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THE MACHINIST

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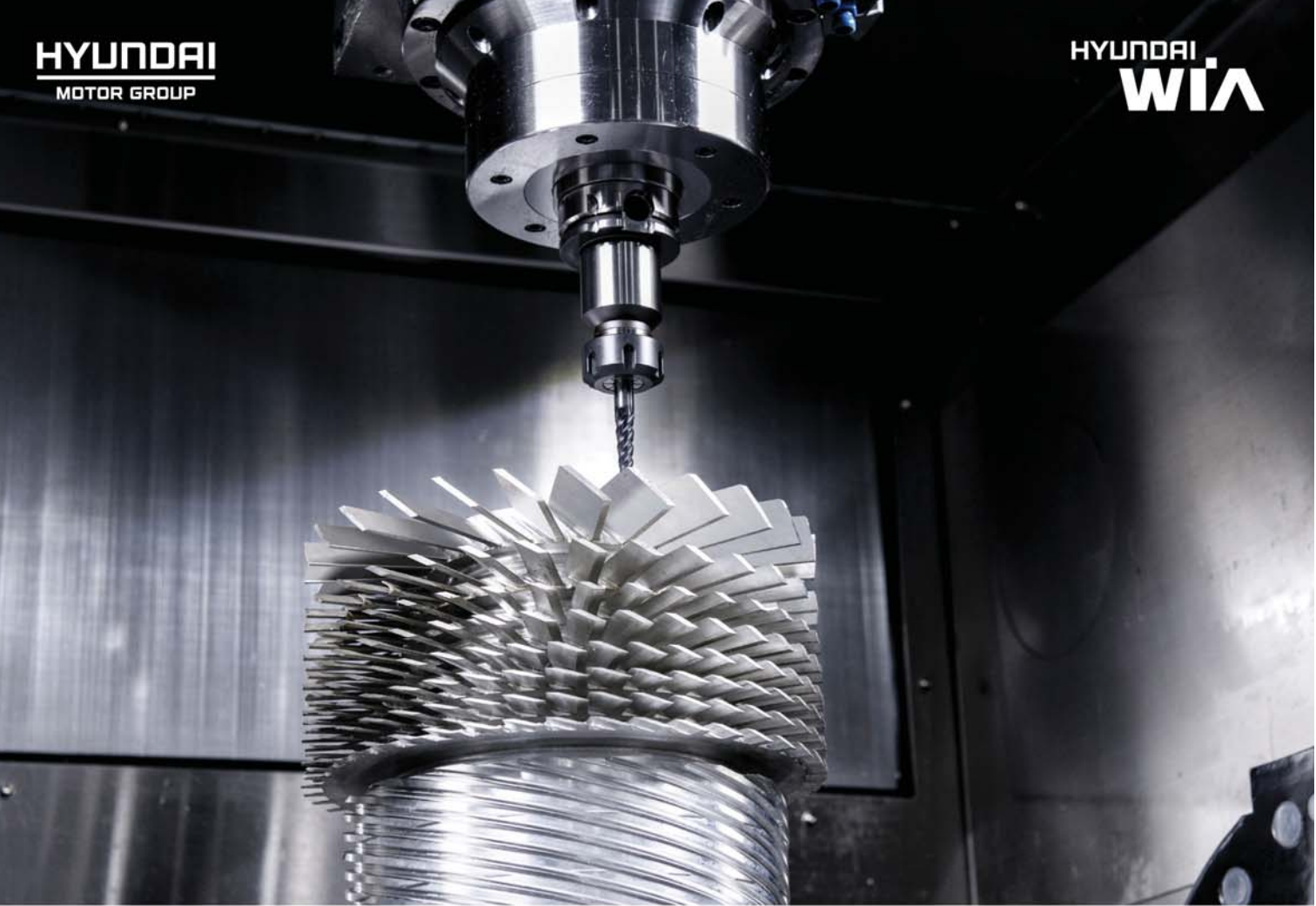
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A new language!

As a journalist, I am saddened by the socio-political dichotomy that has divided our nation today. If someone appreciates something done by those in power then you are considered to be on their side. And if someone criticises or opposes something done by the government then you are against them.

You are either naive (and a blind follower) or you are a cynic and a faultfinding captious critic. Friends, what happened to subjective detachment? What happened to neutral examination? What happened to objective analysis? What happened to constructive criticism? And what happened to critical appreciation? While a reader might smell my literature background in these terms, the point I am trying to raise here is more than academic.

“IT WOULD BE A LANGUAGE BEYOND THE NARROW SOCIO-POLITICAL BARRIERS. IT WOULD BE THE LANGUAGE OF POSITIVE REALISM.”

The year 2017 has already dawned on us. And while it will slowly and surely unveil what it promised to us, I propose a completely new language for communicating our hopes and challenges, our dreams and pains as well as our aspirations and fears. It would be a language beyond the constraints of semantics and linguistics; it would be a language beyond the narrow socio-political barriers. It would be the language of positive realism. And when they ask me ‘whose side are you on?’, I will use this language to tell them what we all want to say. I am on the side of good business and good life! Cheers to that!!

*For last year's words belong to last year's language
And next year's words await another voice.*

From Four Quartets by T. S. Eliot

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TM Star List 2017

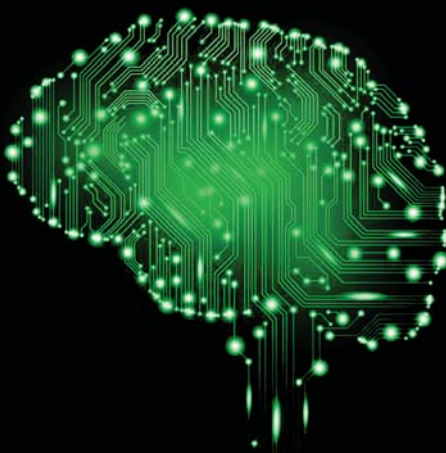
The Machinist Star List was created couple of years ago with the aim of recognising the iconic leaders of Indian manufacturing. This year's list encompasses leaders from different industry sectors such as automotive, railways, aerospace, power equipment, construction equipment, etc. Though they come from different backgrounds, what brings them on the common platform of Star List 2017 is their excellent leadership that has paved the path of success for their respective companies. The Machinist salutes their outstanding leadership!

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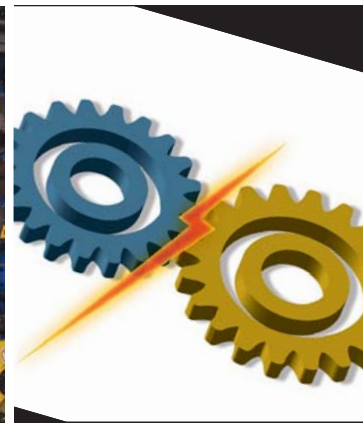
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Corrigendum: Wrong photograph was used on pg 67 in the previous issue. Inconvenience to the concerned is regretted.



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Tata Steels upgrades its plant

TATA STEEL recently inaugurated the second phase of CRM BARA. TV Narendran, MD, Tata Steel, India and SEA graced the occasion as the Chief Guest. Speaking on the occasion Narendran said “During the inception of CRM BARA Phase I, we faced few challenges. I am very happy to see that the learnings and experience from Phase I has been implemented in Phase II, I would like to congratulate the entire team for the good work done. This complex has a lot of potential and is one of the most important customer facing divisions of Tata Steel. I wish the team a great success in the coming years.”

The up gradation of facilities in Phase II such as the reversing mill were installed to meet the full hard cold rolled (FHCR) requirement of Tata Blue Scope Ltd at CRM, Bara, which is of 0.25 MTPA capacity. In the current ramp-up of TBSL, the unutilized capacity of the reversing mill is being used to produce HRSPO. To meet the increased demand of HRSPO in auto-



motive sector, a 0.3 MTPA hot rolled skin passing facility has been installed.

After the implementation of Phase-II expansion Project, part of the pickled coils will be input to the hot skin pass mill, which is also being installed as a part of the project. In order to cater to the input requirement of the new hot skin pass mill for hot rolled coils, the production capacity of the existing pickling line has been increased to 0.68 mtpy from the designed capacity of 0.5

mtpy. The final product from the plant after augmentation shall now be full hard cold rolled, hot rolled pickled and oiled coils and hot rolled pickled, skin passed oiled coils.

The automation system at Phase II is now designed with state-of-the-art instrumentation and programmable logic controller to monitor and control the various parameters for the safe and efficient operation of HSPM & Pickling Line.

Effective implementation of schemes necessary: ASSOCHAM

TERMING the steps announced by Prime Minister Narendra Modi in his address to the nation on New Year’s Eve as ‘extremely positive for the Indian economy,’ apex industry body ASSOCHAM said that the focus should now be on effective implementation of these schemes to drive economic growth.

“The initiatives like 60-day interest waiver for farmers who have taken loans from district co-operative banks and primary societies together with additional fund of 20,000 crore given to NABARD to give loans to farmers would help in alleviating pains of farmers and rural class,” said ASSOCHAM President Sunil Kanoria.

He also said that schemes like interest subsidy on loans for low cost housing together with impetus to

affordable housing will provide much needed help to vulnerable sections of society and revive consumer confidence amid largest, but poorest socio-economic group.

Further, the push towards low cost housing is also good news for retail portfolio of banks and non-banking financial companies (NBFCs) that have been struggling to boost their business amid economic slowdown.

The ASSOCHAM chief said, “The credit guarantee for SME and MSME has been increased to Rs 2 crore. This will provide support to these sectors. The focus should now be on effective implementation of the credit insurance programme so that banks and NBFCs get their money in case of defaults faster than what it has happened in the past.”

Going up on the ‘Ease of Doing Business’ ladder

GOVERNMENT OF INDIA in its efforts to improve the business climate of the country and also improve country’s ranking in the World Bank’s report on Ease of Doing Business; held a meeting recently under the chairmanship of the Union Finance Minister Arun Jaitley. Here, Secretary, DIPP informed that Nodal Departments have been identified for each indicator who will lead the reform process across the 10 indicators. Departments gave an overview of the reforms undertaken and agreed to implement suggested reforms by January 2017. It was further agreed that Departments will hold intensive stakeholder consultation to get their feedback and also engage with the respondents to ensure that the reforms are felt at the ground.

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World's first offsite manufacturing park launched



KEF INFRA has recently officially launched KEF Infra One Industrial Park in Krishnagiri, Tamil Nadu. Infosys founder Narayana Murthy was the chief guest for the occasion. Built on an area of one million square feet and developed at an investment of Rs650 crore, KEF Infra One at Krishnagiri

is the largest fully integrated offsite manufacturing park in the world.

KEF Infra One has a diverse range of cutting edge technology which will help optimize the company's manufacturing processes. With a vision to fast forward India, KEF Infra is at the forefront of Industry 4.0 with their fully integrated world class design and state-of-the-art manufacturing technology.

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Hiring to grow by 10-15 percent: TimesJobs Survey



THE YEAR 2017 is bringing good news for job seekers, with an expected 10-15 percent rise in hiring activity in 2017 as reported by over 2000 employers across India Inc. in the TimesJobs.com Job Outlook Survey 2016-17.

This points towards a cheerful year for the hiring industry, as employers' expectations are greater than what they were last year. In the TimesJobs Job Outlook Survey last year (2015-16), employers had anticipated a lower 5-10 percent rise in hiring while now they are upbeat about seeing a 10-15 percent rise in 2017.

"There is a clear paradigm shift in the Indian Economy, with the support of the government's efforts and focus on IT, entrepreneurship and manu-

facturing, India Inc. is steering itself for strong growth that is seen to be impacting job growth and employment in the country next year," says Nilanjan Roy, Head of Strategy, Times Business Solutions.

IT, Telecom, Healthcare and Manufacturing Sectors to be the top Employment Generators

In the TimesJobs.com Job Outlook Survey 2016-17, 30 percent organizations felt the IT and telecom sectors will hire the biggest numbers, 20 percent said the healthcare sector and 15 percent said that manufacturing will be the top employment generator. Another 15 percent voted for automobile and 10 percent for infrastructure and retail sectors.

Gujarat maps districts for aerospace & defence facilities



THE GOVERNMENT OF GUJARAT has recently announced its Aerospace & Defence policy to embark its commitment to the sector. The Government has also shared the list of districts where the defence manufacturing facilities shall be setup, these include districts such as Kutch, Bhavnagar, Amreli, Kheda, Vadodara and Bharuch. As a part of its "Make in India" programme and to promote defence manufacturing sector, the Central Government granted 121 defence manufacturing licenses to various private sector companies. Gujarat has received 20 licenses since May 2014.

With skilled intensive manufacturing capabilities and a robust infrastructure, Gujarat has the right ingredients to become a key link in the Indian Defence supply chain.

Speaking on the ecosystem for Aerospace & Defence in the state, PK Taneja, Additional Chief Secretary (Industries & Mines) said, "We've already seen great interest from global companies in the area of Aerospace & Defence. Some of these companies have already visited Gujarat and paid multiple visits to proposed sites. As a state, we have the requisite land, coastline and skilled manpower for the sector to flourish. Some of the growth drivers include: Robust Physical Infrastructure, Strong Manufacturing & Engineering base with presence of MSMEs across value chain, Availability of highly skilled manpower and World class building & repairing facilities.

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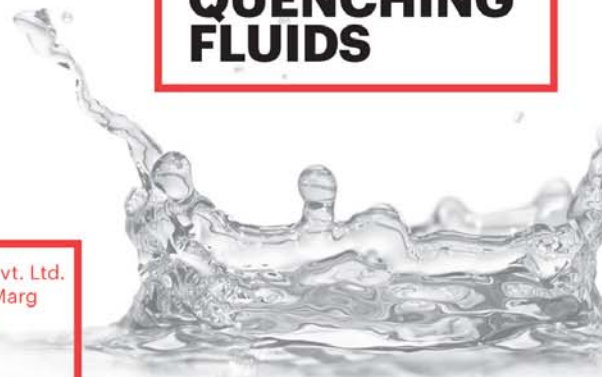


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Boeing forecasts strong demand for new commercial airplanes

Boeing says strength in the capital markets and innovative funding developments will provide airlines and lessors efficient aircraft financing solutions in 2017.

The ninth annual Boeing Current Aircraft Finance Market Outlook forecasts the sources of financing for new commercial airplane deliveries in the coming year and the industry's overall delivery financing requirements for the next five years.

