS-III ban also had its bearing on automobile segment, eventually impacting our business as well.”

“Having said that, we still registered double-digit growth, thanks to the market demand for our state-of-the-art products and solutions. We are looking ahead to build on this success by introducing more innovative offerings in the future and expanding our foothold in potential markets. With our diverse product portfolio, trusted partners and effective solutions, we aim to become and be perceived as the partner of choice for automotive seating and interiors for all buses and trucks. We look forward strengthening our partnerships with industry players and the government whilst developing the ecosystem, in addition to fostering greater customer relationship,” he continued while he spoke on the forecast.

Mehta further has a vision to scale up not just in numbers but also keep on improving the quality of our products. “For



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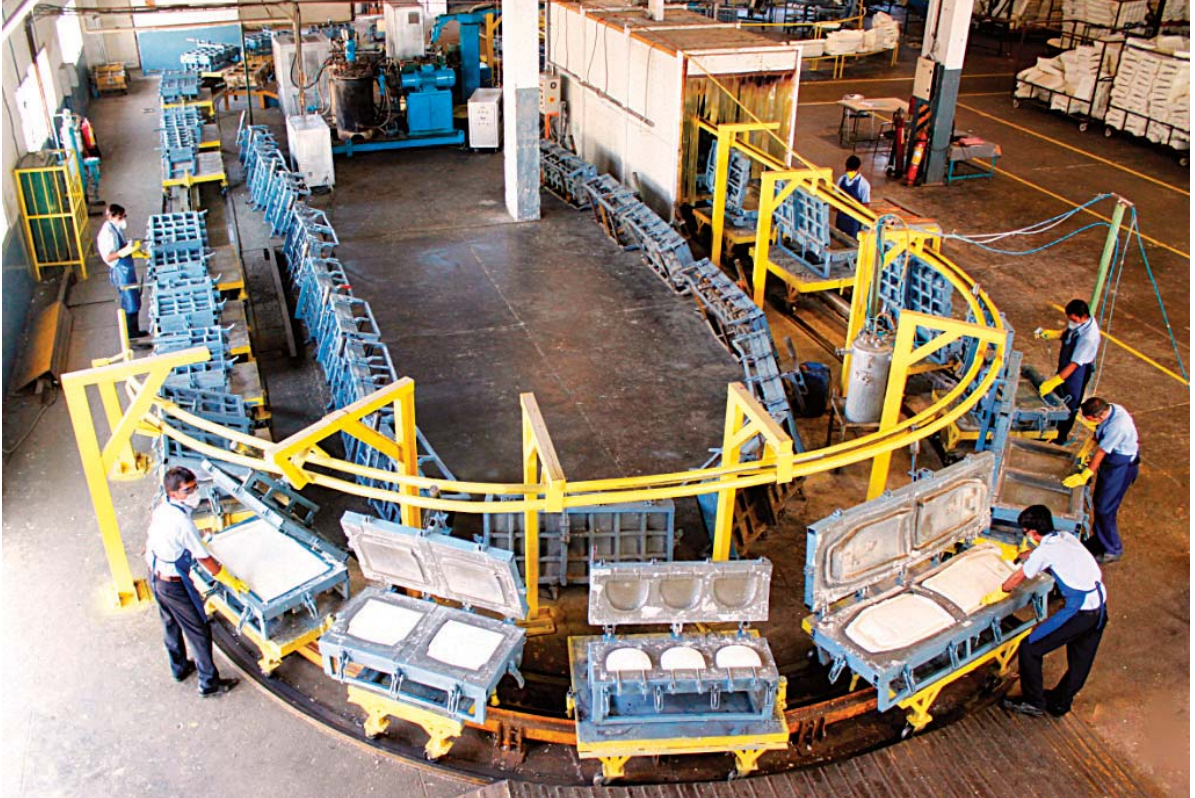
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We are looking to build on this success by introducing more innovative offerings in the future and expanding our foothold in potential markets.

this, we have a dedicated R&D unit at Pithampur and Pune that comprises of research scholars, skilled engineers and acclaimed automotive designers for product innovation and betterment of our manufacturing standards. Our state-of-the-art R&D centre is ready to support global and domestic needs of customers with support from in-house and external test facility. We check the seats with help of 95 percent Manikin available in-house. The design team is strongly backed up by in-house styling team helping us to provide end-to-end solution to our customers. In-house tooling facility for injection moulding, sheet metal stamping, robotic welding fixtures, foam moulding, thermoforming, etc. help us in reducing the time to market.”

#### Indian market


The Indian auto industry is one of the largest in the world. “The industry accounts for 7.1 per cent of the country’s Gross Domestic Product (GDP). Moreover, the growing interest of the companies in exploring the rural markets further aided the growth of the sector. India is also a prominent auto exporter and has strong export growth expectations for the near future. In a fiercely competitive market like India, it is also important to be price sensitive and strengthen service quality to ensure customer loyalty. The Government of India and the automobile industry will have to together devise a two way road map to encourage the next generation of opportunities, to make the Make in India campaign a real success,” revealed Mahta.

“At Pinnacle Industries, we look forward to increase our market share in each segment. Our constant efforts in expanding our production capacities and capabilities to cater to the evolving consumer demands have enabled us to tackle the changing market trends,” he proudly stated.

#### CSR activities

Going beyond its innovations in the automotive industry, Pinnacle Industries Ltd. has developed a Wheel chair and artificial limb. “The Polyurethane foot was developed using technology from the Indian Space Research Organisation (ISRO). The foot is designed and manufactured in co-operation with BM-VSS, Pinnacle Industries and DOW Chemical. The Polyurethane foot represents a breakthrough in limb technology in the world,” Mehta informed.

Wheel chair is developed in association with Whirlwind, Stanford and MIT “The leveraged freedom chair (LFC) is an all-terrain wheelchair providing unparalleled mobility for people with disabilities. Conventional wheelchairs are unsuited for the rough roads and long distances faced by people with disabilities, often confining them to their homes. Developed at Massachusetts Institute of Technology (MIT), the LFC empowers its rider to travel independently. Pinnacle Industries is manufacturing the chair as a CSR initiative.”

Speaking on the CSR activities, Mehta concluded by saying, “We at Pinnacle believe that it is critical to grapple with and impact social challenges, and it is our conviction that the engagement with social problems must be deep, meaningful and formed in the thought process of long-term commitment and action. We continuously strive to develop innovative solutions with the help of educational institutions, research centres and start-ups to address large-scale societal problems by utilising our manufacturing core competence.” 

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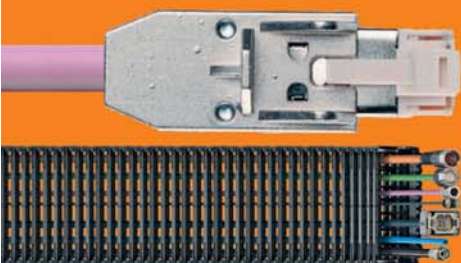
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## Abhishek Jain

CEO & MD PPAP Automotive

“**O**utperforming previous results and continuously improving is our aim,” says Abhishek Jain, Chief Executive Officer and Managing Director, PPAP Automotive. Adding further to it, he says “Daily small improvement is our mantra for success. We firmly believe that today’s result should be better than yesterday’s. The team is motivated to take up new challenges and is focused on doing activities more efficiently.”

Speaking about improvements at the company level, Jain mentions, “Our journey on the path of continuous improvement and Muda elimination continued during the year and brought creditable results with the EBITDA margin crossing 21 percent in the

Daily small improvement is our key mantra for success. We firmly believe that today’s result should be better than yesterday’s.

last quarter of the Financial Year 2016-17. In the current financial year, we have targeted to grow at higher than industry rate, acquire more customers and consolidate the improvements achieved.”

The country is undergoing one of the biggest tax reforms in the history. How that is to be affected the automotive industry? “GST regime will definitely support the competitiveness of the automotive industry as it will eliminate the state boundaries and goods can be easily transferred from one state to another. We have already started seeing the OEM’s reducing their prices due to the impact of GST. It is expected to bring in seamless flow of Input Tax Credit and removal of cascading effect of taxes. Increased online working shall reduce the direct interface with the GST departments. It shall ultimately be demand ac-



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cretive as overall efficiencies will be improved.”

With the motto of continuous improvement, the company has brought about innovative product and also has won an ET Poymers Award for Excellence in Automotive. Elaborating on this innovation, Jain mentions, “Body slide moulding for Baleno won the award. And the features that turned to be award worthy were - Weight reduction (by 17 percent), reduced wall thickness and addition of aesthetics with Chrome Insert.”