"We're seeing increasingly diverse financier and investor activity in the aircraft financing industry, providing more options to meet most growth in funding needs," said Tim Myers, president of Boeing Capital Corporation. "Access to commercial bank debt and continued participation from the capital markets in 2017 will allow airlines and lessors to capitalize on the strength of the aviation industry and robust global passenger traffic trends."

Boeing forecasts continued strong demand for new commercial airplanes in 2017, resulting in about \$126 billion in deliveries across the industry with potential to grow to \$185 billion by 2021.

"Capitalising on the growth ahead requires regulations and policies that facilitate the efficiency and stability of the aircraft financing industry. Banking regulations that sensibly value aircraft assets and continued efforts to move toward global standardization of transactions through the Cape Town Convention will help ensure long-term availability of aircraft financing," Myers said. "Further, while the healthy financing environment has helped to absorb the impact of the lack of export credit in the short-term, history shows this is not sustainable."

Alpha Design signs deal with ISRO

Alpha Design Technologies Pvt Ltd (ADTL) has signed a contract with Indian Space Research Organisation (ISRO) for assembly, integration and testing of IRNSS satellites. In the next two years, with the help of ISRO, ADTL will invest in creating, an ultra-modern satellite manufacturing, assembly, integration, testing and qualification facilities, with a view to independently supply four to five satellites to ISRO.

At present, the company is selecting 70 of their top rated employees which include engineers, diploma holders and ITI qualified, for them to be trained at ISRO for nine months. During the training at ISRO, the ADTL's team would be assisted in on-job learning followed by actual assembly, integration and testing. Speaking on it, Colonel H. S. Shankar, CMD, ADTL said, "It is a significant step for us. As part of the contract, initially our teams would get minimum ISRO supervision and later would independently be making complete satellites."

AIT to acquire KUKA Systems Aero

Advanced Integration Technology (AIT) has acquired KUKA Systems Aerospace North America (KUKA Aero). KUKA Aero is the market-leading integrator of new robotic technologies used in aerospace assembly and a provider of flexible automation solutions and engineering to the aerospace industry. KUKA Aero's core executive team will remain intact, led by Group Vice President Robert Reno. "This team have helped define the state-of-the-art in aerospace automation and built a wonderful company from a standing start 10 years ago, bringing KUKA's pioneering automation solutions to the aerospace industry," said AIT Chairman and CEO Ed Chalupa.

HAL-Do-228 civil variant roll-out in April 2017



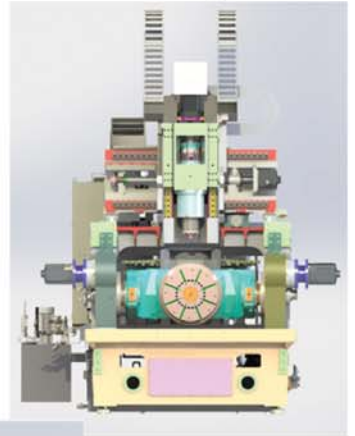
The Minister of State for Civil Aviation, Jayant Sinha inaugurated Structural Assembly of HAL-Do-228 (Civil variant) at HAL's Kanpur facility recently. "We are keen to take forward our Regional Connectivity Scheme (RCS) and HAL has an important role to play in this," he said.

Speaking on the occasion, T. Suvarna Raju, CMD, HAL said he expects the first aircraft to roll-out by April next year. The DO-228-201 upgraded version, a 19 seater commuter aircraft currently being manufactured at HAL Transport Aircraft Division (TAD) Kanpur is the most suitable product under 'Make in India' category for Regional Connectivity Scheme (RCS). "Our aim is to help the Government in its mission to provide affordable and sustainable air travel with access to various parts of India. As a proactive step in this direction HAL board sanctioned Rs. 100 crs for two civil variants though there is no firm order. We see a big business opportunity in this segment for next 10 years," he said. HAL has already started manufacturing two civil demonstrator aircraft.

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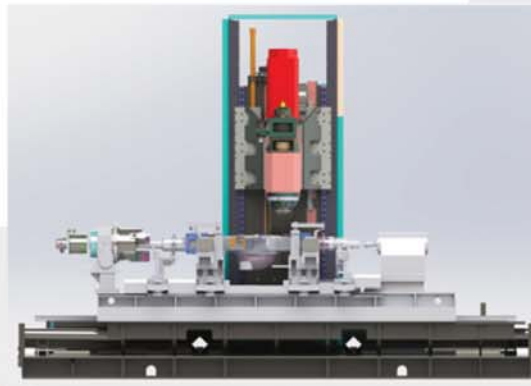
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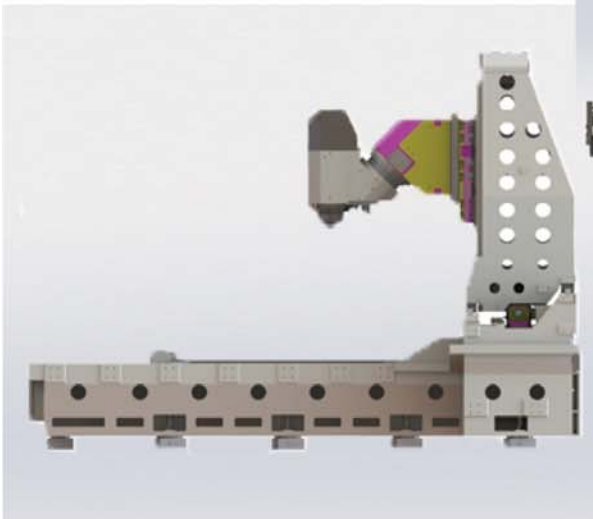
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A list of key events happening between January 2017 to September 2017, both nationally and internationally.

<p>IMTEX 2017 January 26-February 1, 2017, Bangalore www.imtex.in</p>	<p>CONEXPO-CON/AGG March 7-11, 2017 Las Vegas, NV (US) www.conexpoconagg.com</p>	<p>TIMTOS March 7-12, 2017 Taipei (Taiwan) www.timtos.com.tw</p>	<p>IESS - International Engineering Sourcing Show 2017 March 16-18, 2017 Chennai Trade Centre, Chennai www.iesshow.in</p>
<p>Automotive Engineering Show March 21-23, 2017 New Delhi www.aes-show.com</p>	<p>ACMA Automechanika New Delhi 2017 March 21-24, 2017 New Delhi http://acma-automechanika-newdelhi.in.messefrankfurt.com/newdelhi/en/exhibitors/welcome.html</p>	<p>ProMat 2017 April 3-6, 2017 Chicago, (US) www.promatshow.com</p>	<p>AMTEX 2017 April 12-15, 2017 Mumbai www.amtex-expo.com</p>
<p>Hannover Messe April 24-28, 2017 Hannover (Germany) www.hannovermesse.de</p>	<p>INTEC 2017 June 1-5, 2017 Codissia Trade Fair Complex, Coimbatore www.intec.codissia.com</p>	<p>Delhi Machine Tool Expo August 10-13, 2017 New Delhi www.mtx.co.in</p>	<p>EMO Hannover September 18-23, 2017 Hannover www.emo-hannover.de</p>



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Five planes in arrow formation fly over Rajpath on the occasion of the 67th Republic Day Parade in New Delhi. Courtesy: PIB

Endless opportunities!

The growth in domestic demand for commercial, military, and general aviation aircraft, as well as MRO services coupled with availability of skilled talent is ensuring the swift and sustained development of Aerospace & Defence engineering and manufacturing in India.

By Kishore Jayaraman, President, Rolls-Royce India & South Asia

One of the key pillars of the 'Make in India' initiative is the creation of an indigenous aerospace and defence (A&D) manufacturing ecosystem. Since its launch, the initiative has resulted in the resurgence of the A&D engineering and manufacturing sector.

India suddenly spring-boarded into international focus as not just a hub for R&D but also as a centre for manufacturing excellence when it came to precision manufacturing of complex components. Indian companies have time and again proven themselves capable of providing first-time correct quality comparable to global standards. The growth in domestic demand for commercial, military, and general aviation aircraft, as well as Maintenance, Repair, and Overhaul (MRO) services coupled with availability of skilled talent is ensuring the swift and sustained development of Aerospace & Defence (A&D) engineering and manufacturing in the country.

Current Scenario

The Indian A&D industry is the most attractive globally and the government is keen to leverage this advantage to promote investments in the sector. However, the sector is at nascent stages with <1 percent of the global aerospace industry share, mostly for manufacturing tier-2 and tier-3 components.

Over the years, the A&D industry in India has shown a remarkable level of maturity, adapting quickly to support the growth of the aerospace manufacturing sector by adopting international quality standards and establishing technologically advanced manufacturing facilities. Initially it was dominated



Over the years, the A&D industry in India has shown a remarkable level of maturity, adapting quickly to support the growth of the aerospace manufacturing sector by adopting international quality standards and establishing technologically advanced manufacturing facilities.

by public players but recently it has witnessed a surge in the number of private players such as Tata, Mahindra and Reliance entering into A&D manufacturing through joint ventures and partnerships. A lot of aerospace companies have also setup engineering centres that manage the entire gamut of aerospace engineering work packages – right from structural analysis and networking solutions to training & support solutions.

Key growth drivers

A number of factors have played a crucial role in the creation of this fertile ground for the growth of this sector. Some of the key ones are: cost effective manufacturing, availability of skilled engineering talent pool, IT infrastructure and encouraging government policies such as indigenisation and offset regulations.

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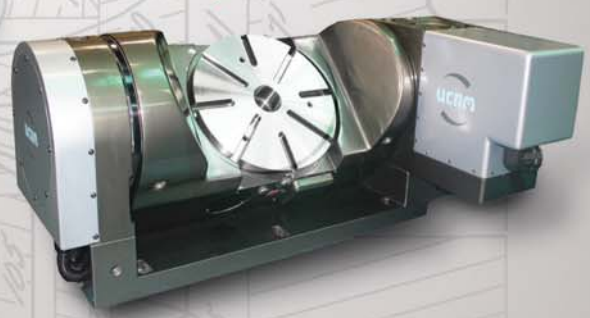
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Compared to other aerospace manufacturing destinations such as Middle East and South-East Asia, the engineering labour cost offer a 20-30 percent cost advantage while the manufacturing labour cost advantage is around 15-25 percent. These advantages are even higher when compared with Europe and North America. Other than this, India's intellectual capital provides immense opportunities for R&D work with potential to change the face of the aerospace sector, globally.



Trent 1000 powered SCOOT 787 Dreamliner. Courtesy: Rolls-Royce

Skilled talent pool – Every year, over 2.5 million graduates are added to the workforce, including 500,000 engineers. This talent can be further trained to ensure the country's global competitiveness.

IT Infrastructure – Indian companies are increasingly being viewed as long-term partners and not as mere suppliers/vendors. IT/Engineering services such as design and development, verification and validation, development of tools, reverse engineering and maintenance services are highly leveraged in A&D components manufacturing. This enables Indian players to participate across various phases of the product lifecycle. India, which offers well developed and cost-effective IT industry can be easily leveraged by A&D component manufacturing firms.

Government policies/initiatives – The government has taken several policy initiatives to lower entry barriers and improve the ease of doing business in defence manufacturing. Initiatives like offset requirement and 'Make in India' can further add momentum to the sector.

The offset requirement has been set to at least 30 percent for all defence equipment wherein, the foreign vendor is obligated to invest at least 30 percent of the deal value in the Indian defence industry which is likely to create a market opportunity worth US\$50 billion. Furthermore, 100 percent FDI and a new DPP will further strengthen the policy regime to promote aerospace & defence manufacturing in India.

Growing domestic demand – India is expected to have ~1,800 commercial aircraft, four times the current aircraft

fleet by 2035. With the growing number of aircraft in both commercial and military roles, the services and support sectors will also see an increased demand. It also presents huge opportunity for foreign aircraft manufacturers to outsource manufacturing work, partly due to offset requirements, but mostly to derive cost benefits.

Also, Indian commercial aircraft fleet has an average age of ~5 years, resulting in maintenance requirements. With the increasing age of the in-service fleet, demand of MRO services and spare parts for aircraft will increase. Manpower costs competitiveness, locational advantages and the presence of specialist capabilities combine to make India a regional hub for MRO operations.

Challenges to the Sector


While the sector remains to be on a positive growth path, there are still a few areas which may prove to be a hindrance in this sector reaching its apogee. What needs to be kept in mind is the fact that aerospace manufacturing and engineering is a technology, capital and skill intensive industry.

While the transfer of technology (ToT) has been made easier under relaxed norms announced by the government in 2016, the indigenous industry stakeholders need to move towards investing in the ability to innovate.

Manufacturing will need to be sustained by the workforce, both blue and white collar. As such, industry-academia as well and private-government initiatives will need to be set in motion to ensure a steady and skilled workforce that will be able to ensure the smooth functioning of the complex ecosystem to global standards.

Future Opportunities

The government's priority is to indigenise the A&D industry, attract global players to manufacture in India and lower the dependency on imports in the sector. With encouraging regulatory policies and enablers, increased private sector participation and global attention, the A&D manufacturing seems to be set on the growth trajectory. However, there is more that can be done through creation of an A&D ecosystem to accelerate growth. Infrastructure and skill development are critical for achieving self-reliance and the government should continue encouraging manufacturing clusters. The private sector should be treated as an equal partner and a collaborative partnership approach should be followed with the suppliers.

With the rise of Industry 4.0 in the sector, opportunities for big data analytics, automation as well as cyber security will soon get a foot in the door for stakeholders who wish to have a bigger slice of the pie. When we look at India, most of the elements that make-up an ecosystem are already present. Integrating these into one seamless indigenous supply chain is the next step for this industry. 2017 can be optimistically seen as a year of progress for the sector with respect to the further development of the sector, propelling India into the next hub for global aerospace manufacturing. 

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Image source: Association of Indian Forging Industry

Addressing market dynamics

At times, automation is a hefty investment. However, it also brings substantial advantages with it. Here is more on the benefits of Industrial automation.

By Swati Deshpande

Today automation offers benefits in various areas including addressing market dynamics. “Speed and innovation are the two key factors deciding winners in this ever changing competitive market. Continuous innovations in products/services, business models and processes while delivering them first are crucial. Going forward, automation should become an enabler in delivering the same,” opined Hussain Shariyarr, Sr. Vice President – Operations, Godrej Appliances. Explaining the same with an example, he added, “We have used automation to reduce our throughput time, new product introduction time, and increase flexibility through quick model changeovers. Additionally, we are piloting Industry 4.0 in one of our factories wherein cyber-physical systems monitor the factory’s physical processes and take decentralised decisions. In addition to improving productivity and quality, this will also help us to monitor our products and processes across the entire value chain. It will further help us to build a strong connect with our consumers and enhance their experience.” Furthermore, Muralishankar Sambasivam, Vice-President, Association of Indian Forging Industry and Jt Managing Director of Super Auto Forge, Chennai mentioned, “Most of our automated lines are single piece flow making the

entire process lean, thereby enabling the manufacturing to be more effective to changing the market environment.” He further opined that automation gives repeatability of quality and productivity demanded by today’s changing market demand. Today’s customer demand quality products at reasonable price. These parameters can be maintained only with automation and continuing utilisation of resources.