“Body Side Molding is used to add aesthetics and also provide safety to the vehicle in case of minor accidents. PPAP’s in-house designed part is not only light in weight but also easy to install on the door panel. These features have resulted in improving the vehicle’s fuel efficiency and time saving in part assembly. Despite weight reduction, Product Quality requirements were ensured through DFMEA, Design Reviews, Mould flow Analysis, material testing, PFMEA, performance testing and inspection,” he further adds.

### Paradigm shift

The auto industry is going through a transitional phase. Speaking on it, Jain notes, “The paradigm shift taking place in the industry is towards the focus in reduction of fuel consumption and a connected car concept where the car is an extension of yourself. We are continuously challenging our designs and providing lower weight solutions to our customers.”


Also, lightweighting is another area that has been challenging auto makers and auto component makers. “The prime focus on reduction of fuel consumption has led many automakers to focus on reducing the weight of their car by using light weight components. Use of engineered plastic has been

The automotive industry is a highly competitive industry where you are competing with local as well as global players. It is imperative that in order to survive, we supply our components with utmost quality at the most competitive prices.

playing a major role in replacing traditionally used steel in many components. PPAP has been consistently supporting this initiative by efforts towards reducing the cross section of its profiles as well as wall thickness of injection moulding parts, thereby reducing the weight of the components manufactured by it,” he said.

As far as Indian automotive industry is concerned, it is further in transition from regulations point of view. “We will be seeing a lot of technology getting changed on the fuel intake systems, emissions and the exhaust systems. Many component suppliers are ready with the technology to cater to BS VI requirements. The biggest foreseeable change will happen when India decides to adopt hybrid and electric vehicle technology in a big way.”

As the industry goes through a number of transitions, one of the aspect that can not be neglected is skilled labour. While touching upon the topic, Jain mentions, “The automotive industry is a highly competitive where you are competing with local as well as global players. It is imperative that in order to survive, we supply our components with utmost quality at the most competitive prices. Skilled and responsible workforce is the minimum requirement of the industry. Unless we have committed labour force, we cannot be competitive in the long run.”

He further adds that the Government of India is well aware of this gap between availability and need. “Revamping of ITIs, Pradhan Mantri Kaushal Vikas Yojana (PMKVY) are some of the initiatives being taken. While these initiatives are in the right direction, the implementation is yet to give the desired output of skilled manpower to meet present day requirement of Automotive Component industry,” he concludes. 





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## Nishant Arya

Executive Director, JBM Group



**T**oday, Nishant Arya is leading the JBM Group, which was established by his father S. K. Arya. While taking the operations ahead with great zeal, Nishant enabled the group to take up new ventures. Speaking on the Group, he says, “JBM Group as an entity is very dynamic. The very basis of our vision is set up on harnessing the power of people, innovation and technology. Hence, as a group we are always agile in identifying ways that can enable us in delivering excellence and delight to our stakeholders. The legacy I enjoy is that

Like with most of the industries, GST has brought some challenges for the automotive industry as well. For larger organisations like us, it is comparatively easier to migrate to the new regime but the real challenge lies with on-boarding the smaller vendors. Which we believe will happen in due course. Overall, it will have a huge positive impact on the business as it will ensure timely compliance and will also enhance transparency.

of innovation powered by technology, and I see it as a launch pad for the group to create more value and achieve even greater milestones.”

Under his leadership, the group’s performance was impressive last year. Speaking on the performance of the company, Arya proudly said, “As a group we grew at a healthy rate of around 20 percent, which is more than double the industry growth rate of 7-9 percent. Growth has been widespread as all our major divisions, viz. Components, Tooling and Buses saw good demand. Our Tooling division continued being

We foresee all the major divisions of the group gaining substantial momentum in the current year.



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the highest contributor of EBITDA margin for the group and grew at a robust rate of 50 percent in the last fiscal.”

Speaking in detail about the year, he informed, “The year gone by will be remembered as a milestone year for JBM’s buses division as it delivered the first tranche of its CNG powered intra-city buses – JBM CITYLIFE – to Noida Metro Rail Corporation (NMRC). Currently over 50 JBM CITYLIFE buses are plying on the Noida-Greater Noida route. Also, the joint venture between JBM and Europe’s largest electric bus manufacturer Poland-based Solaris Bus & Coach showcased India’s first 100 percent electric bus ECOLIFE in the Auto Expo 2016.” He further mentioned that he has similar expectation from the current year. He noted, “We foresee all the major divisions of the group gaining substantial momentum in the current year. The new plants in Sanand and Indore, and the capacity expansion at Pune and Chennai plants will add majorly to the top line. We also see a lot of action taking place in the bus division for both fossil fuel based as well as 100 percent electric buses. We aim to bring about more value addition thereby creating more wealth for all our stakeholders.”

### Electrifying the future

Envisioning the future, JBM launched electric buses. “JBM Group has entered into 100 percent Electric Buses segment, surpassing the hybrid technology space entirely, through a partnership with Poland-based Solaris Bus & Coach. Even the government has shown its interest for 100 percent electric technology over hybrid technology. JBM Solaris Electric Vehicles Pvt Ltd, a joint venture between JBM Auto and Solaris Bus & Coach, showcased India’s first 100 percent electric bus ECOLIFE in 2016’s AutoExpo where it garnered a lot of attention. So far we have received interests from various state governments including the government of Haryana. We are sure that you will see ECOLIFE on the Indian roads soon,” Nishant informed.


Arya is also looking ahead at the changing norms. Speaking on the same he noted, “The

The year gone by will be remembered as a milestone year for JBM’s buses division as it delivered the first tranche of its CNG powered intra-city buses – JBM CITYLIFE – to Noida Metro Rail Corporation (NMRC).

transition to BS VI emission standards will bring about a huge change. The transition time frame is too narrow and the industry will have to work doubly hard to meet the requirement. So the ones that will handle this change early will be those who will innovative fast with strong R&D and technology to back them up. The government has already set its eyes on going 100 percent electric by 2030.”

With all this, there will be a sea change that the automotive industry will witness in the near future. “To address the demands of the future, JBM Group started early in getting ourselves aligned with the changing demands of our customers. We have a dedicated and a very strong vertical for R&D and design which enables us to evolve fast,” Arya informed.

While the while industry is undergoing transformations, there is a dire need of upgrading the skills of labour. “The dearth of skilled labour is a pertinent issue for the entire industry. With so many ITIs and other technical institutions churning lacs of students every year, it is disheartening to see the lack of industry ready labour. Now that the auto industry is evolving fast, it will have to realign itself to the inevitable changes that are bound to take place, re-skilling and up-skilling of the current labour force will also pose a big challenge,” noted Arya.

“Initiatives like Automobile Skills Development Council (ASDC) is a step in the right direction to enable technical institutions align their curriculum in accordance with the needs of the industry,” he mentioned. He concluded with the hope that these steps would benefit the industry in the near future. 

The transition to BS VI emission standards will bring about a huge change. The transition time frame from BS IV to BS VI is too narrow and the industry will have to work doubly hard to meet the requirement.

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## Sunjay Kapur

CEO, Sona Group



**L**egacy is a double edged sword. Leading the company with right environment can be a challenge. Speaking about his company, Sunjay Kapur, CEO, Sona Group noted, “It is a family-run business since the company was established by my father and our founder Dr Surinder Kapur in the late 1980s. Our forging arm of the business was also constituted less than a decade later in the mid-90s through a joint venture. At Sona Group, we have always inculcated a positive learning environment wherein we are constantly encouraging our teams towards innovation. This has really helped us evolve our business practices and processes in terms of how we look at the business, market and the opportunities.”

While talking about future of the company, Kapur men-

tioned, “Today, the automotive industry is moving at lightning speed comparable to that of the IT industry and Fin-tech. This environment forces us to be completely agile and open to change and new processes, new systems and new products. If you look at the automotive industry in terms of buying habits, electrification and autonomous driving, even the number of new competitors entering the industry, one will notice there is much change happening. While we maintain the foundation of quality and building systems, following the relevant systems and processes, we are forced to continuously improve upon what we have already built and enhance the foundations we have – be it processes, products or systems – in terms of what our customers are demanding in delivery, quality and cost. One needs to continuously evolve in order to meet and



exceed customer expectations.”

Taking ahead the legacy also comes with few tough decisions. One of such decisions was selling Sona Koyo Steering Systems Ltd to JTEKT. Speaking on the same, Kapur opined, “We decided to divest our entire equity stake in Sona Koyo Steering Systems Ltd. Though a tough decision to take, it was carefully thought out. Looking back at it a few months later, we are very happy as it was a win-win deal for JTEKT, Sona Group, our customers, employees and other stakeholders. The decision to exit a 30-year-old partnership with JTEKT after we grew the business to revenues of Rs. 1,600 crore was because our growth was restricted only to India and we did not own the technology. But the decision has been a transformational step in Sona’s journey and allows us to completely focus our investments, attention and energies on the fast-growing precision-forgings business – Sona BLW, wherein there is immense potential for growth and global market leadership.”

The Second Green Revolution is a crucial need in the sphere of environmental consciousness, thereby driving socially-responsible manufacturing.

### Prevailing wide spread spectrum

Sona BLW Precision Forgings Ltd (SBPFL) is a renowned precision-forged gear manufacturer present across three locations globally with a total of seven manufacturing plants – three in India, three in Germany and one in Hungary. “The three Indian manufacturing facilities are located in Gurgaon (two) and Pune (one). In Germany, the three facilities are located in Remscheid, Duisburg and München. We recently expanded our Hungary manufacturing facility, which is essentially a machining and heat-treatment operation. Currently, we are engaged in machining at this plant, but in future, we will move to heat treatment operations too. We established our Hungary facility solely for this operation, as earlier we were forced to outsource machining operations and now we have brought this in-house to Hungary, which is a low-cost country,” informed Kapur.

Sona BLW has automated machining and forging lines

and employs 2,300 people worldwide. “The Company and its German and Hungarian subsidiaries manufacture near-net-shaped gears (bevel gears), precision-forged speed gears, synchroniser rings, E-axes and differential assemblies for automotive and other applications. We are renowned for our patented warm forging German technology and manufacturing high-precision forging components for cars, trucks, agricultural applications and construction-equipment makers. We

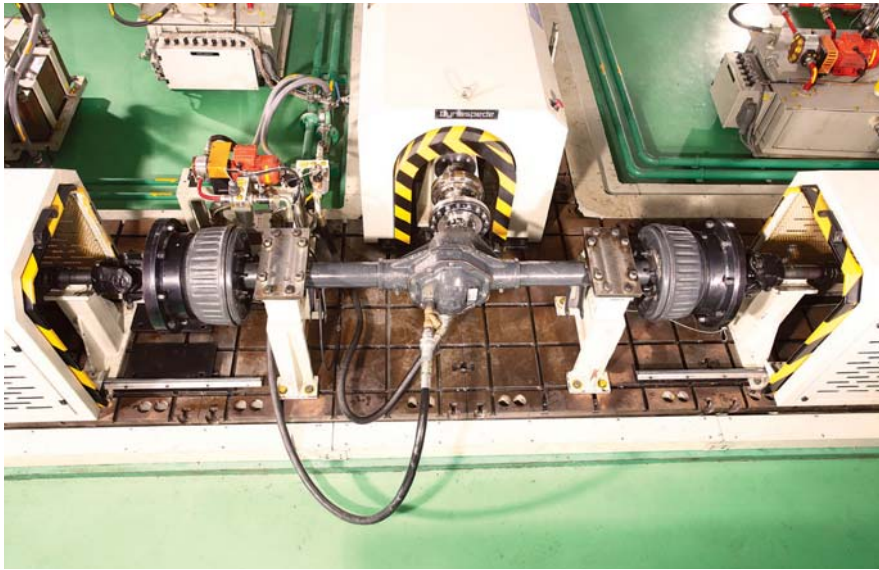
currently have around 12 percent market share in the precision-forged gear business worldwide and supply to key global customers, including major OEMs such as Daimler, Volkswagen Group, Renault, MAN, Scania, BMW, and Caterpillar, among others,” he added.

The Indian arm of Sona BLW also supplies to OEMs in the passenger vehicles, commercial vehicles and tractor segments like Maruti Suzuki, Tata, Mahindra & Mahindra, TAFE, Escorts, Volvo Eicher, ITL and Bharat Benz. “The Indian company also has significant exports to leading global automotive players such as John

Deere, American Axle, Linamar, CNH, Carraro and DANA. Globally, it is known for high-quality standards, design innovation and high customer satisfaction,” Kapur continued.

With these strengths, how has been the year for the company? “The group registered 34 percent growth during FY2016-17. The last year has been exciting as we chartered the new path of growth for the coming decade. The decisions taken last year have turned us into a very fast-moving agile company. Much of this growth comes from our exports to the United States and the upswing in the commercial vehicle market. The axle count has also begun increasing in the commercial vehicle platform due to the kind of vehicles that are being manufactured. This has definitely given us an uptake in the year gone by,” Kapur informed.

Speaking about the current year, Kapur averred, “We foresee a similar growth in the current year as well due to the combination of domestic market factors and our export busi-



The Automotive Mission Plan (AMP) 2016-26 envisions helping the industry touch \$260-300 billion, and help in the creation of 65 million more jobs. The mission is to increase the exports of vehicles by five times and components by 7.5 times and help the industry contribute 12 percent to the Indian GDP.

ness. We are expecting a minimum growth of 15-20 percent in the current year. We have substantial export orders from the US, with business already booked for the current year. We are also working with different OEMs as well as Tier-I suppliers – mostly differential manufacturers – and we see good growth in that.”

#### Impact of GST

While the company was going through internal corporate transformation and was focusing on the current businesses, the other external aspect that was to impact the business was GST. Elaborating on its impact of this major tax reform on the industry, Kapur stated, “I believe GST is a beginning that will foster the creation of a stable and coordinated policy regime – something the automotive sector always needed. We should also remember that not only do we need to sustain and improve manufacturing competitiveness but also to internalise the strongest focus on addressing the challenges of environment and safety.”

“The Automotive Mission Plan (AMP) 2016-26 envisions helping the industry touch \$260-300 billion, and help in the creation of 65 million more jobs. The mission is to increase the exports of vehicles by five times and components by 7.5 times and help the industry contribute 12 percent to the Indian GDP. The GST rates on automobiles will truly empower the

industry and its various component sectors by boosting demand. An overall reduced tax burden will strengthen the automotive market in India,” he said.

“Nearly a third of all small cars sold worldwide are made in India, and it is time to give a fillip to the sale of cars in the premium segment. So keeping the costs of small cars almost the same, thanks to the minimal hike in duty, the GST announcements will reduce the effective duty on premium cars, benefitting buyers. By reducing the tax on luxury cars from the present rate of 52-55 percent to between 42-45 percent

under GST (a GST rate of 28 percent and maximum luxury car cess of 15 percent), the Government will give the required fillip to the sale of premium cars, which declined in 2016,” Kapur added.

While we look at its bright side, GST has adverse side too. According to Kapur, “In the age of greater environmental consciousness and personal activism, it is particularly disheartening that the Government has decided to tax hybrid cars at the highest GST bracket of 28 percent in addition to 15 percent cess. Hybrid vehicles not only conserve fuel, they also produce less CO<sub>2</sub> emissions. In fact, environmentally-responsible civic municipalities are putting a possible move to hybrid public transport vehicles on top of their public works agendas. Such environmental-friendly vehicles must receive the Government support they deserve. I believe it’s time for the Second Green Revolution in India. This one can have a similarly far-reaching impact and provide equally-critical benefits as did the first – the agricultural revolution. The Second Green Revolution is a crucial need in the sphere of environmental consciousness, thereby driving socially-responsible manufacturing.”

#### Looking ahead

Keeping the company aligned with the market trends and demands, Sona Group has brought in exciting innovations. Elaborating on it, Kapur stated, “We indigenously designed and developed a new product – the 5kW Electric-Axle – and witnessed a successful pilot phase, where we delivered more than 110 to 115 E-axles, typically for retro-fitting. This year we are also looking to increase our customer base. We are in talks with many OEMs to explore if we can have these E-axles fitted within the OEMs. Today, the E-axle is only geared for the Electric Rickshaw (E-Rickshaw). Once we increase the motor size of the E-axle, there will be great potential for the product in the future and we would be looking at other vehi-



cles as well.”