Seconding the same, Farrokh Cooper, Chairman & Managing Director, Cooper Corporation Pvt Ltd said, “In our plant, the lines are automated with the flexibility to change the product within its range and with the higher productivity, the stock



“Some measures to reduce manual errors include adaptation of international standards, with maximum automation levels in the manufacturing processes.”

Farrokh Cooper, CMD Cooper Corporation Pvt Ltd

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“More than the availability of skilled manpower, it is consistency which is affecting the industry today. In automated cells even the product inspection is carried in the process thereby reducing the dependency on QA inspectors.”

Muralishankar Sambasivam,
Vice-President, Association of Indian Forging Industry and Joint Managing Director of Super Auto Forge, Chennai

as per the customer demand can be maintained in advance.” Cooper Corporation Pvt Ltd has installed dedicated lines for production, which cater to the major customers with robotic systems to get maximum uptime in production. Some of the other examples are Single Piece Flow Manufacturing and On-line Auto gauging & Packaging of Components in the line, auto correction factors to the machine through automation to get undisturbed production and Online Auto gauging & Packaging of Components in the line and auto correction factors to the machine through automation to get undisturbed production. “We have also installed Vision System for visual defect identification on high production lines to feed online parts to Customer and Automation Line Up to Packaging,” continued Cooper.

On the aspect of addressing market dynamic with automation, Shripad Ranade Practice Head—Automotive, Engineering & Infrastructure, TATA Strategic Management Group believed, “Automation reduces the iterations and tests required to design and launch the product, so that companies can respond quicker to changed product-mix and quantity requirements. Increased quality expectations are met through better control over the process parameters. In fact advanced manufacturing technologies such as additive manufacturing along with autonomous robotics are going beyond operational efficiency improvements and ushering in a new era in manufacturing with mass customization of products at minimal or no incremental cost.”

Elaborating on the advantages of the automation, S M Nayak, AVP Engineering Services, Godrej & Boyce informed, “Automation can help in doing work quicker. Everything which was earlier done on paper can now be done digitally making it cost-efficient, streamlined, error-proof and accessible. Manual effort, poor hand-offs between departments or partners, and the general inability to monitor overall progress results is a significant waste for most processes. Process automation eliminates or significantly reduces these problems

Automation brought lots of advantage to our company. Listed below are the most important advantages that automation has brought to our company.

- Increased throughput by automating critical processes
- Improved quality & reduced the defect rate which was happening during manual process
- Reduced the rework which was happening due to inconsistency of processes
- Improved consistency of processes & products
- Increased consistency of output & improved the delivery time
- Reduced direct human labour costs and expenses

Source: Godrej & Boyce

along with a reduction in labour hours, time span, and increased throughput and increased productivity.”

Skilled labour

Furthermore, automation eliminates the dependency on skilled operator, speaking on the same Ranade stated, “Automation helps reduce dependence on a few skilled employees handling operations and codifies their experience into automated systems. This avoids knowledge and skill drain when these employees leave or are not available in sufficient numbers, thus minimising disruptions in the business operations.”

Adding to it, Sambasivam noted, “When operators are running the machine, the consistency in output cannot be guaranteed whereas in automated setup, consistency in output is a given factor. Because of operator’s mistake, there used to be accidents affecting the tool performance and also equipment accuracy. With automated setups such accidents are totally eliminated since the automated systems have lot of poka-yoke.” Moreover he said that because of automation the lead time of production is reduced thereby reducing the overall inventory. Stating it with examples Cooper mentioned, “We use inter-locking assembly lines and our own machining lines



Automation brings along speed and rhythm on the shopfloor. Additionally, it also supports productivity, quality and improves safety. Further, it encourages change in people’s attitude and behaviour while setting-up a culture of speed and flexibility.

Hussain Shariyarr, Sr. Vice President – Operations, Godrej Appliances

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“Automation can help in doing work quicker. Everything which was earlier done on paper can now be done digitally making it cost-efficient, streamlined, error-proof and accessible.”

S M Nayak, AVP Engineering Services, Godrej & Boyce

for key components. Our dedicated automated lines called gen-set lines with conveyer systems avoid human errors. Some of the measures to reduce manual errors include adaptation of international standards, with maximum automation levels in the manufacturing processes. With this the labour requirement to run the line is reduced drastically & we have trained our own employee to handle the automations.

Speaking on the same, Shariyarr mentioned, “While India has ample manpower, the issue of inadequate skilled workforce has always been a challenge for the industry. Low cost automation can assist in simplifying the manufacturing processes thereby lowering the skill requirement in the job. This will eliminate the need to deploy a skilled operator. If the manufacturing sector can achieve this successfully, it will mitigate one of the biggest risks of the future.”

He further added that Godrej Appliances has been reducing the company’s skilled manpower requirement year on year through low cost automation solutions on assembly lines and integrated manufacturing lines across core processes. “As we move ahead, one key skill that will be must is ‘Being Digital’ and it shall replace most of the technical skills required on shopfloors. India is fortunately well placed for this shift,” Shariyarr continued. Opining on the same, Sambasivam noted, “More than the availability of skilled manpower, it is consistency, which is affecting the industry today. In automated cells



Automation reduces the iterations and tests required to design and launch the product, so that companies can respond quicker to changed product-mix and quantity requirements. Increased quality expectations are met

through better control over the process parameters.

Shripad Ranade, Practice Head – Automotive, Engineering & Infrastructure TATA Strategic Management Group

even the product inspection is carried in the process thereby reducing the dependency on QA inspectors. Currently, close loop inspection and correction system are available, thereby the process is automatically corrected by checking the product. This reduces rejection and ensures consistent quality.”

According to Nayak, automation does not solve the problem of skilled labour completely. “With automation a lot of jobs can be easily done by machines, which require less human labour which and increases the productivity of the plant. Although one needs to be trained to operate machines but that takes lesser time and man power. However, the intelligence and presence of a human on the manufacturing plant is unparalleled in case of any crisis. We believe adaptability is the key to future, humans are more adaptable,” he said.

On a concluding note

According to Cooper some of the biggest advantages of the automation are consistent production, consistent quality, minimum labour, single piece flow, reduced inventory and reduced handling. “The projected manufacturing cost & actual manufacturing cost are maintained throughout production & monitoring through SAP system daily,” he mentioned.


In addition to quality and productivity, automation also changes culture of the company to some extent. Speaking on the same, Shariyarr noted, “Automation brings along speed and rhythm on the shopfloor. Additionally, it also supports productivity, quality and improves safety. Further, it encourages change in people’s attitude and behaviour while setting-up a culture of speed and flexibility. Today, automation has not only improved our productivity and quality levels but also made us more agile and flexible to meet our customer’s requirements.” 



Image source: Association of Indian Forging Industry



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Reshaping the foundry industry

The key industry association that promotes education, research, training and development to Indian foundry men has introduced a unique in-plant training program to enhance foundry skills amongst the workforce.

The Institute of Indian Foundrymen, the key Industry association that promotes education, research, training and development to Indian foundry men, introduced a unique in-plant training program, aptly named 'Yogyata Vikas', to enhance foundry skills amongst the workforce.

Foundry, largely considered to be the 'feeder industry' to manufacturing, finds wide application in growing sectors like Auto & Auto Ancillaries, Capital Goods, Earth Moving, Railways, Power and Defence besides most others. Foundry practices, constitute the fundamentals of Engineering, and a skill development program will help improve productivity and sharpen the competitive edge of foundry men, which will in turn hugely impact Government run programs like 'Make in India'.

While on one had the Government is tweaking policies to create a conducive business environment for various sectors, like the passing of the GST bill, on the other hand the industry will have to throw-up a skill-ready workforce to take the country to its rightful position as a manufacturing hub of the world. The Auto sector in the country is expected to grow to US\$ 300 billion in the next 10 years from the current figure of US\$ 80 billion, while the Capital Goods sector may see a 3-fold growth in the next decade. A catalyst to this enormous growth would be the availability of skilled manpower both in terms of quality and numbers. As per estimates, the foundry sector in India, employs close to two million people directly or indirectly, with productivity of 20-25 million tons per person, per year, with average rejection rates in the region of 5-10 percent per person. It is expected that with up-skilling, the kind IIF is planning to rollout, the performance of workmen will improve by over 25-30 percent, and at the same time bringing down rejection rates per person dramatically.


In a nutshell, this Training Program

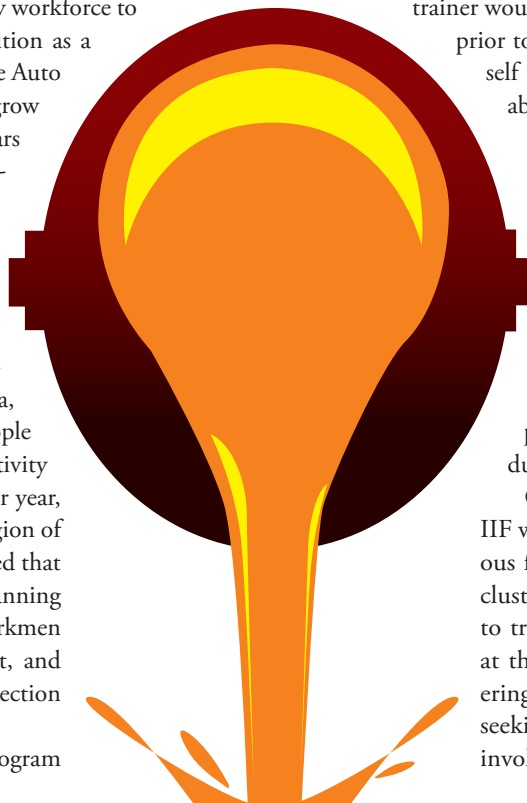
"This unique and exclusive training program is a real opportunity to work together to shape a new era of Indian foundry industry. We are committed to ensure remaining in a strong position to deliver to its fullest potential in a constantly evolving industry landscape."
K. Samaraj, Past President, Institute of Indian Foundrymen

raises the benchmark, in terms of aligning the availability of skilled foundry men with the overall Industry vision. In a unique 'first', IIF would be imparting specialized training to the shop-floor workers at the veritable doorstep of their foundries by skilled trainers. The 10 training modules would also be available in regional languages, with each module of 8 hours, customised to requirements of a particular foundry.

The program has been exclusively designed to impart technical knowledge with practical orientation, scheduled as per the convenience of the foundries being trained. The trainer would also pay a visit to the foundry, a day prior to the actual program to acquaint himself with processes and machineries available, so that the training would be that much more effective.

K. Samaraj, Past President, Institute of Indian Foundrymen said, "This unique and exclusive training program is a real opportunity to work together to shape a new era of Indian foundry industry. We are committed to ensure remaining in a strong position to deliver to its fullest potential in a constantly evolving industry landscape.

Over the coming months and years, IIF will undertake inplant training at various foundry units across various foundry clusters redefining a different approach to training. IIF would be closely looking at the certification requirements, considering the future of IIF training course seeking to improve the experience for all involved. 



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TM Star★ List

The Machinist Star List* was created couple of years ago with the aim of recognising the iconic leaders of Indian manufacturing. This year's list encompasses leaders from different industry sectors such as automotive, railways, aerospace, power equipment, construction equipment, etc. Though they come from different backgrounds, what brings them on the common platform of Star List 2017 is their excellent leadership that has paved the path of success for their respective companies. The Machinist salutes their outstanding leadership!



**Names of the Leaders appear in the alphabetical order of their first names in the list. It does not denote any kind of ranking.*

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Amit Gossain
Managing Director,
Kone India

Amit Gossain, Managing Director, Kone India, brings with him a rich professional experience of more than two decades across different functions. Interestingly, this is his first stint with elevator and escalator industry – having spent the rest of his career in the construction equipment business. Earlier, he was in the business of moving things and now he is in the business of moving people. While those two subjects are almost poles apart, the commonality that defines Gossain’s association with both is his focus on technology and innovation.

“At, Kone our mission is to improve the Flow of Urban life. We will continue to innovate and provide value to our customers in line with the market trends. In 2017 we will gear up both on the product and technology platform to meet the need of the urbanizing markets. We will look at expansion as and when

“WE WILL CONTINUE TO INNOVATE AND PROVIDE VALUE TO OUR CUSTOMERS IN LINE WITH THE MARKET TRENDS. IN 2017 WE WILL GEAR UP BOTH ON THE PRODUCT AND TECHNOLOGY PLATFORM TO MEET THE NEED OF THE URBANIZING MARKETS. WE WILL LOOK AT EXPANSION AS AND WHEN MARKET DEMANDS INCREASE BEYOND OUR EXISTING CAPACITY.”

market demands increase beyond our existing capacity,” he says.

Kone’s production unit in Chennai produces elevators for the Indian market as well as

for Bangladesh, Nepal and Sri Lanka. The production unit also manufactures components for modernization projects in other Asian-Pacific markets such as Australia, Korea, Singapore and Malaysia. “Chennai also has a training centre where our installation engineers and field mechanics are trained to meet the Company’s strong reputation for high quality and uncompromised safety, as well as the expectations of Indian customers, when installing and maintaining elevators and escalators. Our global technology and engineering centre is a testing and research hub, which supports the latest technology and development of future Kone solutions,” he shares.

An Industrial and Production Engineer with Masters in Management & Systems from Indian Institute of Technology (IIT) – Delhi, Gossain says that the aim of the Company is to “deliver the best people flow experience.”



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Dr. Andreas Laueremann

President and
Managing Director,
Volkswagen India
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Dr. Andreas Laueremann, President and MD, Volkswagen India, is a man on mission. Not one to rest on past achievements, he is always setting new benchmarks for himself and that is what makes him a truly inspirational leader. It was a tough year for the Volkswagen brand globally but the Indian operations under the leadership of Dr. Laueremann not only held its head high through the challenging times but also clocked successful numbers.

And as the man himself points out, the highlight of the year was the start of production and market introduction of the made-for-India Volkswagen Ameo. “Another highlight for us was that for the fourth year in running we increased our annual production and rolled out 145,145 cars this year. This has been the highest production for our plant so far. Vento’s success in Indian and in export markets, especially Mexico, has been a great boost for

“OUR TARGET IS TO GROW FURTHER THIS YEAR IN BOTH DOMESTIC AS WELL AS EXPORT MARKETS AND THE CHALLENGE IS TO DELIVER THESE INCREASED VOLUMES THROUGH OUR EXISTING SETUP. OUR DEFINED STRATEGY IS ALSO SHAPING UP SOLIDLY NOW AND ITS RESULTS WILL BECOME EVEN MORE VISIBLE THIS YEAR.”

us,” he says. Earlier in December, the Volkswagen Pune facility also reached a milestone of producing over 250,000 units for the export markets. “While these are absolute numbers of success, what has really improved for us behind the scenes are our productivity and efficiency

levels, which of course have improved without compromising on the quality of our products,” Dr. Laueremann points out. A key reason behind this success is the new strategy developed specially for India. This is a strategy that we have developed ourselves for our operations in India. This strategy tackles the core issues faced in India and solutions for the same. “While this strategy is aligned with the global strategy of Volkswagen Group and Volkswagen brand, it is purely theorised on Indian references and requirements,” he shares.

The other contributors to the success include introduction of a bottom-level management. “We have created several indirect or white collar positions on the shop floor that are responsible and accountable for the direct or blue collar employees’ operations. These are really the leaders that reach the last mile and make a positive impact by overcoming and regularising the operational level hurdles.”

After four years of growth, sustaining the momentum will be the most important target for Volkswagen India. “We are pushing our efforts on improving productivity and efficiency further. Our target is to grow further this year in both domestic as well as export markets and the challenge is to deliver these increased volumes through our existing setup. Our defined strategy is also shaping up solidly now and its results will become even more visible this year.”

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Bharat Salhotra

Managing Director,
Alstom India &
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As the head of Alstom Transport, he is responsible for expanding the Alstom Transport footprint in India and for ensuring that projects get delivered in time and within budget. During the last three years, since he joined, Alstom Transport has substantially expanded its footprint in India and today has several projects under execution. Since his taking over, Alstom has augmented its footprint in India by adding over 2,000 engineers to its twin innovation hubs at Bangalore. Alstom Transport India is well positioned for serving not only the Indian market but also the rapidly expanding markets in South Asia Pacific region and beyond.

Today, the company is working on prestigious projects. "Alstom is executing metro projects in several Indian cities including Chennai, Kochi and Lucknow where it will be supplying rolling stock manufactured out of its state of the art facility at Sri City in Andhra Pradesh. In the mainline space, Alstom is executing signalling & power supply systems for the 343 km section on World Bank funded Eastern Dedicated Freight Corridor. Construction of the new electric locomotive factory for manufacturing and supply of 800 numbers of high horse power locomotives is also in full swing at Madhepura, Bihar. These



“INDIA IS ONE OF THE MOST PROMISING TRANSPORT MARKETS IN ASIA PACIFIC REGION. AS PER THE LATEST UNIFE FORECAST, THE ACCESSIBLE MARKET IN INDIA ALONE IS ESTIMATED AT CLOSE TO 4 BILLION EUROS OVER THE 2016-2018 PERIOD.”

locomotives will be the most advanced in the Indian Railways fleet and the first rollout of the finished product is expected in early 2018,” said Salhotra.

Speaking on the Indian market, he said, “India is one of the most promising transport markets in Asia Pacific region. As per the latest

UNIFE forecast, the accessible market in India alone is estimated at close to 4 billion euros over the 2016-2018 period, with a growth rate of 6.6 percent as compared to 2013-2015. Alstom, with its strong footprint in India, is well positioned to address both the urban as well as the mainline railway markets.”

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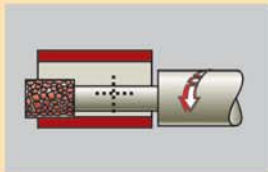


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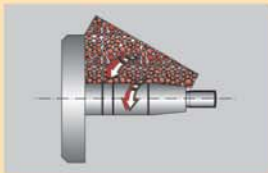


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Harsh Dhingra

Chief Country Representative, India, Bombardier Transportation

The railways in India are reforming and one of the companies that are helping the massive organisation to be modernised and sustainable is Bombardier. Harsh Dhingra, Chief Country Representative heads Indian operations of Bombardier Transportation. “As a solution provider and innovation leader, we strive to be the first choice rail technology provider for India,” says Dhingra.

Harsh Dhingra joined Bombardier Transportation in October 2010 and since then he is heading the organisation with the clear objective of making commuting easier world-over. Apart from serving the Indian Railways, the company

“AS A SOLUTION PROVIDER AND INNOVATION LEADER WE STRIVE TO BE THE FIRST CHOICE RAIL TECHNOLOGY PROVIDER FOR INDIA.”

has also been associated with Delhi Metro. “578 metro cars, over 1200 Bogies and propulsion equipment delivered from India to Delhi Metro. With recent order from Delhi Metro in June 2015, Bombardier shall manufacture additional 162 cars, over 334 bogies and propulsion from Indian site,” informs Dhingra. Additionally, plant at Savli is supplying bogie components for export projects in Australia, Brazil

and Saudi Arabia.

“With stress on Make in India, Bombardier is one of the few rail companies in India which is truly supporting Indian Government’s Make in India campaign. Bombardier Transportation is not only making rail products and solutions for the Indian market which are manufactured in India but also delivering it for exports from India. Bombardier truly resembles ‘Make in India for India’ and ‘Make in India for the World’,” continues Dhingra.

On a concluding note, “Rail Transportation sector in India is on the right path and momentum is built to significantly reform Railways in the years to come,” Dhingra mentions.



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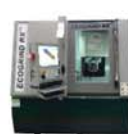
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Pankaj Dubey

Chief Executive Officer
& Director, Eicher
Polaris Pvt Ltd

“IN THE CURRENT CALENDAR YEAR, WE WILL BE INCREASING OUR PRESENCE TO 150 LOCATIONS FROM OUR EXISTING 70 LOCATIONS WITH THE BS - IV VARIANT OF MULTIX. WE BELIEVE WHAT SMARTPHONES HAVE DONE FOR PHONES, THIS VEHICLE SHOULD DO FOR AUTOMOBILES.”

A joint venture between Eicher Motors and Polaris Industries took shape in 2012 and within no time the company created a new category in the Indian automotive industry i.e. India's First Personal Utility Vehicle. Pankaj Dubey has been associated with company since its inception has played significant role in launching this vehicle. While speaking proudly on the product, he says, “It appeals to the whole spectrum of consumers from existing bike owners, aspiring vehicle owners, etc. The initial response of Multix has been rewarding and we feel it is the time to expand our distribution base.” He has strategised the growth plans as well. “In the current calendar year, we will be increasing our presence to

150 locations from our existing 70 locations with the BS - IV variant. We believe what smartphones have done for phones, this vehicle should do for automobiles,” he says. It is his extra ordinary vision has taken the company to this level in such short span of time. Elaborating on the approach of the company towards the new vehicle, he mentions, “We have looked at every aspect of value proposition delivery, whether it is the vehicle, its accessory system, the retail experience or service thereafter, and have challenged the set norms. Multix is a perfect solution to those who are looking to improve their business by increasing their efficiencies.” Along with heading Eicher Polaris, Pankaj Dubey is also Managing Director & Country Head at Polaris India Pvt. Ltd.



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Immense positivity is one of the hallmarks of Dr. Pawan Goenka, Managing Director, Mahindra & Mahindra Ltd. And what's more important is that this positivity is not at the expense of reality. In fact, he is one industry leader who believes in keeping his eyes and ears absolutely open to the ground realities.

For example, he is very well aware of and is sensitive to the inconveniences caused some of the policy reforms. However, he can also see the immediate benefits and foresee the long term advantages of these reforms not just for the economy but also for the nation at large. Of course, he remains supremely confident about the year 2017. "The outlook for 2017 is positive given the various initiatives taken by the Government in the right direction, especially initiatives such as Digital India, Smart Cities and the various infrastructure development projects, to name a few. I am hopeful that with the roll out of GST and the upcoming Union Budget the economy will get a further boost and hence I continue to remain optimistic about 2017," he says.

Prior to starting his illustrious journey with Mahindra & Mahindra, this technocrat also added many feathers to his cap while working at

the General Motors R&D Centre in Detroit, U.S.A. from 1979 to 1993. Then, he joined M&M, as General Manager (R&D) where he led the development of the legendary Scorpio SUV. Of course, 'the father of the Scorpio' (a tag that he is quite fond of), has been rising steadily at the Mahindra Group with his outstanding and all round contributions.

From being appointed as the COO (auto sector) in April 2003, to

becoming the President (auto sector) in September 2005, President (auto & farm equipment sector) in April 2010, Executive Director and Group President (AFS) in April 2015, and MD of Mahindra & Mahindra Ltd., in November 2016, Dr Goenka's career is the stuff dreams are made of. Last year, he also became the first Indian to receive the prestigious '2016 FISITA Medal of Honor' for his 'outstanding contribution to the global automotive industry'.

Dr. Pawan Goenka

Managing Director, Mahindra & Mahindra Ltd.



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Prasan Firodia

Managing Director,
Force Motors Ltd
MD, Jaya Hind
Industries Pvt. Ltd
Director, Jaya Hind
Montupet Pvt. Ltd

By Niranjan Mudholkar

It is never easy to maintain a market leading position in a given segment in the volatile automotive market. But Force Motors, under the able leadership of its Managing Director Prasan Firodia has managed to retain its dominance in the van / mini bus segment for a fairly long time with an average 60 percent market share every year.

Of course, the young and talented Firodia understands the dynamics of the automotive industry pretty well. “The Indian Auto industry is not just one of the largest in the world but is also one of the most challenging industries. Automotive manufacturers and suppliers are confronted with increasing complexity as a result of increasing numbers of products and options, shorter technology cycles, increasing pressure to innovate and global supply networks, he says.

Firodia, who graduated in Business Administration from the European Business School and Regents College, London, UK, joined Jaya Hind Industries (a Group Company) in 2002 as Director Operations. Not only did he himself grow through the ranks but also steered the organisation with his leadership. Jaya Hind won the “Best Foundry in India- Large Sector” Award in 2008, 2010, 2014 and 2016. Firodia is today the MD of this

“GST IMPLEMENTATION, TRANSITION OF BS III TO BS IV AND THE 7TH PAY COMMISSION ARE SOME OF THE FACTORS THAT ARE LIKELY TO IMPACT THE AUTO INDUSTRY BUT I AM HOPEFUL THAT THE ‘FORCE’ (READ AS INNER STRENGTH) WITHIN US WILL HELP US ADDRESS THESE CHALLENGES SEAMLESSLY.”

Company. At Jaya Hind, he has been instrumental in transforming the company to be a preferred supplier to almost all leading national and international automobile OEMs. Recently, he established a JV between Jaya Hind and Montupet SA France, which provides high precision

cylinder heads compatible for Euro IV, V and VI engines.

Firodia believes that 2017 is certainly going to be an exciting year with a host of strategies and policies that are aimed for the larger benefit of the society. “GST implementation, transition of BS III to BS IV and the 7th pay commission are some of the factors that are likely to impact the auto industry but I am hopeful that the ‘force’ (read as inner strength) within us will help us address these challenges seamlessly.”

Firodia has further strengthened Force Motors association with Daimler and BMW by setting up a dedicated facility in Chennai and Chakan. Force Motors is now recognised as the only company globally to produce engines for top two European luxury cars makers.

Besides being actively involved with relevant industry associations ALUCAST and SIAM, Firodia also contributes meaningfully to various philanthropic social causes.



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Pratyush Kumar

President, Boeing India, Vice President, Boeing International

the manufacturing sector achieve targeted contribution of 25 percent in the GDP.”

Elaborating on aerospace and defence sector, Kumar says, “The base that automotive manufacturing segment has given us is a very important platform to enter into the space manufacturing in a big way. In fact, most of the current suppliers for the aerospace industry in India have automotive in their DNA.”

Further he underlines that, though, there could be some similarities, manufacturing approach for the two industries is not the same. Highlighting this point he says, “The golden approach towards automotive manufacturing

“THE GOLDEN APPROACH TOWARDS AUTOMOTIVE MANUFACTURING IS SIX SIGMA OR PARTS PER MILLION. ON THE OTHER HAND, THE AEROSPACE SECTOR WORKS UNDER ZERO DEFECT ENVIRONMENT.”

is six sigma or parts per million. On the other hand, the aerospace sector works under zero defect environment.” He further mentions that zero defect environment calls for a skilled workforce.

He concludes by saying the country has the potential to achieve golden figures that Government has put forth, provided the industry work towards it.

Air India and many other domestic Indian airlines have been flying high with Boeing’s aircrafts. The contribution of the company in defence sector is also immense. Pratyush Kumar has been heading this company since 2012 and is responsible for development and execution of the company’s strategy in India. He

aligns business priorities, expands Boeing’s footprint, develops customer relationships, and builds partnerships with industry and government stakeholders in the region.

Underlining the importance of the aerospace manufacturing and engineering sector for India, Kumar says, “Aerospace is one of the promising sectors that can help



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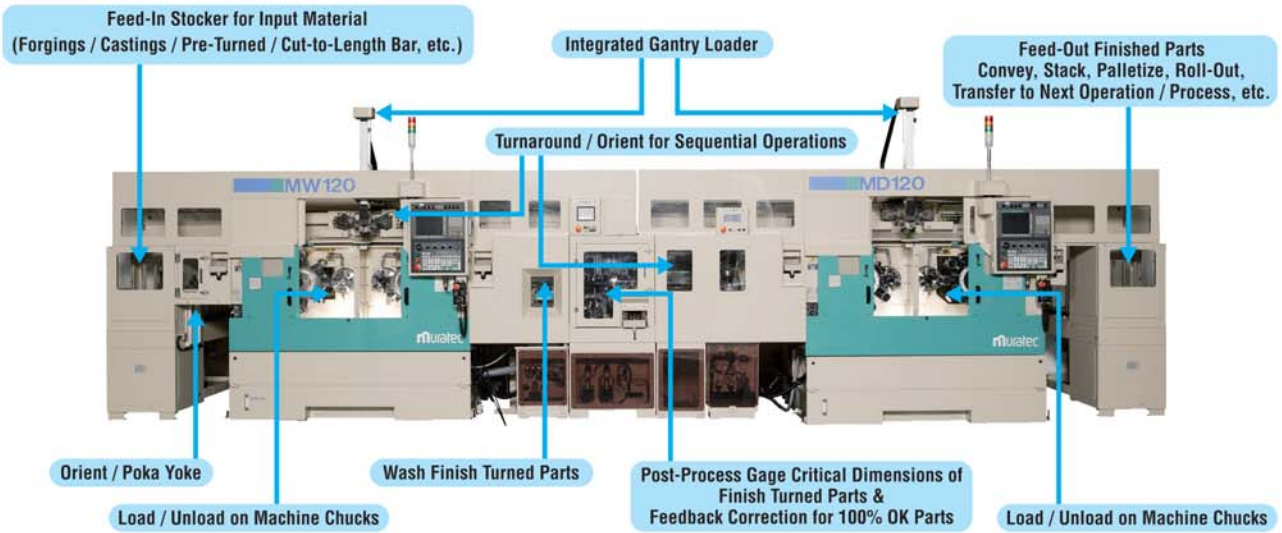
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Ramesh Kymal

Chairman & Managing Director, Gamesa Renewable Private Limited

The year 2016 has been an interesting year for Gamesa as the country has witnessed a good growth in the renewable energy sector. Ramesh Kymal, Chairman & Managing Director, Gamesa Renewable Private Limited, believes that the success of his organisation lies in its ability to deliver holistic renewable energy solutions to its customers.