Looking at the market ahead, he mentioned, “The automotive industry’s roadmap is extremely disruptive. We have seen the evolution of electric vehicles from the traditional ICE (internal combustion engines) to a complete electric vehicle. We have also seen hybrid electrics; we are already supplying to electric vehicle manufacturers from India and Germany. These manufacturers are global players and, therefore, we are geared to cater to their demands. Fortunately, with our products, which is the differential and in the driveline, we see these products continuing for the foreseeable future. Therefore, our forgings and gears will continue to exist”

“Parts of the vehicle will eventually be eliminated because of the new kind of technology cars will adopt. In fact, if you consider autonomous driving, almost everything in the vehicle changes. In terms of transformation, there are all kinds of technology the automotive industry will see such as flying cars. When you look at our product, the driveline or the differential, if we were to eliminate the differential, we will really go to in-wheel or hub motors and even when we do that,

it’s time for the Second Green Revolution in India. This one can have a similarly far-reaching impact and provide equally-critical benefits as did the first – the agricultural revolution.

forgings will still be required. It may not be the same type of product, but forgings will be required. So we will continue to produce and expand our capacity to the new kind of differential, if it ever does come about,” he continued.

“However, for the foreseeable future, we are certain the differential will remain in the current shape and form. But there will be much change regarding the automotive industry and so, the components industry needs to map or create a technological roadmap in conjunction with what’s happening to OEMs. As OEMs are evolving and moving from one technology to the next, from the traditional technology of combustion engines to electric and then to pure electric, the components industry will have to follow that,” he projected.

As the industry is on the journey to accept BS VI by 2020, Kapur says that the industry will be all set embrace new regulations. “Yes, we are absolutely ready to accept BS VI norms by 2020. When you look at the Indian automotive components industry, it is a matured one. We are not the same industry that used to be just focussed on Indian technology or markets alone. Today, the Indian automotive components industry is well established. Many companies are investing in R&D as well as design and development of products, indigenisation of tool rooms, and localisation of products. Therefore, I am confident that the Indian automotive components industry is absolutely ready to accept BS VI norms by 2020.” 

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The collet holder adapts perfectly to different MQL-Systems and tool shank connections by variable exchangeable transfer elements and adjustment screws. Its integrated minimal length compensation reduces axial forces and leads to both better tool life and thread quality.

[www.emuge-franken.in](http://www.emuge-franken.in)





# Green Warriors

HAL's Kanpur facility won The Machinist Super Shopfloor Award 2017 in Green Manufacturing. **M M Tapase**, GM, Hindustan Aeronautics Ltd -Transport Aircraft Division, Kanpur, speaks about the plant's green initiatives.

By Swati Deshpande

**Green manufacturing is the need of the hour. Can you please tell us about your views on the same.**

The Government of India is focusing on the bigger role of manufacturing sector in country's economy. The Government has set a target of increasing sector's contribution to GDP to 25 percent from the current level of 16 percent. With the growth in the manufacturing, environment concerns also need to be discussed. There is a continuous requirement of optimum usage of energy and resources while minimising waste. Hence, in the current business scenario 'Green Manufacturing' or 'sustainable industrial activity' is definitely the need of the hour and required to be implemented with zeal.

Following four ways transform industrial operations:

1. Implementation of green processes.
2. Manufacturing of products with minimal waste.
3. Usage of renewable & recycling of energy.
4. Energy Audit and usage of resources optimally and efficiently.

At HAL Kanpur, IT enabled solutions are being emphasised in all working areas. We are working towards paperless working environment and ensuring efficient monitoring and control of production activities to minimise the wastages at every stage, reduction of cycle time of production and use of environment-friendly material leading to Green Supply Chain, etc.

Our product, DO-228 aircraft is fuel efficient and we are focusing on making it more energy efficient. This year we are launching upgraded variant of Dornier aircraft in the civil aviation market with more

energy efficient engines and propellers. We strive for better utilisation of resources at production hangars, storage of raw material and finished goods in stores, optimum movement for man, machine and material to reduce the cycle time.

**How has been your experience in implementing green initiatives at your plant?**

Indeed, it has been a challenging task with good experiences while implementing green initiatives in the factory, specifically reduction of the wastes and disposal, replacement of old conventional machines by NC & CNCs, implementation of energy meters to check and stop the pilferages & losses, pollution control measures, etc. In general, green initiatives are aiming to minimise the pollution and impact of human activities on the environment. We conducted energy audit through professional agency and implemented their recommendations. In our facility, we emphasised on prevention /control of air, water and land pollutions as per EMS certified norms, usages of efficient machines for low energy and waste of resources, etc. This minimised wastes generation.

The recycling of wastes is another important area of concern. Opting for green initiatives in the facility calls for cultural shift as every stakeholder appreciates and is involved in the process. The green initiatives have yielded positive results related to clean environment, water and soil, avoiding polluting the resources.

**What benefits did you get through implementation of green manufacturing practices?**



This year we are launching upgraded variant of Dornier aircraft in the civil aviation market with more energy efficient engines and propellers.



There are tangible as well as intangible benefits:

**Tangible benefits include:**

- Efficient usage of resources, cost savings, reduction in energy consumption, etc.
- Clean work place, surroundings and environment in factory and township for hygienic and healthy atmosphere.
- Improved ground water level due to installation of rain water harvesting system, drastic reduction in wastages & garbage.
- Proper up keeping of materials, tools, and wastes disposals, opportunities of recycling of materials and wastes.
- Recycling concept for packaging material and scrap.
- High power savings by optimum use of electricity, compressed air, water supply and several consumables.
- Reduction of movement of man and material using of battery operated vehicles.
- Qualified for EMS-IS/ISO-14001:2004 certifications to declare division ECO friendly.

**Intangible benefits**

- Clean environment leads improved work efficiency, healthy people and self-disciplined workforce.
- Employees are self-motivated to work on new and efficient machines in the hygienic environment.
- Waste reduction and proper disposals.


**What were the challenges that you faced?**

Major challenges were to inculcate awareness into the employee's attitude. Budget constraint was another key challenge due to high investment cost for procurement and implementation of various systems. It was also important to execute the initiatives without affecting production activities.

Initially, we started taking initiatives on sample basis in different identified areas and monitored the advantages closely. Everybody realised the benefits started working towards green manufacturing aspects like usage of energy resources efficiently, minimising the wastages, application of LEAN concepts etc. In the end, it was very challenging but very positive step towards the development of sustainable industry.

**Have you set any targets in this regard?**

Yes, every year we set targets towards green manufacturing in the factory as well as in the township. Some of the areas are,

- Plantation of more trees and rain water harvesting.
- Setting up of non-conventional solar power units.
- Implementation of garbage disposal by using green technologies and installation of STP plant for sewage disposal.
- Construction of toilets for the nearby villagers.
- Replacement of conventional lights with LED lights.
- More usage of battery operated vehicles in the factory.
- Replacement old machines with new & upgraded ones.
- Implementation of LEAN principles in all working areas. 

**UPDATES**

**Zavenir and Kluthe Group form a 50:50 Joint Venture**

Zavenir and Kluthe Group have announced a major strategic 50:50 joint venture, named Zavenir Kluthe. The aim of this tie-up is to cater the needs of automotive, automotive ancillaries, heavy engineering, and plastic industry. According to their terms of the tie-up, Zavenir will help the venture with its domestic infrastructure in marketing and sales of specialty chemical products. While, on the other hand, by sharing its state of art technologies Kluthe will bring in competitiveness to users apart from enabling them to adopt solutions which are greener. Since 2011 Zavenir has been a licensee partner of Kluthe Group, this joint venture is an extension of this relationship aimed at increasing the manufacturing, marketing, and sales of all Kluthe's products and technologies in the field of metal working fluids, surface treatment, and paint shop management.

Kluthe leverage with Global customers in these industries



**Saket Bhartia of Zavenir and Martin Kluthe of Kluthe Group signing the agreement**

combined with Zavenir's domestic infrastructure in manufacturing and sales of specialty chemical products provide synergies which can enable Zavenir Kluthe to establish a leadership position in the Indian metal working fluid and surface treatment markets.

Saket Bhartia, Managing Director of Zavenir, said, "Zavenir has in the past built up a leadership position in the Indian corrosion prevention markets, with this strong commitment from Kluthe, Zavenir Kluthe aspire to become a top 3 player in the INR 20 Billion metal working fluid market by 2020."

Martin Kluthe, Managing Director of Kluthe Group (Germany) said, "Zavenir has for long been a trustworthy licensee of Kluthe Group, and nobody better than Zavenir could cater to our needs of expansion in the Indian market. As a venture extension of the partnership, we are planning on setting up a technology center and state-of-the-art plant in Western India to cater to ever growing Indian markets by 2020."



# Charting the path of growth

**C.V Arunkumar, Vice President—Sales, SolidCAM Software India Pvt. Ltd. speaks to The Machinist about the company’s operations and growth in India**

**By Swati Deshpande**

**Tell us about SolidCAM’s operations in India.**

SolidCAM India’s operations started in 2008 and since then we are growing at a very fast rate. We have added more than 100 customers since 2015. The testimony to the same is that the headcount has grown from a nine members team to a 32 members team. Apart from the above, we have grown our operations and have opened new branches in Chennai, Coimbatore and Punjab. Today, SolidCAM is spread across India. The primary reason that we could achieve it is that we provided excellent and local technical support to our growing network of customers.

A major achievement of SolidCAM India is to establish our 24/7 – Technical support centre at Pune for the entire Asia Pacific region.



**Tell us about company’s solutions that are well-accepted in the Indian market.**

Today, SolidCAM India is a very well-known brand for its revolutionary milling technology namely IMachining. The company is recognised as a platform solution provider for integrated CAM solutions. It has become an industry standard for MillTurn applications and has developed a very complex 14 axes millturn application solution. Moreover, the company has introduced many new machining applications and the new addition to that is rotary machining, which is aimed at providing complete programming automation to multistage and multi start, cylindrical parts like bottle moulds, screws, propellers, etc.

**How has been the last year for SolidCAM India? How are you looking at this year?**


FY 2016 has been a good year for SolidCAM India. We grew over 20 percent during last fiscal both in terms of number of licenses that we sold and number of customers that we added to our installed base. The number of IMachining customers we added has been more than double throughout India. The current year looks to be promising and with the advent of GST we hope to increase our market penetration and technology absorption.

Aerospace has been topping the table with best growth prospects. Apart from that, industrial machinery, manufacture & engineering, job shops, have been driving growth for our organisation.

**Which are the industries that have been driving growth of the company in the country?**

Many industries have been doing well in the past 3-4 quarters. Aerospace has been topping the table with best growth prospects. Apart from that, industrial machinery, manufacture and engineering, job shops, have been driving growth for our organisation. The growth of the hydraulics manufacturing also looks promising.

**IMachining is latest solutions brought by SolidCAM for CNC machining. Can you please elaborate on the solution?**

IMachining is a revolutionary and patented milling technology solution from SolidCAM. This technology offers 25–70 percent reduction in the machining time. Today both IMachining 2D and IMachining 3D are very mature and proven products. Surely, both the variants are proving to a big boon for the entire manufacturing Fraternity. 



## Simply plug in at an angle with the new plastic angle adapters

The motion plastics specialist igus has developed the ibow for a quick and easy angling of plug connectors. The angle adapter can be installed either during assembly or retrospectively on existing cables. To ensure operational reliability, the connector need not be removed from the cable. The ibow reduces

your planning and delivery times as much as the assembly and storage costs. Slide it on, bend the cable, fix and ready to use! In just a few steps, the new igus ibow, from the motion plastics specialist igus, can be used to attach cables with an angled plug connection and save space. With this simple injection moulded part, igus allows flexible connection of cables to a machine, whereby the angle of connection is freely selectable. "With the use of the igus ibow, cables can be connected just as easily to machines as without the adapter," explains Christian Stremlau, head of the readychain/readycable division at igus. "Customers do not need specially trained personnel and also save twice because they only need to get one type of plug connector, the straight connectors and their harnessing are also significantly cheaper than angled connectors." Users can therefore obtain the identical connector types as harnessed readycables from igus and also choose the best angle for connecting to the machine later. This saves process and storage



costs and above all eliminates errors.

### Faster and, above all, safer use

By using the cost-effective igus ibow, the connector does not have to be removed from the cable, which saves time and is also safer. As soon as the cable complete with connector has been pushed through the adapter and angled, it must be fixed with a cable tiewrap. In this way, it can also be removed again easily later if required. Depending on the customer's requirements, igus supplies the ibow as an individual part in various installation sizes or already harnessed together with the appropriate cables. Users can also specify the desired colour or add additional individual labels.

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## UPDATES

### National Productivity Summit showcases competitiveness in manufacturing

The 11th Edition of Indian Machine Tool Manufacturer's Association's (IMTMA) National Productivity Summit got underway today. The summit was inaugurated by Girish Shankar, Secretary, Department of Heavy Industry, Government of India, Shishir Joshipura, Managing Director, SKF India and Sunil Kaul, Group President, Excellence in Manufacturing, Innovation and Technology, Anand Automotive. Also present were Parakramsinh G. Jadeja, President – IMTMA, and V. Anbu, Director General and CEO of IMTMA.

The summit was held for two days from 4–5th August 2017 and will enable the delegates to know more about new manufacturing technologies and best practices on the shop floor through enriching keynotes, live case study presentations, plant visits, sharing of success stories and focused technical sessions.

Speaking on leader led transformation for zero defect in



manufacturing, Sunil Kaul, Group President, Excellence in Manufacturing, Innovation and Technology, Anand Automotive, said "In today's era it is imperative that companies as well as its leaders have to position manufacturing as a strategic differentiator by pursuing productivity improvements to increase return on investments and enable growth through innovation."

Girish Shankar, Secretary, Department of Heavy Industry, Govt. of India, said "the Government is extensively promoting domestic manufacturing

across key industrial corridors and we will further aim to solidify manufacturing ecosystem in India to boost domestic manufacturing by aligning our policies related to ease of doing business, FDI investment rules and infrastructure development to grow domestic manufacturing in India and raise its GDP contribution to 25 percent by 2025."

The two day summit had Live Case Study Presentations on some of the best practices in manufacturing by leading manufacturing companies.



## Next-generation multitasking machines



Okuma has developed The LASER EX smart machines with state-of-the-art laser applications to achieve the ultimate in process-intensive machining. The LASER EX Series represents the world's first multitasking machines that perform milling, turning, and grinding, as well as hardening and additive manufacturing processes.

Laser metal deposition (LMD) with a variable laser achieves precision control, from high efficiency to high definition additive manufacturing. Laser spot diameter:  $\varnothing 0.4$  to

8.5-mm (infinitely variable control).

Adding hardening to the cutting and grinding processes. Compared to hardening in conventional heat treatment systems, this process is quick and produces less distortion resulting in dramatically improved throughput.

Adding hardening to the cutting and grinding processes. Compared to hardening in conventional heat treatment systems, this process is quick and produces less distortion resulting in dramatically improved throughput.

Five models are in this LASER EX series now for a wide range of workpieces. The MU-8000V, MU-6300V, and MU-5000V are based on vertical machining center 5-axis machines. The MULTUS U3000 and MULTUS U4000 are based on Okuma's multitasking machine design.

The MU-8000V LASER EX for  $\varnothing 1,000$ -mm parts, is the world's largest machine for additive manufacturing.

For more details, contact  
Okuma Corporation  
Website: [www.okuma.com](http://www.okuma.com)

## Lubricants for machine tools

ExxonMobil's wide product portfolio is designed specifically to meet the challenges of equipment in extreme conditions of temperature, load and water contamination. ExxonMobil products help to sustain maximum power output from machine tools, minimise wear and tear as well help to preserve the life of the equipment/components.

**Slideway Oils:** Poorly formulated slideway oils may not separate readily from aqueous coolants. This results in the formation of 'tramp oil' which compromises the effectiveness of the coolant by shortening its effective life and adversely altering cutting performance. Tramp oil can also lead to bacterial growth resulting in foul odour, short service life and potential health as well as safety concerns.

**Water soluble cutting fluids:** To optimise productivity it is very important to choose technology-leading aqueous coolants. The highest performing coolants can reduce maintenance requirements by resisting biological attack thereby extend batch life. Ease of maintenance needs to be balanced with performance as well as protecting the machine components from corrosion and sticky deposits. In addition, the fluids should meet the latest Health and Safety regulations, be easy to monitor and maintain in service. Collectively, these properties will help deliver long service life, excellent cutting perfor-

mance and reduced maintenance downtime.

**Neat cutting oils:** Neat or straight cutting oils are used in applications which are beyond the typical performance profile of aqueous coolants, like tapping and threading of high alloy steels. They improve machining in high speed automated machining centres through outstanding cutting performance, reduced tool wear and enhanced surface finish. Ideally they should be light coloured to allow clear visibility of the workpiece; have low misting characteristics to help workplace safety and product usage; and are chlorine free to support environmental concerns, while balancing with a high degree of lubricity and machining performance.