Gamesa Renewable Private Limited, a wholly owned subsidiary of the € 3 billion Spain based Gamesa Group, is one of the few multinational RE companies in India who deliver end to end value chain starting from resource assessment, infrastructure development, manufacturing and asset management for both wind and solar energy projects. "Our growth is the outcome of this strategy and can be best explained through our overall installations in India," says Kymal, who has been heading the organisation since its inception.

Gamesa has a wind power installation base of over 3500 MW in India. Of this, the first 1000MW it took four years. For the second 1000MW, it took 17 months and for the third 1000MW, it took just 9 months. "We plan to achieve the next 1000MW in a much lesser time. We are the No.1 wind turbine manufacturer in the country for the past two consecutive year (according to Indian Wind Turbine Association), holding a market share of 29 percent," Kymal shares.

WE ARE THE NO. 1 WIND TURBINE MANUFACTURER IN THE COUNTRY FOR THE PAST TWO CONSECUTIVE YEAR (ACCORDING TO INDIAN WIND TURBINE ASSOCIATION), HOLDING A MARKET SHARE OF 29 PERCENT."

This trend also reflects in Gamesa's solar business in India. "We had a humble entry into the Indian solar market in 2015 with an order of 10MW and today we have a solar installation base of over 70MW. We struck an order of 130MW with one of the leading IPP's in India and now we have set our foot in the lands of Sri Lanka with 20MW."

Since its inception in India in 2010, in a time of about six years, Gamesa has commissioned four manufacturing facilities across

India with two facilities in Chennai manufacturing Nacelle and Hub for the Wind turbines.

Kymal believes that the time ahead will be much more exciting and challenging for renewable energy industry. From research papers to reality, accepting climate change has come a long way and today it stands as a reality in the eyes of nations. "With CO2 levels rising over the threshold limit, we see renewable energy as one of the solid solutions to mitigate the situation. Thanks to the congregation of nations at CoP21 which ensured the collective acceptance on the climate situation and the actions of the respective nations going forward. India charting its vision of 170 GW of renewable energy installations by 2022, has given the much needed impetus to the industry and has opened the gates for the players to expand their horizons further. In short, this is the time of renewable energy and its growth is inevitable," he asserts.



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The year 2016 has been extremely busy for Jaguar Land Rover (JLR) in India. JLR India kicked off the year with the launch of Jaguar's flagship luxury saloon, the new XJ MY16. At the Auto Expo 2016, it launched Jaguar's most advanced sports saloon, the all-new Jaguar XE. To strengthen its petrol portfolio, JLR introduced the Discovery Sport Petrol with the all-new 2.0L turbocharged petrol engine in June 2016.

The year also witnessed the introduction of the Prestige variant of its popular sports saloon, Jaguar XE, which is placed between the XE Pure and XE Portfolio. Finally, the all-new Jaguar XF was launched in September 2016. The highlight of the year was the launch of the First ever performance SUV by Jaguar, the all-new F-PACE, which garnered a stupendous response. JLR ended the year with the introduction of the 2017 Model Year New Range Rover Evoque.

The fact that a luxury car maker is launching so many new products in a year clearly reflects its confidence both in its products as well as in the market. And why not? When you have a leader like Rohit Suri, who follows seriously high standards then the entire team lives by the premium tag in every sense. The fact that they are operating in a truly aspirational country like India makes things really happening for them.

As Suri himself says, India is one of the most vibrant and fast evolving premium car markets across the globe. "With the advent of the GST and other progressive economic reforms within the industry by the government, we are looking forward to a strong growth in the premium car market in India in 2017. JLR plans to further boost its portfolio with exciting

"WITH THE ADVENT OF THE GST AND OTHER PROGRESSIVE ECONOMIC REFORMS WITHIN THE INDUSTRY BY THE GOVERNMENT, WE ARE LOOKING FORWARD TO A STRONG GROWTH IN THE PREMIUM CAR MARKET IN INDIA IN 2017."

new products as well as focus on enhancing the customer purchase and ownership experience using new

age digital technologies," says Suri – who has been at the helm for the last seven years.

Taking the cue from the nationwide wave of digitisation, Suri is ensuring that while JLR India is making digitally advanced cars and SUVs, it is also possible to buy these cars digitally (online). Under Suri's leadership, JLR India is also regularly expanding its network and engaging with customers through off-road events and tours.

A veteran of 28 years, Suri is using his experience encompassing different industries and different geographies to raise JLR India's position consistently in the Indian luxury car market.

Rohit Suri

President, Jaguar Land Rover India





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Sandeep Singh

Managing Director,
Tata Hitachi
Construction
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Sandeep Singh joined Tata Hitachi Construction Machinery Company Private Limited as the Managing Director in August 2015 with the aim to guide the company through the next phase of growth. It's been about 18 months since then and Tata Hitachi is well on course for another strong year.

Construction equipment is one of the most dynamic markets in India today. With high competition, volatile nature of business and long gestation periods of the target industry (infra and mining), it is easily one of the toughest industries. And while the name Tata Hitachi is almost synonymous with hydraulic excavators, it is never easy to maintain market leadership unless you can consistently get your act together and stay ahead of the competition.

“As an organisation, our attempt, like always, will be to keep pace with market growth and consolidate market leadership. Our focus will be on our demand drivers – Infrastructure and Mining. 2016 saw a significant improvement in our business. Our growth showed

an upward curve and we ended the year on a stronger and higher note,” Singh says. So the year 2016 has been a reasonably good year for the Company. “We have retained our leadership in the hydraulic excavator business with 37 percent market share. We are also seeing growth in our wheeled product business,” he adds.

“WE HAVE RETAINED OUR LEADERSHIP IN THE HYDRAULIC EXCAVATOR BUSINESS WITH 37 PERCENT MARKET SHARE. WE ARE ALSO SEEING GROWTH IN OUR WHEELED PRODUCT BUSINESS.”

Singh, who has more than three decades of robust experience across different functions in the automotive, tractor and construction equipment industries, is an engineering graduate from National Institute of Technology, Surat.

In 2017, Tata Hitachi will be looking to build on the foundation it has created for itself in 2016. “We

will be expanding our product range and focusing on increasing our sales of wheeled products. Our aim will be to deliver quality products and services to delight the customer, every time,” says Singh.

A key strategy to retain leadership position is to regularly launch well defined products that not only address customers’ needs but also delight them. Accordingly, Singh and his team have developed a two pronged product strategy – one addressing the value segment and the other the premium segment. In addition to the launches in 2016, the New Year will also see Tata Hitachi introducing new products.

“As market leaders, we believe that it is our responsibility to introduce new technologies and offer IT enabled solutions to our customers. This belief has led us to launch a next-generation service solution that utilises Information Communication Technology to deliver monthly reports to customers,” Singh adds. Under his leadership, the Organisation is also continuously studying market requirements and opportunities and fine tuning its dealership network with the aim to stay close with its customers.

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Sumit Sawhney

Country CEO and Managing Director, Renault India Operations

The year 2016 has been a period of mixed fortune for the Indian auto industry. And one of the few brands that has not only clocked good sales numbers but also has established its position amongst the top six players is Renault India. Today, it is one of the youngest and fastest growing automotive brands and the number one European brand in India in its segment.

“2016 has been the biggest year for Renault in India and our

focus for 2017 will be to continue and build on our growth journey, reflecting our long-term commitment to the Indian market,” says Sumit Sawhney, Country CEO and Managing Director, Renault India Operations – the man instrumental in establishing the Renault brand in India and setting the company on a growth trajectory.

Sawhney joined Renault India when the automotive industry was going through a downturn. He inspired the team leading from the front and together they have

set new benchmarks in the Indian automotive industry.

While the Duster SUV had already helped create great brand equity, Sawhney knew that it was the small car segment that drives the bulk of Indian auto market. And so came the Kwid, Renault’s global car, which has already garnered more than one lakh bookings. Of course, Duster’s position as one of the top selling SUVs in the country remains intact! In October 2016, Renault ranked number 6 in India’s automobile industry and posted a growth of 211 percent from January to October 2016 as compared to corresponding period last year.

Of course, Sawhney has just started and he already has a strategy in place for future. “We plan to launch at least one new product every year, over the next five years, beginning with some exciting product innovations starting next year. In terms of our network reach, we grew from 205 to 270 facilities in 2016, making it one of the fastest ramp ups in the automotive industry,” he shares.

Renault has formulated an aggressive product plan for India. “At Renault, we believe in the ‘power of declaration’ in terms of tangible business goals, backed by strategic measures across all key business dimensions, ranging from product, network expansion and measures to ensure customer delight. Continuing our promising journey, we plan to bring several new innovations in products and services for the Indian market,” he adds.

Besides his passion for automobiles, Sawhney is actively involved with humanitarian projects, and he also keenly pursues his interest for aviation in his personal time.

“WE PLAN TO LAUNCH AT LEAST ONE NEW PRODUCT EVERY YEAR, OVER THE NEXT FIVE YEARS, BEGINNING WITH SOME EXCITING PRODUCT INNOVATIONS STARTING NEXT YEAR.”





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Tomohiko Okada

Managing Director,
Toshiba India Pvt.
Ltd.(TIPL)



Japanese technology is playing a vital role in ‘powering’ India. Toshiba India Pvt. Ltd. (TIPL) is doing so under the able leadership of Tomohiko Okada. “Philosophy of ‘Committed to People. Committed to the Future.’ Toshiba is committed to play a significant role and be a partner in India’s growth and development. At Toshiba, we want to be the power behind every great start in this country. Because it’s when technology meets life you’re empowered to unleash your full potential,” Okada believes.

His first association with India dates back to April 1989 where he managed Group’s operations in Delhi for five years. Subsequently, from April 2010 to December 2013, he served as President – Toshiba Thermal and Hydro Power Systems Company (TTPS/TIPL).

He has achieved remarkable milestones for Toshiba which includes projects such as NTPC

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“B” project, Turbine/Generator island orders of NTPC 3X800 MW Kudgi, 2X660 MW Meja and 2X800 MW Daripalli project. Most recently, he played an instrumental role in winning the 1st ever full scope EPC project of 1X660 MW Harduaganj project.

Looking at the future, Okada says, “Our brand promise in the country is ‘Toshiba – For The Next India’ and we want to deliver this commitment through our ‘Make-in-India’ strategy focusing on sustainable B2B fields like energy solutions, railway systems and elevators besides water treatment business. In 2017 too, Toshiba will continue to consolidate its manufacturing operations with an aim to Make in India and Export from India’.”

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Vinod K. Dasari

Chief Executive Officer and Managing Director, Ashok Leyland Limited



Ashok Leyland Ltd recently launched Circuit series first Electric Bus Made in India. The country's first Made in India 100 percent electric bus is a zero-emission vehicle created under the leadership of Vinod K. Dasari, who perfectly understands the market conditions and dynamics. This bus, which is specifically developed for Indian road and load conditions, is validation of this fact. Having the future perspective, the company is spearheading with its innovative products. It has bagged order worth US\$ 170 million (about Rs 1,140 crore) from Tanzania to supply vehicles, gen sets and spares. The company is also expanding its wings in the defence sector. Ashok Leyland Defence Systems (ALDS) has selected U.S. global security and aerospace company Lockheed Martin, for the pursuit of its Indian Armed Forces - Light Specialist Vehicle (LSV) and Light Armoured Multipurpose (LAM) vehicle programs.

It is not only about the innovative and market oriented products. Dasari equally pays

“IT WILL BE A CRUCIAL YEAR FOR THE COMMERCIAL VEHICLE INDUSTRY AS BS IV WILL BECOME MANDATORY ACROSS THE COUNTRY. THIS IS WHAT THE INDUSTRY HAS BEEN ASKING THE REGULATORY BODY FOR SOME TIME. WHATEVER THE REGULATION, TO PROVIDE A ROADMAP TO IMPLEMENT THE SAME AND THEN THERE SHOULDN'T BE ANY CHANGES TO IT. WITH THE EXPECTATION OF GST, AC CABINS FOR TRUCKS AND OTHER SAFETY FEATURES, THE YEAR LOOKS INTERESTING FOR THE INDUSTRY.”

attention to the process of manufacturing. The company's Pantnagar manufacturing facility won Deming Prize, a widely recognised quality award in the world. Ashok Leyland Pantnagar has become the first truck and bus plant in the world and also the only CV manufacturer outside of Japan to win the Deming Prize.

Dasari joined Ashok Leyland in 2005 as Chief Operating Officer and was appointed as Whole Time Director in 2008. This was followed by his current position of Managing Director in 2011.

Envisioning the year 2017, Dasari said, “It will be a crucial year for the commercial vehicle industry as BS IV will become mandatory across the country. This is what the industry has been asking the regulatory body for some time. Whatever the regulation, to provide a roadmap to implement the same and then there shouldn't be any changes to it. With the expectation of GST, AC cabins for trucks and other safety features, the year looks interesting for the industry.”