**Spindle oils:** Spindle oils are used for high speed spindle bearings and equipment where high speeds and fine clearances are involved. It provides exceptional lubrication of close-tolerance bearings which helps keep the bearings running cool and helps maintain the precision required by many of today's critical machine equipments. These are designed for spindle bearings, and exhibit required properties to function at low pressure hydraulic and circulating oils as long as the proper viscosity is selected. This feature helps minimise inventory costs and reduce the potential for product misapplication.



## Digital gripper twins for high-performance assembly

Chicken or egg? – By going digital of assembly systems, this famous question will soon be cleared up. For the Hannover Messe, Schunk is beginning to digitalise its entire gripper range and thus paves the way for virtual commissioning and simulation of complete handling solutions. With the aid of the mechatronics concept designer from Siemens PLM Software and the Digital Twins from Schunk, designers and systems planners will soon be in a position to simulate complete assembly systems in 3D and virtually depict the entire engineering process from the concept to mechanics, electronics and software, right up to commissioning. Instead of the classical CAD cover model, a detailed digital image of the individual components appears, including their full functionality. The Digital Twin comprises the CAD volume model with all geometric data for modelling in Siemens NX, CAE data (EPLAN), and a kinematic behaviour model in which the stroke, extension and retraction speed, acceleration, jerk, nominal force and mass are stored. In addition, Schunk seeks to extend its Digital Twins in a second step in the future with a range of PLC components for virtual commissioning (software/hardware in the loop).



enables systems constructors and users a significant shortening of project duration, faster commissioning and clear efficiency effects for repeated implementation of similar systems. All relevant planning steps from calculation of the cycle times to designing the components with respect to traverse path and stroke as well as collision calculations can be completely virtually covered by the engineering software. Besides savings of 30 percent on pure en-

gineering time, systems constructors and users also benefit from a significantly reduced project duration. Instead of only beginning programming after physically assembling the system, as had normally been the case until now, all individual processes can be systematically coordinated, programmed and optimised in the form of relative conditional rules using the virtual model. Furthermore, the virtual model forms the basis for follow-up and real-time control in on-going production. In the first step, Schunk digitalises its 24V mechatronics range for high-performance assembly.

*For more information, Contact:  
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Schunk Intec India Pvt Ltd  
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### Clear shortening of project duration

The integrated engineering with the aid of virtual simulation

## UPDATES

### Chiron Werke receives Bosch Global Supplier Award

Chiron Werke GmbH & Co. KG has been honoured with the Bosch Global Supplier Award from Robert Bosch GmbH. Chiron received it in the category purchasing of indirect material and is the only manufacturer of machining centers among the prize winners. With this award, Bosch recognises outstanding performance in the manufacture and supply of products and services – notably in the areas of quality, costs, innovation, and logistics. “We are proud of this award. It shows that we offer high quality and future oriented solutions – in partnership with our customers,” states Dr. Markus Flik, CEO of the Chiron Group.



nerships,” explains Dr. Karl Nowak, President, Bosch – corporate sector for purchasing and logistics.

Chiron has met the requirements of Bosch and, therefore, received in 2017 not only the Global Supplier Award for the first time, but also the Bosch Preferred Supplier Award for the fourth time. In front of some 100 representatives of the supply industry, Dr. Flik and Stefan Birtzle, Head of Global

Account Management Automotive Chiron Werke, received the coveted award.

Chiron supported Bosch with highly productive machining solutions and has long been more than a mere deliverer of machining centers. “Chiron is a partner in development and innovation that supports Bosch to remain competitive,” says Dr. Flik. Competences in the development, manufacturing and implementation of complex production systems as well as the continuous development of digital solutions are critical 40 success factors.



## Silence please... the secret behind Silent Tools

The SilentTools+ boring bars are part of the CoroPlus platform, comprising connected tools and software.

By Åsa Backman

Everything the Silent Tools R&D team in Norway does is based on customer demands, add curiosity and a desire to learn to this and you'll have the recipe why the team is so good at innovation.

The view is marvellous: black wintry water cutting through snow-covered mountains surrounding a fjord. This is Trondheim, Norway, and it's where you'll find the brains behind the next generation of connected Silent Tools+ boring bars.

Industry 4.0 and the constant demand for new innovations can be stressful for companies, but Sandvik Coromant in Norway has created an environment for bright ideas to flourish. It's no coincidence that competitors are still struggling to produce vibration-free boring bar lengths above 10 times the hole diameter while the team in Trondheim is testing bars that can handle double that, now with connectivity and software that save valuable time and money for the customers. What's the secret?

**Without connectivity, operators spend a lot of time measuring, listening, feeling and watching before, during and after machining. Components of the size that this bar can machine are extremely expensive, which means that process stability is key.**

"It's a combination of many things," says R&D manager Anders Digernes. "We have the full value chain from ideas to complete manufactured products under the same roof, which gives us access to a lot of different competences. Our flat organizational structure makes us very flexible and agile in our response to new opportunities, often identified through R&D's direct contact with customers."

Tormod Jensen, a PhD engineer on the R&D team and one of the brains behind several patents of the Silent Tools dampening system and sensor technology, points to another reason. "We are part of the large Smart Tools project founded by the Research Council of Norway, and this has been a key factor in our success," he says.

The SilentTools+ boring bars are part of the CoroPlus



**"We are part of the large Smart Tools project founded by the Research Council of Norway, and this has been a key factor in our success."**

**Tormod Jensen, a PhD engineer on the R&D team, Sandvik**

platform, comprising connected tools and software. Dan Östling, another PhD engineer on the Trondheim team, has been driving the development of the sensor and signal technology – technology that opens up a world of new opportunities for customers from pre-machining all the way to post-machining. R&D engineer Mathias Tjomsland demonstrates the interface while one of the operators attaches a long, heavy boring bar to the machine. The icon for centre height displays 0.0°.

"Wow, you got it exactly right on the first try," Tjomsland tells the operator.

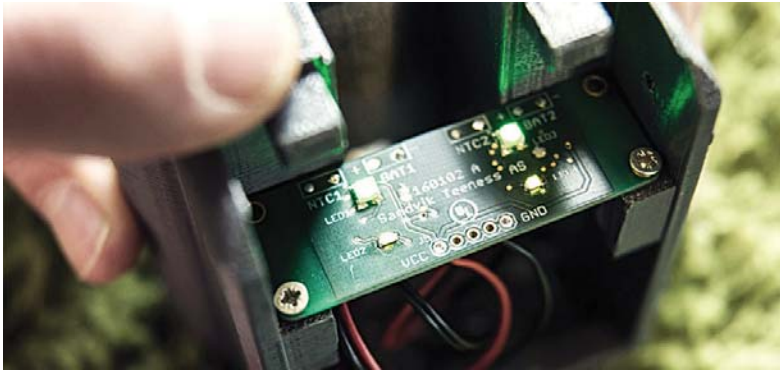
Without connectivity, operators spend a lot of time measuring, listening, feeling and watching before, during and after machining. Components of the size that this bar can machine are extremely expensive, which means that process stability is key. During a visit to several aerospace manufacturers in Canada, the R&D team realized another challenge – lack of visibility.

"When turning inside long components, it's extremely difficult to know what is going on," Tjomsland says. "In modern machining centres, you may not even know if the insert is actually in cut, as they are very sound-isolated. Every minute the machine is cutting air is very expensive."

When the 18xD sensor-based boring bar was first displayed at the IMTS exhibition in Chicago in 2016, the aerospace customers that the team had previously met in Canada came to visit the booth.

"Everything we do is based on customer demands, but





Another person who is passionate about his job is R&D engineer Einar Leo Ottesen, who is exploring additive manufacturing opportunities. “We always have our eyes open for new material and new ways of manufacturing our tools to make them stronger, lighter, smarter and more cost-efficient,” he says.

Curiosity and a desire always to learn new things are two more pieces in the

the Canadians were all really impressed that we had listened to their problems and actually solved them,” says marketing manager Nils Aksel Ruud.

Tjomsland gently puts his hand on the bar, and the icon for deflection immediately reacts on the screen. The interface is amazingly visual and easy to understand. Tjomsland’s passion for design and user experience has been truly valuable in the development of the software.

puzzle of what makes the Sandvik Coromant team in Norway so good at innovation.

The new connected Silent Tools+ boring bar is being launched in September.