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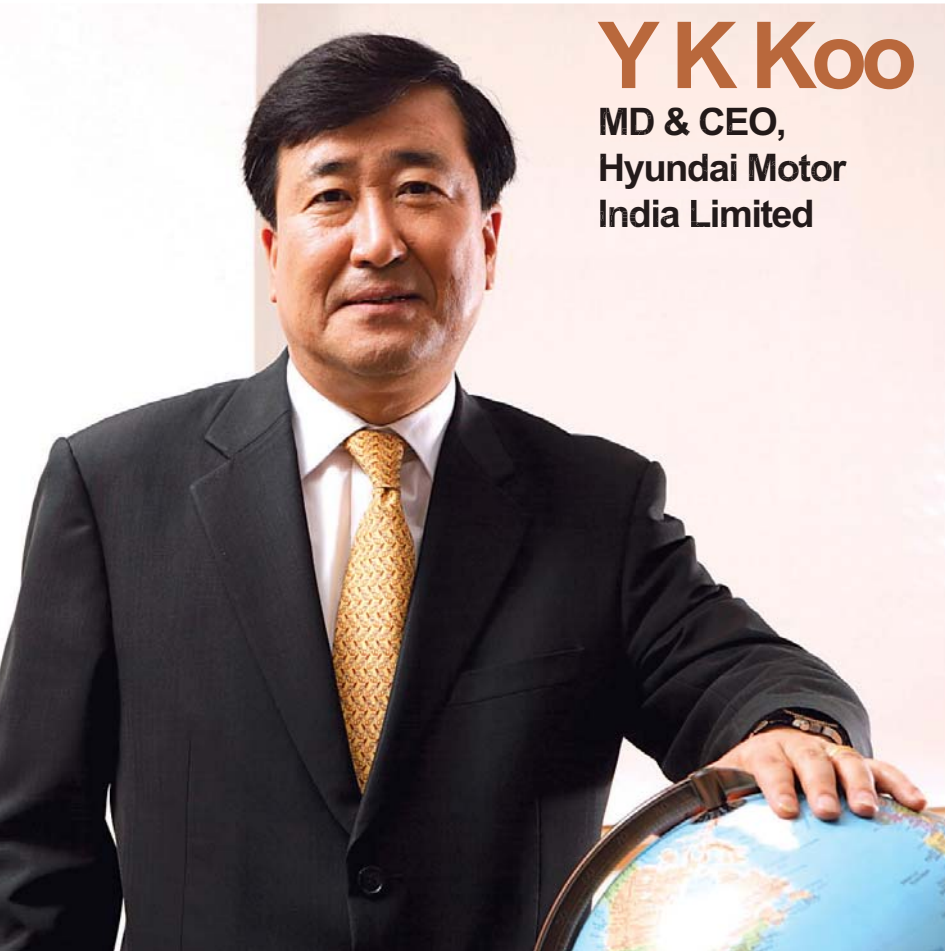
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Y K Koo

**MD & CEO,
Hyundai Motor
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It's not easy retaining the tag of 'India's largest exporter of cars' for 12 long years! But Hyundai Motor India has been doing it, and in style. But that doesn't mean that the focus on the local market is less. Far from it! In fact, the race in the domestic market has intensified and Hyundai is making every car count! Nobody knows it better than Y K Koo, MD & CEO, Hyundai Motor India Limited (HMIL). An eloquent captain who leads from the front and who blends an aggressive go getter attitude with an equally charming and affable persona!

While his appointment as MD & CEO of Hyundai Motor India may be relatively recent, Koo is no stranger to India. His first stint with India was in 1997 when he played a big role in laying the company's foundation for sales and service

“THERE IS ALSO A GROWING ASPIRATION TOWARDS HIGHER SEGMENTS ESPECIALLY THE MID AND SUV SEGMENT. I BELIEVE THIS TREND IS GOING TO TRANSLATE INTO A SHARPER FOCUS FROM MANUFACTURERS IN THE FUTURE, WHERE PRODUCT DIFFERENTIATION AND CATERING TO NICHE CUSTOMERS IS GOING TO RULE.”

network over a period of five years. His second innings in India

started in 2008 as Executive Director sales and marketing when he again set the charts rolling before he was promoted to Russia as Managing Director of HMCIS. And after leaving his mark in Moscow, he returned to his favourite playground – India as HMIL's eighth Managing Director!

Koo, who likes to keep himself fit by swimming and hiking, is known for his quiet and brilliant masterstrokes. Demonetisation has adversely affected the trucking sector and this has had a direct impact on the car industry. Koo's response? HMIL became the first car company to domestically transport cars via the coastal route!

In 2016, HMIL celebrated 20 years of its foundation. And that's when Koo outlined the vision for the next 20 years. He not only wants HMIL to become the most loved, trusted and modern premium brand but also wants to build it as a great place to work. Of course, he would also want to HMIL to acquire the coveted market leader position.

Koo believes that the Indian customer has matured and there is immense potential for growth in the Indian market, which is reflected in the shift in demand towards more sophisticated and value added products. “There is also a growing aspiration towards higher segments especially the mid and SUV segment. I believe this trend is going to translate into a sharper focus from manufacturers in the future, where product differentiation and catering to niche customers is going to rule,” he says.

Accordingly, HMIL has a full line up of very advanced products which are aimed at satisfying these requirements of the customer. “Dealerships are also seeing a transformation in their offering to meet the customer demands. Digitization will acquire greater traction and we have already set up digital showrooms in key markets,” he adds.



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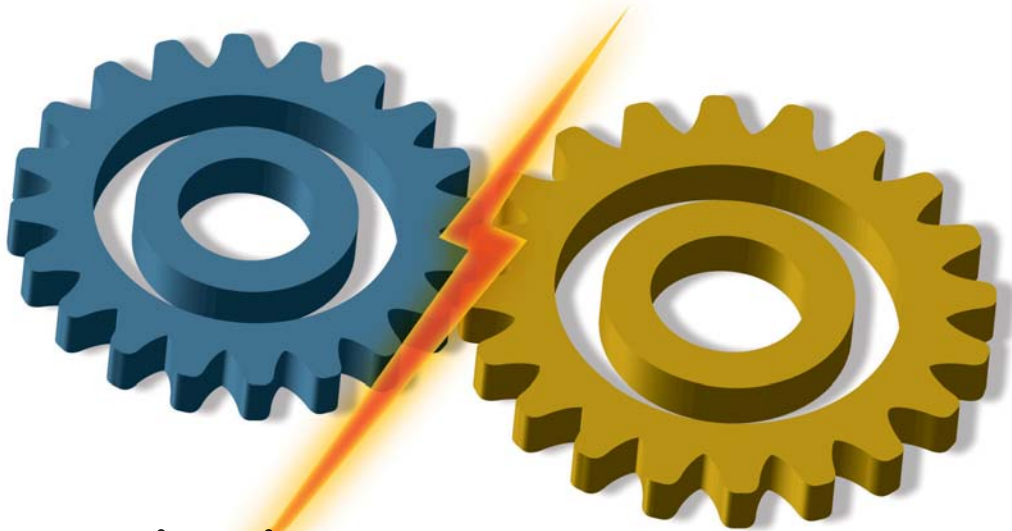
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Demonetisation: A temporary disruption

Right from the common citizen to the big daddys of the industry, demonetisation has affected everyone. Here are some opinions from the industry about the scenario.

By Swati Deshpande

PMI data for December indicated that the rupee demonetisation took a toll on manufacturing performance. Companies saw new work and output dip for the first time in 2016. In turn, quantities of purchases were scaled back and employment lowered. Meanwhile, input costs increased at a quicker rate, whereas output charge inflation eased.

Commenting on the Indian Manufacturing PMI survey data, Pollyanna De Lima, Economist at IHS Markit and author of the report said, "Having held its ground in November following the unexpected withdrawal of 500 and 1,000 bank notes from circulation, India's manufacturing industry slid into contraction at the end of 2016. Shortages of money in the economy steered output and new orders in the wrong direction, thereby interrupting a continuous sequence of growth that had been seen throughout 2016. Cash flow issues among firms also led to reductions in purchasing activity and employment."

"As the survey showed only a mild decline in manufacturing production in the last month of the year, the average reading for the Oct-Dec quarter remained in growth terrain, thereby suggesting a positive contribution from the sector to overall GDP in Q3 FY16/17. With the window for exchanging notes having closed at the end of December, January data will be key in showing whether the sector will see a quick re-

bound," De Lima added.

On this backdrop, what does the industry think? Opining on the current situation, Dharmender Tuteja from Dalmia Bharat Group "Demonetisation, though laudatory and bold for attacking black money and informal economy, is decelerating growth in short term as cash crunch and psychic impact has curtailed purchasing power. SME sector and rural areas have been impacted more than others. To capitalise on this



"Demonetization has definitely impacted most of consumer goods, but with the arrival of winters we have seen a gradual increase in purchase of water heaters compared to previous month but below last year. We are witnessing a gradual shift towards a

digital economy in our sector as well, with retail chain stores and growth in online purchasing. We believe that normalcy should set in latest by end of Q1 2017"

V Ramnath, Managing Director, Ariston Thermo Pvt Ltd

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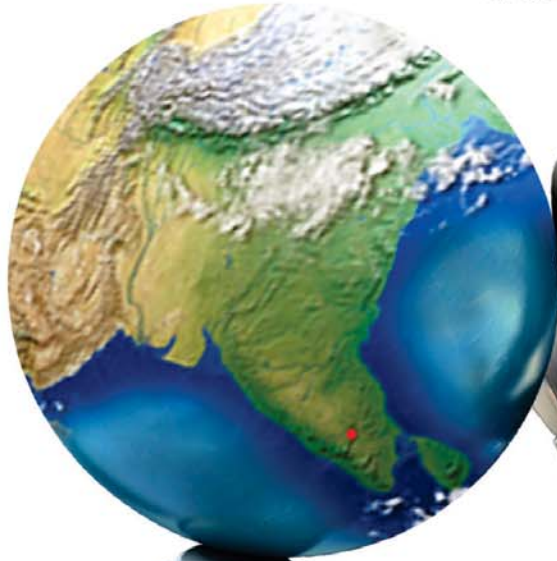
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“While our payments to our vendors are through banking channels, we have learnt of some inconvenience to some of our vendors and contractors operating in remote / rural areas who used cash for their business activities. We understand that here

too, after the initial disruption, they have migrated to banking channels and situation returned to normal quite fast.”

Kaustubh Shukla, Chief Operating Officer of the Industrial Products Group, Godrej & Boyce

step and reverse the damages, it is essential for the government and RBI to waive/bear the transaction costs associated with digital/cashless means of payments until required new currency is printed and is in circulation. It is also imperative for Tax department, to examine the source of cash deposits in banks and bring rightful tax dues to government's coffers. If this is done successfully, the tax revenue stream will get boost on an enduring basis which needs to be used to pump prime the economic growth by increased the government spending and reduction in tax and interest rates.”

Impact on manufacturing

Elaborating on the impact further, V Ramnath, Managing Director, Ariston Thermo Pvt Ltd mentioned, “As per the PMI, demonetisation has adversely impacted manufacturing growth in November. Manufacturing in India is one of the sectors that presumably works in the ‘white’ economy, rather than being fuelled with cash or black money. Overall industrial output for October 2016 was contracted by 1.9 percent and growth in consumer goods was positive by 1.2 percent in 2016, which was comparatively weaker than the last year. Capital goods output growth was -22 percent in the period (-26 percent in October) relative to a decent 9 percent growth in April-October 2015,”

On the other hand, Godrej & Boyce has observed minimum impact on the manufacturing. Speaking on the same, Kaustubh Shukla, Chief Operating Officer of the Industrial Products Group, Godrej & Boyce said, “The first couple of days the logistics were affected owing to shortage of cash for fuel, toll and Octroi, etc. However, the situation recovered soon.”

Detailing further on the situation, he said, “While our payments to our vendors are through banking channels, we have learnt of some inconvenience to some of our vendors and contractors operating in remote / rural areas who used cash for

their business activities. We understand that here too, after the initial disruption, they have migrated to banking channels and situation returned to normal quite fast.”

Being concerned about the future, Shukla mentioned, “Ours is a Business To Business sales transaction and have not been affected on the sales side in the immediate period. We may be affected if the economy / GDP growth rate indeed slow down as feared. However the prospects of a V shaped recovery in the long run is comforting.”

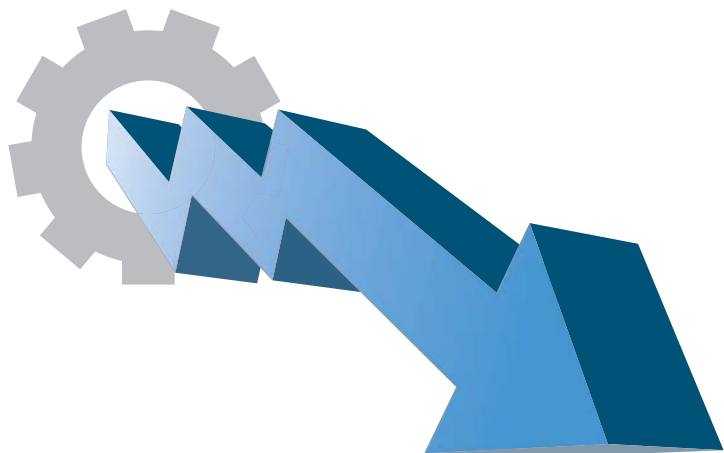
On the other hand, Ramnath's perspective is different. Ariston Thermo's market has seen some effect of the situation. Detailing on it, he said, “Demonetisation has definitely impacted most of consumer goods, but with the arrival of winters we have seen a gradual increase in purchase of water heaters compared to previous month but below last year. We are witnessing a gradual shift towards a digital economy in our sector as well, with retail chain stores and growth in online purchasing. We believe that normalcy should set in latest by end of

“Demonetization, though laudatory and bold for attacking black money and informal economy, is decelerating growth in short term as cash crunch and psychic impact has curtailed purchasing power. SME sector and rural areas have been impacted more than others.”

Dharmender Tuteja, Dalmia Bharat Group

Q1 2017”.

Talking on the impact on the whole industry, Tuteja concluded, “It is extremely important to desist populist measures like loan waivers, distributing freebies or increasing subsidies but to urgently boost the government spending to upscale country's infrastructure and expedite held up projects which will have employment and income generation spin-offs for masses. Besides, tax and interest rates need to be cut to incentivize greater compliance of tax laws and stimulate economic growth. If we fail to do so early, demonetisation will go down in history as failed and bungled up initiative of Modi.”



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With a vision to ‘power’ India, Toshiba and JSW collaborated and formed a JV. With the manufacturing facility in Chennai having an installed capacity of 3,000MW, Toshiba JSW is geared up to contribute to the government’s goal to provide 24x7 electricity for residential, industrial, commercial and agriculture use.