*For more details, contact:*

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## Power supply for security system and DC-UPS Applications

The IP surveillance market is witnessing buoyant growth today and more importantly the demand for CCTV and Surveillance products is going to be sustained with very consistent and high growth rates over the next 4 to 5 years.

Electronic security pertains to leveraging technology in safeguarding assets by preventing unauthorised access to key data or assets. The government has been the traditional consumer of such security services. Corporations rank second in the usage of such devices for their employees and critical data infrastructure and now one can witness its implementation in areas like household security and small mom-and-pop stores.

The Indian security market is in an interesting growth phase on the back of renewed interest on existing security and surveillance measures in the country mainly due to terror threats in recent times. Today we are moving from security in closed spaces to security and surveillance of public places. So we foresee spending on this industry both from the government and the private sector. For the PMU series, the latest AC/DC series of panel mount power supply with integrated UPS from Delta Electronics is designed to support the security application. The integrated UPS provides battery management for charging an external 12Vdc or 24Vdc SLA battery with adjustable charging current from 0.5A to 1.5A and has TTL compatible monitoring signals for AC OK, DC OK and Battery Low status alert. The power supply utilises MOSFET to switch to battery operation with zero switch-over time in the event of failure/ disruption of the input AC power source to ensure utmost reliability in your system protection.

The first two models in the PMU series are rated at 13.8V/9.5A (PMU-13V155WCCA) and 27.6V/4A (PMU-27V155WCCA). The PMU series meets major international safety approvals according to IEC/EN/UL 60950-1 and CCC



to GB4943.1, certified to EMI Class B to EN 55022, EN 55032 and GB9254.1.

### Highlights & Features

- LED indicator for DC OK (Green) and battery reverse polarity (Red)
- Zero cut-over time from loss of AC to battery operation
- Protection against reverse polarity battery connection
- Conforms to harmonic current IEC/EN 61000-3-2, Class A
- High MTBF > 700,000 hrs. per Telcordia SR-332
- Built-in monitoring signals for AC OK, DC OK and battery low indication
- Overvoltage / Overcurrent / Over temperature / Short circuit protections
- Built-in over current and short circuit protection in buffering mode operation

*For more information: Manuj Chaudhary, Product Manager-Delta India, Industrial Power Supplies. Manuj.Chaudhary@deltawww.com www.DeltaPSU.com.*



## The art of connecting

Smart products. Smart process. Smart factory.

By Marc Jarrault

Industrial 4.0 also known as ‘Smart factory’ or ‘Smart manufacturing’, aims to innovatively transition business models and revenue sources with the use of advanced information and services. The transformation is driven by mass adoption of technology and digitisation across sectors, including automation, manufacturing process improvement and productivity/production optimisation. The use of Industrial Internet of Things (IIOT) and Big data analytics has maximized the efficiency of manufacturing ecosystem. The need for factories to be future ready has influenced thoughts and actions of manufacturers to implement technologies to make smart factory a reality. Smart cables and connectors play a vital role to empower smart factories and increase production efficiency.

Being the world’s leading suppliers of cable and connection technology, Lapp is already shaping smart factory initiative. The future began long ago at Lapp when we partnered with SmartFactoryKL, a non-profit association founded in 2005. It is a network of industrial and research partners, which initiates and implements together research and development projects, ranging from base technologies to the development of marketable products in Europe. In association with SmartFactoryKL, Lapp has developed a hybrid plug within the frame work that combines data, power supply and pneumatics in one connector and significantly reduces the retrofit times of a modular

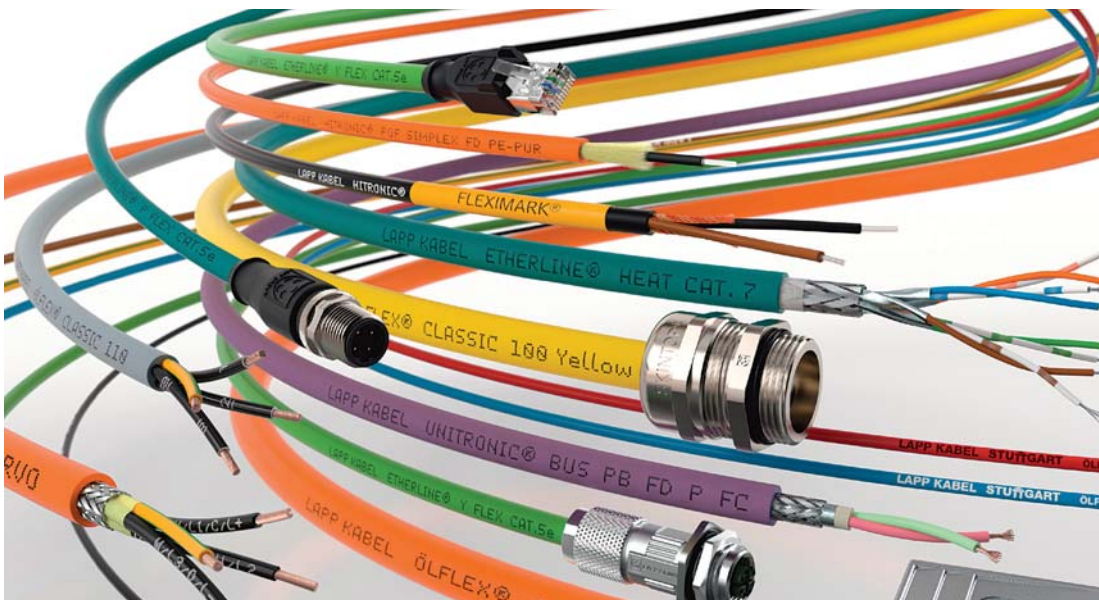
production plant.

Lapp is dynamically working towards making smart factory a reality by developing solutions to meet the challenges of the future. The product range that will be displayed at the Automation Expo’17 will showcase some of Lapp’s offering for smart factories. To further strengthen Lapp’s offering for the smart factories, the company will launch ETHERLINE ACCESS, the managed and unmanaged switches, at the Automation Expo 2017. The switches along with data cables and connectors from one source will ensure reliable connectivity for industrial network. The other product range that will be displayed at the Automation Expo 2017, include:

**ETHERLINE**, is data communication systems for ETHERNET technology. ETHERLINE systems are made up of durable and robust cables and connection components for passive network technology and deliver an effective solution for almost any application, particularly in an industrial environment. They have an increasingly important role to play with the need of future ready factories on the rise.

Under this range of products, we have developed highly flexible ETHERLINE FD Cat. 6A. These cables can transmit highest data rates with consistent reliability in drag chains that are under constant movement with a data rate of 10 Gbit/s. In order to fulfil the Cat. 6A requirements, we recommend the use of M12

The use of Industrial Internet of Things (IIOT) and Big data analytics has maximized the efficiency of manufacturing ecosystem.





connectors where water-tightness and dirt resistance in accordance with IP67 are required.

We also offer space-saving yet robust solutions such as the 30 percent thinner ETHERLINE EC, suitable for use at sensor level which allows the tightest bending radii. Thanks to the robust PUR outer sheath, the cable can also be used with high mechanical stresses or in oily environments. Another extension to the ETHERLINE products is the robust 4-wire Cat. 5e Ethernet cables. These are also available as finished products with a pointed, space-saving M8 connector that is substantially smaller than the M12 connector, commonly used with Industrial Ethernet.

The technology is linked using the PROFINET Industrial Ethernet system. ETHERLINE range of products is designed with data cables that ensure minimal loss of data/signal, and uses networking which assures high speed data communication. The slim and light design of the components manufactured by Lapp enables robustness with high flexibility best suitable to manage torsion, reeling and unreeling.

Under ETHERLINE, Lapp is launching ETHERLINE ACCESS, the managed and unmanaged switches. ETHERLINE ACCESS is an active network component for industrial Ethernet systems. Lapp believes that the ETHERLINE range of cables, connectors and switches are the integral part of the company's vision for future factories.

**The slim and light design of the components manufactured by Lapp enables robustness with high flexibility best suitable to manage torsion, reeling and unreeling.**

**UNITRONIC**, the high-quality UNITRONIC data network cables and field bus components provide a forward-looking solution for all applications in industrial machinery and plant engineering. From transmission of simple control signals to field bus signals in complex network structures, this offers a dependable cabling and connection solution for almost every situation. UNITRONIC 100 CY is highly effective in avoiding leakage of signals during data transmission. This is achieved because of the tinned copper braiding act as



**As a competent partner in the realisation of future-oriented networks, we have greatly extended our cabling and connection technology range for Industrial Ethernet and fibre optic cables so that we can supply the market of the future with ground-breaking solutions.**

a screening material against EMI interference. This especially helps when there is a need for fast, safe and forward-thinking solutions for transferring data.