By Swati Deshpande

From the time it started operations in 2012, Toshiba JSW Power Systems Pvt Ltd (TJSP) has been at forefront in helping Indian power sector to add capacities. Under the leadership of Yoshiaki Inayama, Managing Director, TJSP, the company recently marked a significant milestone with shipment of its first ‘Made-in-India’ steam turbine generator. The 800-megawatt steam turbine and generator (STG) for Unit 2 of the Kudgi Super-critical Thermal Power Station in Karnataka state is Toshiba’s first large-scale generation system to be manufactured and assembled with locally procured parts and systems, and tested in India.

On this momentous occasion, Inayama mentions, “With this shipment we embarked on our local manufacturing – from procurement to testing and shipping, for customers in India and the neighbouring countries. We are determined to continue to deliver excellent products under our commitment to the Indian Government’s ‘Make-in-India’ campaign. With the manufacturing and supply of turbines and generators, we will continue to contribute to the growth of industries ‘for the next India.’”



“TJPS is an undisputed market leader in the 800MW category having won orders from NTPC for 3X800MW for Kudgi Ultra Supercritical Thermal Power Project and two for the NTPC’s Darlipali Super Thermal Power Project. TJPS also won an order for two 660MW supercritical steam turbine and generator island packages for Meja Thermal Power Project from Meja Urja Nigam Pvt. Ltd., a joint venture between NTPC and UPRVUNL.”

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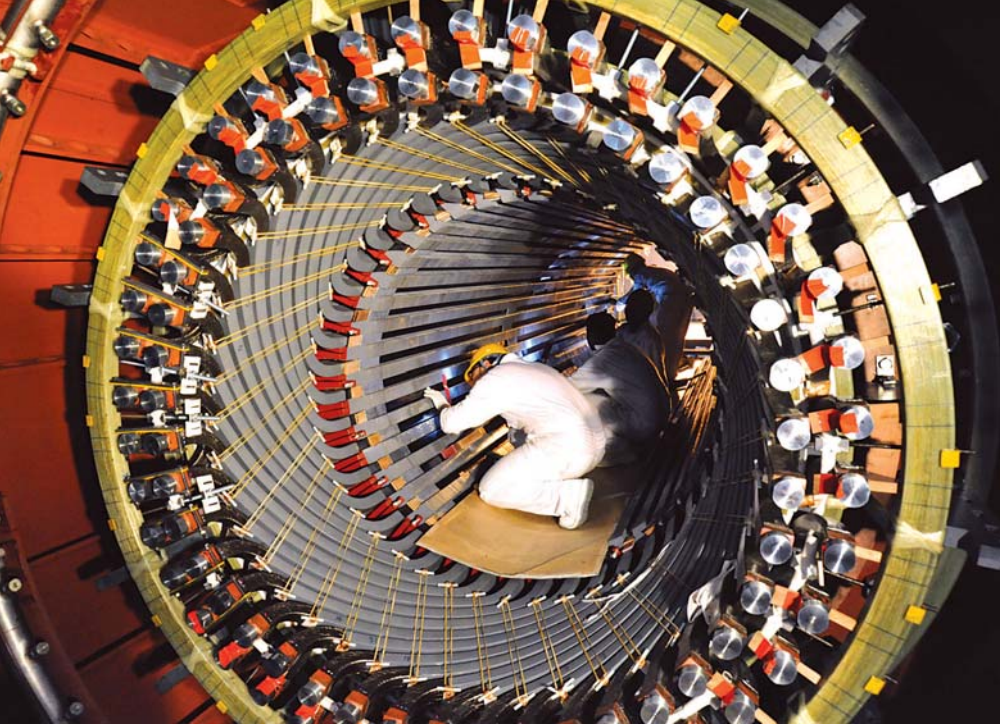
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The company recently marked a significant milestone in its endeavour to offer customers state-of-the-art power generations solutions with shipment of its first 'Made-in-India' steam turbine generator. The 800-megawatt steam turbine and generator (STG) for Unit 2 of the Kudgi Super-critical Thermal Power Station in Karnataka state is Toshiba's first large-scale generation system to be manufactured and assembled with locally procured parts and systems, and tested in India.

Since its inception, the company has worked with various Indian PSUs. "TJPS is an undisputed market leader in the 800MW category having won orders from NTPC for 3X800MW for Kudgi Ultra Supercritical Thermal Power Project and two for the NTPC's Darlipali Super Thermal Power Project. TJPS also won an order for two 660MW supercritical steam turbine and generator island packages for Meja Thermal Power Project from Meja Urja Nigam Pvt. Ltd., a joint venture between NTPC and Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd. (UPRVUNL)," he informs.

The company was recently awarded a full EPC Contract by UPRVUNL valued at Rs. 3,436 crore for 660MW Harduaganj Ultra-supercritical Thermal Power Project.

Indian market

Elaborating on the Indian market, Inayama says, "It is one of the toughest markets in the world because Indian customers require world class quality products at Indian price. Despite this difficulty, many world famous companies have entered into the Indian market. This underlines the importance of the market. Because of this, there has been severe competition in the Indian market."

In order to overcome this situation indigenisation is essential. "When we expand indigenisation of raw materials and parts, it is crucially important to ensure quality and delivery time of those items as it has direct impact on quality and delivery time of final products. To tackle with this situation, we have been developing suppliers which can meet our quality and delivery time requirement," he explains.

Another aspect that has an impact on quality of the final products is skilled workers. "Well-trained engineers and operators are important contributors in the

success of the final product. We have trained our people at Toshiba Japan and also experts at our counterparts in Japan have visited India to train our staff. We also have established our training programs and training facility in the factory," he adds.

India-at present

When asked about current scenario in the power sector, Inayama informs, "Electricity is driver of growth and India's current vision and focus is on purposeful growth and electric power plays very important part. However, the current power situation in relation to providing uninterrupted and adequate supply of 'Power to All' needs tall efforts covering the entire chain of power, generation, transmission, distribution and revenue collection."

Further he mentions that addition to power generation capacity has been meeting the planned targets from 10th Plan to current 12th five year plan. However, target of 'power to all' still lags behind. Elaborating on it, he says, "The Current production of 1,278.91 TWh in 2015 makes India as the third largest producer and fourth largest consumer of electricity in the world. The government targets capacity addition of 88.5 GW under the 12th Five-Year Plan (2012-17) and around 100 GW under the 13th Five-Year Plan (2017-22). The Growth in industrial activity would boost demand for electricity, Increase in population and increasing per-capita usage would give further impetus. The power availability in the year 2015-2016 was 1,138 Billion units. The requirement shall be around 1,900 Billion units in the year 2022."

In such scenario, how is Toshiba JSW Power Systems doing? Answering this Inayama says, "Toshiba JSW with its current order booking from the Indian market in relation its capability to manufacture and deliver is affected due to lower volume of business available in Thermal Power market in India. Like all other manufacturers, the subdued market volume of thermal power business in India, the production capacity is affected. However, Toshiba's Global reach in power

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business supports TJSP to effective usage of its resources.”

“The market size of Thermal power in India has shrunk which affects the optimised usage of manufacturing capacity and resources deployed for Indian market. While we understand the current shrunk market size for thermal power, we are hopeful that to meet demand of 1,900 TWhr by 2022, thermal power will continue to play lead role,” he continues.

In such scenario, what helps the company is exports. “Currently, we export key components of steam turbines and generators to North America, Japan and South-East Asian markets. In years to come, we plan to export the entire steam turbine generator sets to the world markets. In the last FY, the contribution of exports to the sales revenue is in single digits and we aim to achieve about 30 per cent by 2020,” he details.

Research & development

While catering to the global market, the importance of R&D for business cannot be emphasized enough. Sharing his views on R&D, he notes, “In order to keep the carbon dioxide emissions in check, renewable energy is very important but uncertainty overshadows its significance. Therefore coal thermal will remain as one of important power source with indigenous resource for main grid and it is very important to improve the efficiency of coal thermal power station by applying Supercritical and Ultra Supercritical technology and proper maintenance and modernization along with stability improvement of renewable energy.”

Toshiba JSW is keen on developing technologies for efficiency improvement, such as supercritical technologies including Ultra and Advanced-Ultra Supercritical for new construction and renovation & modernisation, carbon dioxide capture and storage, World’s First Direct-Fired Supercritical Oxy-Combustion CO2 Power Cycle, and plant operation efficiency improvement utilising IoT and AI. “TJPS has been collaborating with Toshiba Japan for those R&D. In addition to that, TJPS is keen to improve its productivity. We have been applying several innovations for

“India is one of the toughest markets in the world because Indian customers require world class quality products at Indian price. Despite this difficulty, many world famous companies have entered into the Indian market. This underlines the importance of the market. Because of this, there has been severe competition in the Indian market.”




Toshiba JSW is keen on developing technologies for efficiency improvement, such as supercritical technologies including Ultra and Advanced-Ultra Supercritical for new construction and renovation & modernisation, carbon dioxide capture and storage, World’s First Direct-Fired Supercritical Oxy-Combustion CO2 Power Cycle, and plant operation efficiency improvement utilizing IoT and AI.

this area with a little help of Japanese engineers,” reveals Inayama.

Expansion

As TJSP aims to go global, it remains focused in serving the Indian market. With its manufacturing facility in Chennai that has an installed capacity of 3,000MW, Toshiba JSW is geared up to contribute to the government’s goal to provide 24x7 electricity for residential, industrial, commercial and agriculture use. “We are actively participating and are in the process of positioning ourselves as a significant player in the Thermal Power Sector as a Turnkey EPC contractor and Number 1 EMPCS company in India. We are also ready to execute power projects within the challenging timelines demanded by the IPPs. Thermal plant efficiency improvement is crucially important considering environmental demand. We are also aiming to expand this area by utilising our facility & human resource and Toshiba’s technologies and experiences,” he informs.

Toshiba JSW began commercial operations in 2012 with a capacity to produce steam turbines and generators of 3,000 MW a year for thermal power plants. Based on the demand from the domestic and export market, TJPS has the ability to expand its production capacity. “We are also developing a strong vendor base where TJPS can outsource some of the machining operations to other parties. This will also help us to consolidate our utilisation capacity,” he concludes. 



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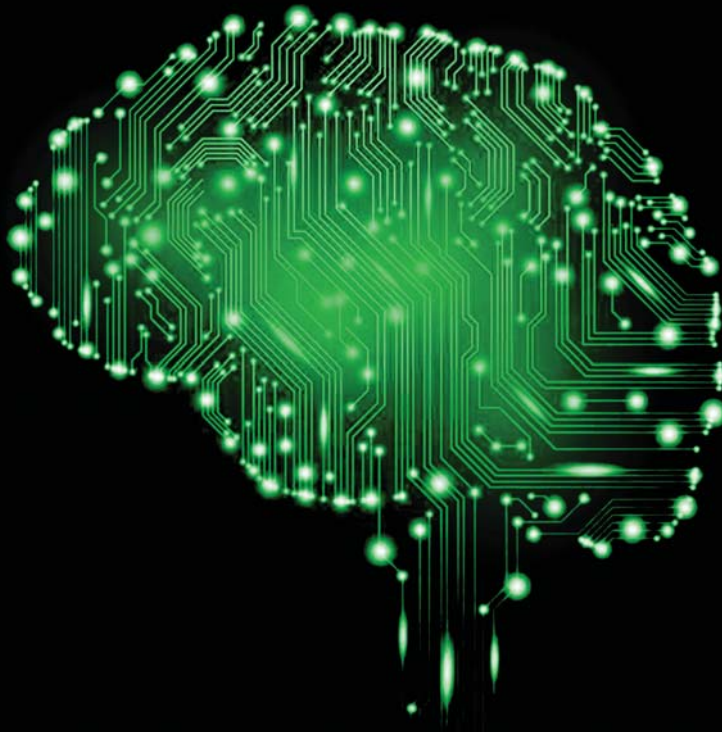
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In this ever connected and evolving world, time and space coordinates belong to the players who have designed their future and their eco-system accordingly.

By Harish Pant, Managing Director, Hampson Industries Private Limited

We live, work and do business in the era of extended globalization. To use a cliché, the world is converging at common points. In this scenario, how do companies take care of local aspirations, local needs and local challenges? To begin with, let us look at this question in three disparate perspectives.

Customers' perspective: We see that a new world optimum is evolving where in the differences are in small degrees related to products, services, processes and systems. Local to Glocal is happening at a viral pace due to the seamless flow of products, knowledge and people across the world. In this ever connected and evolving world, time and space coordinates belong to those players who have designed their future and their eco-system accordingly.

Supply chain perspective: Managing an efficient and profitable business is not enough where product life cycles are reducing with algorithmic changes in varieties and volumes. Being future ready requires envisioning the future waves and co-creating and collaborating across the value spiral. Of course, the blistering pace of change cannot be managed with the friction between heavy management and controls. The Volatile, Uncertain, Complex and Ambiguous (VUCA) world can be progressively managed only through digital platforms; create one or be a part of it. There is no other option!

Employee perspective: Doing a days-worth work is not

enough nowadays! Very high impact needs to be created through creativity and smart working as most of the repetitive jobs get assigned to robots and algorithms. Engaging employees for co creating future and collaborating across the organization, inside and outside, requires exemplary leadership and clarity amidst the VUCA world. Incremental does not work anymore. Loads of trust and right positive attitude is a basic minimum while any past baggage needs to be simply dropped off. Agility needs to be in tune with future potential hence employees need to brace the dynamic changes psychologically while finding meaning in creative pursuit.

The future service led model riding on a digital platform is a great global leveller having massive Social, Economic and Environment (SEE) impacts. Now, the embedded products and services, customer's clusters, supply chain clusters and

As Indian manufacturers aim at serving global markets, it is imperative to think about needs and requirements of these markets at the local levels. Elaborating on this theme of the CEO Panel Discussion conducted at 'The Machinist Global Manufacturing Summit 2016' in December, the author (who was part of this panel) presents his perspectives for our readers in this exclusive article.

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Emerging convergence at the UN

The Seventeen Global Goals for Sustainable Development and commitment by businesses and governments across the world at COP 21 Paris Agreement is providing a long-term perspective to all. Local and global are now getting more integrated and connected.

consumers (all being an integral part of a single platform) are providing big data for further evolution of the business model. New insights and deep analysis are helping in creating future products and services.

How many of us would have imagined a cashless India, GST led India, digital India? But it is all happening today. To quote Lenin “There are decades when nothing happens—and there are weeks when decades happen.” Now we have to think fresh for this emerging India!