**HITRONIC**, the fibre optic cables are designed to transfer large volumes of data. Communications via fibre optics are fast, efficient, and secure. Even electromagnetic interference has no effect on HITRONIC fibre optic cable. The HITRONIC range is an ideal solution for robots which need high frequency data to be transmitted.

HITRONIC cables come in three types namely, Glass Optic Fiber, Polymer Optic Fiber, Plastic Cladded Fiber. With the trend moving towards larger data transmission with longer distance and higher bandwidth, HITRONIC cables is the need of the hour; due to which the factories at a long distance can be well connected with the operational offices.

**ÖLFLEX CONNECT**, is a customised plug 'n' play solution, an offering specifically for Machine Tool segment. Everything is possible with this innovative product, from cable assemblies to industry standard servo connections right up to sophisticated high-speed drag-chain systems.

With the years of experience and backed by a team of industrial experts, Lapp is able to offer a huge array of cables that are unique, including ÖLFLEX ROBOT 900 P, ÖLFLEX ROBOT F1, ÖLFLEX CONNECT SERVO and ÖLFLEX CONNECT CHAIN 808. These are highly flexible control cables which provide end-to-end solution and are ideal for usage with torsional load in harsh environmental conditions during manufacturing.

Lapp's product portfolio is adapting to the changing requirements of the manufacturing industry by constantly innovating. As a competent partner in the realisation of future-oriented networks, we have greatly extended our cabling and connection technology range for Industrial Ethernet and fibre optic cables so that we can supply the market of the future with ground-breaking solutions. The trend is towards smaller and smaller yet also more and more efficient connectors and cables.

Our aim as a leading cable and connection technology manufacturer is to meet these industry challenges with our smart range of products.

*The author is the Managing Director of LAPP India PVT. Ltd.*



## Special tools require high engineering competence

Comprehensive product range of LMT Tools Group are made for very specific tool systems characterised by a particular design and having been customised for the user



Figure 1: Special tool for the reverse finishing of a diameter (source: LMT Group)



Figure 2: Compensatable line bore bar for the fine finishing of bores (source: LMT Group)

During the machining of workpieces most processes are performed using standard tools that are most versatile in use. Solid carbide millers and drills, reversible plate tools, tap drills with standardised dimensions or standard reamers fill the tool cabinets of industry. ISO hard metal qualities with high performance coatings characterise the state of today's standard production technology. Often the tool manufacturers additionally modify the position of the cutting blades or the cutting geometry, for example by rounding, to increase the material removal rates or the resulting workpiece quality in specific applications. This produces special effects that are, however, still within the known standard framework.

However, there are also tool designs that are uncommon and therefore mostly unknown. These are special tools designed for the finishing of a very specific workpiece to not only marginally, but significantly increase the efficiency of production. The design of such tool systems is highly complicated and requires great engineering know-how. Often it is difficult even for an expert who does not deal with such solutions daily to recognize what the tool is actually good for (figure 1).

The article below is to show examples from the comprehensive product range of LMT Tools Group for very specific tool systems characterised by a particular design and having been customised for the user, in line with the Corporate Claim of LMT 'exactly yours'.

### Actuator technology for highest precision

Highest precision in large quantity is also required in the automotive industry. For example, in the finishing of crankshaft bearing bores extremes are encountered. Efficiency, smooth running and low-wear operation of the engine depend on the quality and dimensional accuracy of this central drilling pro-

cess. Its high-precision finishing is therefore done using line boring bars, whose design, holder systems and cutting plates must be individually designed and adapted for each engine type.

These compensatable line boring bars (line boring systems) of LMT Kieninger define a totally new tool generation (figure 2). What is new is that these tools for the finishing of the bearing bores are additionally equipped with an internal tie rod to permit the cutting blades to be compensated automatically. This innovation eliminates the time-consuming manual readjustment of individual cutting edges during the machining process. The user now has the option to readjust all cutting blades simultaneously and fully automated to compensate for cutting wear.

Normally, such a process takes place via a measuring con-



Figure 3: Multifunctional tool system for reaming, face and circular milling (source: LMT Group)



trol circuit. First the bearing bore is measured. Next the actual value of the diameter is passed to the machine control and the measuring computer compares this actual value with the required tolerances. The cutting blades are then fully automatically readjusted to the new diameter. The result is a significant increase of workpiece quality and economy. This tool therefore not only matches the trend of highest precision and economy but with its actuator technology capabilities also already meets key requirements of the Smart Factory.

In a use case the pre-finishing of the additional bevels of the bearing bridges of different widths has already been integrated. Thus the customer could significantly increase the tool life by using the new line bore bar with compensation: During pre-finishing by 50 percent and during finishing even by 100 percent compared to the standard methods. At the same time the cycle times could be reduced by up to 70 percent.



**Figure 4: PCD-equipped bell tool for drilling/reaming and countersinking (source: LMT Group)**

**Multifunctionality increases productivity**

Especially in large series production multifunctional tool systems are an important condition for an increase in economy. This also includes the finishing of turbochargers. They consist of highly heat resistant materials, for example cast steel 1.4837 and 1.4848, and place extreme demands on the cutting material, cutting geometry, cutting edge preparation and coating. This in turn makes them to one of the most costly automotive parts to produce.

Using a special combination tool (figure 3) from LMT Kieninger the various finishing methods of reaming, face and circular milling are performed multifunctional by a single tool. The costly tool change is obsolete and with it a potential error source. This reduces process times and increases process reliability.

In another example housings of an electropneumatic impact hammer from the material AlSi9Cu3 are machined. To date two different tools were used for the work steps drilling/reaming and countersinking. With the PCD-equipped bell tool from LMT Kieninger (figure 4) both steps could now be performed multifunctional by a single tool system. This reduced the processing time from previously 27 minutes to 11 minutes. The high machinery costs alone were thereby reduced by 59 percent.

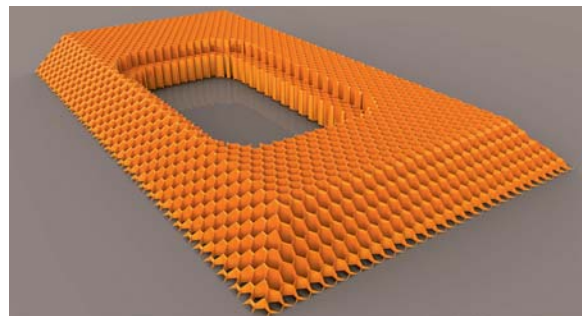
**Lightweight design generates special tools**

Amongst the future-trends are also ecological aspects, such as weight saving and saving the environment and resources. Here, lightweight materials, such as plastics and plastic com-

posites gain increasingly in importance. The reliable and high performance machining of these materials has become a major challenge for tool manufacturers. Many plastics are highly abrasive, fibrous and temperature-sensitive and differ greatly from metal in their machining properties.

In two examples for the finishing of honeycomb and composite materials special tool solutions from LMT Onsrud (USA) are to be presented.

Honeycomb is a lightweight material with a honeycomb structure (figure 5) having a high pressure resistance. In combination with thin cover layers from plastic or aluminium it is, for example, used for the fitted cabinets in aircraft. To manufacture edges or milled grooves in this material the so-called honeycomb hoppers are used. Their cutting blades consist of high-speed steel and are zigzag shaped. Generally the cutting geometry is of a design that prevents fray-



**Figure 5: Example of honeycomb lightweight material (source: LMT Group)**

ing at the workpiece. The cutting element is hollow and thus lightweight itself. In the front area a thin circular blade from hard metal can additionally be fitted to create a defined cutting area. These tools are used in the speed range of approx. 15.000 min-1.

Another mill cutter from solid carbide for the edge and slot finishing of composite materials, such as CRP, used increasingly in the automotive and aerospace industries, is also of interest. Small alternating milling teeth with positive angles of attack prevent the feared delamination of the material layers and create excellent surfaces. A special face geometry permits the trouble-free engagement with the plastic. These tools can be manually guided or used on CNC machines.

They are available in two coating variants: AlTiN and CVD diamond coating. The diamond coating permits especially high cutting speeds on CNC machines and increases the tool life by a factor of 10.

*For more details, contact:  
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
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