Reaching out to customers

For companies that are global in nature, it is not easy to reach out to their customers while understanding the local context while also adhering to their own global vision and brand equity. There is a need to redefine business. And this redefinition or taking business to a new trajectory is further blurring global and local difference. For example, Uber meets the customers’ requirements across the world through a platform. Tesla wants to own and operate e-vehicle taxi services along with the required infrastructure (to manage charging).

The incumbents have their business constraints - let it be economical, infrastructural, scale, political while insurgents. The new comers are thriving on the very edge of these constraints and challenging with their ‘why not’ attitude! In between, the domain of impossible is shrinking fast.

Making use of indigenous

It is equally important to also focus on aspects such as indigenous technologies, skills of local personnel, training, etc. OEMs and tier 1 are hand-holding down stream suppliers in areas of critical skills. Also, companies across have realised the importance of being future ready and are hence engaging with the experts to bridge the gap. Good news is that there is tremendous interest amongst the youth to acquire new skills and it is helping organisations that want to take the leap into future.

Technology development is becoming more complex and it requires structures, processes and systems with freedom for creative work to help in fast paced development of products and services. Businesses have to continually evolve and provide new value propositions.

While it is still not enough, there is an increasing engagement between industry and institutions (education). India needs to invest heavily in research and technology to be future competitive. With the recent policy framework of allowing complete freedom for ten private and ten government funded

Universities, there will be a tremendous movement in creating a world class education system in India.

At the same time, the challenges of archaic labour laws, infrastructure constraints, scale of operations, incremental change in the mind set and absence of political consensus to move ahead with gusto need immediate attention.

The ‘future’ of Glocal


Let’s see look at this from the context of the year 2020 and beyond. For example, in the automotive sector, now the ‘present latest’ is already in India but the ‘future latest’ requires bold policy initiatives. Huge dependency on oil and consequent import bill need to be dramatically reduced for Indian economy to continue its growth trajectory. Government and private players have to urgently articulate immediate shift to Zero Pollution vehicles and build necessary infrastructure to support the same. Having short term goals like ‘Bharat 6’ stage or bringing in similar incremental changes is a waste of time and efforts.



Managing an efficient and profitable business is not enough where product life cycles are reducing with algorithmic changes in varieties and volumes. Being future ready requires envisioning the future waves and co-creating and collaborating across the value spiral.

As automotive moves to E-vehicles, the entire whole tier structure will go for a massive change. Number of components in a vehicle will reduce dramatically. New manufacturing technologies will also lead to small cluster manufacturing. With dramatic changes in vehicle ownership and advent of service providers, there will be massive disruption for the automotive industries.

The aerospace and defense narrative requires inviting major players to co create and Make in India as without major players it would be difficult to leapfrog the deficiency of many decades. Every facet of business namely R&D, infrastructure, skill development, manufacturing technologies etc. needs long term planning and decades of continued efforts. Collaborating with the established players can help us bridge the gap quickly.

With the above two sector specific narratives, there is a need to spell future value proposition for each sector with a billion plus population in mind. Also, we need to assess social, environmental and economical impacts of present businesses. Connecting value proposition and the end impacts through new businesses will provide Glocal solutions which will only differ in degrees across the world. 

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The symbolic lion at the Mahatma Mandir in Gandhinagar, Gujarat.

Let the Lion Roar!

Industry must continue to engage with Government to push for reforms and at the same time work tirelessly to improve its own expertise.

By Ajay S. Shriram, Chairman & Sr. Managing Director, DCM Shriram Ltd.

The clarion call to boost development and script India's growth story resonated through the Make in India campaign. Aimed at making India a manufacturing hub, the campaign got (read with the backing and presence of all big Indian Industrialists) launched two-years back.

While the initiative - which is much lauded and acclaimed within the country and globally - did open up opportunities to attract foreign investment, there is still a lot of ground that needs to be covered.

Mere policy framework cannot be successful alone unless ably supported by a favorable regulatory framework and improved infrastructure. It is equally important for industry to look within and ensure that through cost competitiveness, innovation and quality, it meets the demands of both domestic and international customers.

For a country that has aspirations to become a global economic power, it is imperative to make its manufacturing sector the driving force behind bringing the change. Manufacturing in India brings employment for the younger generation, prevents vulnerability to imports, increase value addition within the country, and provides technology transfer among other notable benefits. Yet, as a country it has been difficult for manufacturing growth at the much-needed pace. In fact numbers indicate that manufacturing share is stubbornly stuck at around 15 per cent of GDP (compared to the target of 25 per cent).

The progress so far

Both Government and the Private sector have to play their re-



It is equally important for industry to look within and ensure that through cost competitiveness, innovation and quality, it meets the demands of both domestic and international customers.

spective roles. A lot has already been done by the government and it is ceased of what else needs to be done. At this stage it will be worth looking at what are some of the major initiatives already implemented. The 25 key sectors of the economy, including automobiles, aviation, biotechnology, defence manufacturing, electrical machinery, food processing, and pharmaceuticals, amongst others will be the focus areas.

Increase in FDI is most encouraging, with inflow into India increasing by approximately 80 percent when FDI across the world has fallen by around 16 percent. Ten reform areas that need special mention are:

1. Parliament has passed the Insolvency and Bankruptcy Code 2015, which provides a strict timeline for insolvency proceedings.
2. Most of the railways sector is now open to 100 percent FDI and there has been a substantial increase in commissioning of new lines.
3. Power Deficit is down from 4.2 percent to 2.1 percent

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January 2017

MAC



4. Road projects over Rs 3 lakh crore have taken off; currently building 21 km per day from a 2 km per day in 2014. Ports and shipping are a focus area with investments of Rs 70,000 crore.
5. Launch of National Capital Goods policy
6. Rapid progress towards digitization and e-governance.
7. In Defence, Government has allowed 51 percent foreign ownership and list of items needing industrial license have been reduced by 60 percent.
8. Civil Aviation policy allows for 100 percent FDI under automatic route in Greenfield Projects.
9. Mining has been opened to the private sector, including foreign investments
10. Government is focused on ease of doing business. A sample of steps taken:
 - a. Online Governance: 14 services delivered by e-Biz single window.
 - b. Easier Labor Laws and combined returns.
 - c. Faster online clearances of environment and forest applications.
 - d. Investor Facilitation Cell by DIPP, including country specific desks.
 - e. Healthy competition amongst States to improve their ranking for the ease of doing business index.

Reality Check

The on-ground reality brings out numerous caveats. Land, a primary resource to draw industries is difficult to acquire, or it is at a price that is disproportionate to the international industry structure. Capital is expensive and often used unproductively. Standby facility due to unreliable power is a typical example of what adds to capital cost. Labour is one factor of production that is cheap, but the low skills level takes away majority of the advantage. Further despite government’s sincere efforts to improve the business regulation scenario our ranking in the ease of doing business continues to be very low, currently standing at 130.

Our energy cost is amongst the highest in the world. We remain vulnerable to international crude prices as well high electricity costs from electricity boards. Cost of basic infrastructure in terms of roads, rail and ports are comparatively more expensive when compared to China, Singapore etc. Given the time required to start and operate businesses, viability often becomes a casualty. Correcting some of these challenges will take time. In fact we may be a bit disappointed that the Make in India mission is not picking up the desired pace, however directionally we are moving in the right manner.

The road ahead

India’s rapidly expanding economy, which has grown by 7 percent a year over the past decade, gives the country’s manufacturers a huge opportu-

The Impact		
Parameter	FY 2014	FY 2016
GDP Growth	6.6percent	7.6
Avg. Consumer Inflation	9.46percent	4.91percent
Industrial production growth	-0.10percent	2.4percent
Fiscal Deficit as percent of GDP	4.4percent	3.9percent
Foreign Direct Investment	US\$ 24.3 Billion	US\$ 40 Billion

The numbers speak about the impact as indicated in the above table.

nity. As incomes rise, the demand for consumer goods skyrockets. And many of India’s consumption sectors—including food and beverages, textiles and apparel, and electrical equipment and machinery—have reached this inflection point.

To seize the opportunities, industry must dramatically increase the productivity of their labor and capital. Some action areas are:

1. Need for smarter ways of manufacturing. Processes around the world are becoming more efficient yet at the same time requiring fewer resources. India need to imbibe smart manufacturing practices.
2. Advanced manufacturing; composites, 3D printing, robotics, carbon fibre etc. are going to become the norm in the future. Companies need to invest in these materials and processes today to be able to efficiently manufacturing tomorrow.
3. A McKinsey benchmarking study of 75 Indian manufacturers shows that Indian manufacturers lag behind their global peers in production planning, supply chain management, quality, and maintenance resulting in lower productivity. Consequently, workers in India’s manufacturing sector are almost four and five times less productive, on average, than their counterparts in Thailand and China, respectively. Of course many Indian companies are making strides.
4. India’s manufacturers must also improve the productivity of their capital, in some cases by 50 percent or more.



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While such improvements are challenging, they are possible if companies set bold targets. The McKinsey study indicates that many Indian companies are assessing the technical design of their capital equipment to make trade-offs between capital expenditures and life cycle expectations for reliability—essentially “Indianising” the specifications.

5. India’s manufacturers could learn a lot from the IT sector’s experience in promoting the large-scale development of skills. A key factor in this success was the early recognition among Indian IT companies, that the number of engineering graduates in computer sciences wouldn’t meet the needs of the country’s burgeoning IT sector. In response, companies began hiring graduates from all engineering disciplines and using in-house curricula to build skills. India’s manufacturers should follow a similar path by establishing in-house training centers to promote vital manufacturing roles. Some Indian companies are already taking matters into their own hands. For example, Maruti Suzuki, has adopted six technical institutes across the country and by using the company’s own managers as faculty, Maruti inculcates trainees with a strong feel for its culture as well.

Increase in FDI is most encouraging, with inflow into India increasing by approximately 80 percent when FDI across the world has fallen by around 16 percent.

6. As the economy develops, manufacturing moves into more sophisticated sectors and progressively starts investing in R&D. This was the pattern in Japan, followed by Korea and now China. To put this in perspective, India spends 0.9 percent of GDP on R&D and of this Industry spends 35 percent. In Korea R&D spend is 4.2 percent of GDP and Industry share is 78 percent. So Korean Industry gets the multiplier benefit of both these percentages. India needs to do the same. A hundred Indian firms must match what GE and Bosch and Emerson do in India, each employing thousands of engineers in R&D. Our manufacturing companies will then deliver on India’s growth aspiration.

In conclusion, industry must continue to engage with Government to push for reforms and at the same time work tirelessly to improve its own expertise. India must not be complacent about having a competitive advantage in labour intensive industries or about its demographic dividend. Advances in technology can have dramatic impact on manpower requirement. The day robots start stitching shirts and artificial intelligence starts interpreting medical reports is not too far. In the long run, competitiveness and R&D is the only way to keep abreast and generate jobs. 

UPDATE

ADB maintains stable outlook for Asia despite global uncertainties

The forecast in East Asia is maintained for 2016 and 2017. Growth this year will reach 5.8 percent, with a slight moderation to 5.6 percent in 2017.

Economic growth in developing Asia remains broadly stable, but a slight slowdown in India has trimmed the region’s growth outlook for 2016, says a new Asian Development Bank (ADB) report.

In a supplement to its Asian Development Outlook 2016 Update report, ADB has downgraded 2016 growth to 5.6 percent, below its previous projection of 5.7 percent. For 2017, growth remains unchanged at 5.7 percent.

“Asian economies continue their robust expansion in the face of global economic uncertainties,” said ADB Deputy Chief Economist Juzhong Zhuang. “Structural reforms to boost productivity, improve investment climate, and support domestic demand can help maintain growth momentum into the future.”

ADB has downgraded the forecast in South Asia from 6.9 percent to 6.6 percent in 2016. Growth will bounce back in 2017, reaching 7.3 percent. India’s tempered growth projection to 7.0 percent from the previously forecasted 7.4 percent in 2016 is due to weak investments, a slowdown in the country’s agriculture sector, and the lack of available cash due to the



Pic courtesy: ADB

government’s decision to ban high-denomination banknotes. This will likely affect largely cash-based sectors in the country including small- and medium-scale businesses. The effects of the transition are expected to be short-lived and the Indian economy is expected to grow at 7.8 percent in 2017.

The forecast in East Asia is maintained for 2016 and 2017. Growth this year will reach 5.8 percent, with a slight moderation to 5.6 percent in 2017.

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'Pure' flow of success!

If you have a dream, don't just sit. Gather courage to believe that you can succeed and leave no stone unturned to make it a reality, says **Dr. Mahesh Gupta**, Chairman, KENT RO Systems Ltd.

By **Niranjan Mudholkar**

Q You laid the foundation of Kent RO Systems in 1998 by inventing a water purifier based on Reverse Osmosis Technology. Tell us about the early days and the journey so far.

I am an IIT-Kanpur graduate from the Class of 1975 — who was happy working for the Indian Oil. Kent RO is nothing short of a dream today. Having gained sufficient expertise during my 10-year stint with Indian Oil, I quit in the mid 1980s to turn my passion into an enterprise. My parents were livid at such an 'adventurous' move. But I had ideas and confidence even though I didn't have money.



"With an investment of Rs100 crore, the company is readying up a new manufacturing plant in Greater Noida which will hike up the production. It would be commissioned in 2018. Further, the company plans to double up its manufacturing capacity."

"To mark the 12th Anniversary issue of The Machinist, we are introducing a new section called 'Entrepreneur' that will feature inspirational stories of entrepreneurs who have triumphed despite all odds!"

In 1998, when my teenage children suffered from jaundice, I was forced to look for a water purifier to install at my south Delhi home. I set out to search the market. The stuff available in the market left me unimpressed. Market leading purifiers then and even now, mainly work on Ultra Violet principle. Essentially, in these water purifiers, water goes through UV Light which attacks the bacteria and kills them, giving customers bacteria free water. As a concerned parent I was very well aware that this was not enough. With greater industrial activity, ground water in and around cities has become contaminated with impurities that dissolve in water such as arsenic, rust, pesticides and fluorides. Take salt or sugar for an example, once dissolved into water you can't see them. The UV Light method can't rid the water of such dissolved substances. I wanted to make a purifier that removes all these.

So, I decided to noodle on the technology and flesh out my own ideas. It helped that I was by then running a small petroleum products company, my first entrepreneurial venture after leaving the job from Indian Oil. After several trials and six months of hard work, I zeroed in on a technology—reverse osmosis (RO) - which promised the results I wanted, and the first KENT purifier was born in March 1999. Recognizing its potential, and in order to promote a healthy and happy life for other families, I decided to market this invention.

So I started my expeditions from a small garage where I used to design these purifiers with my own patented technology. And that's how Kent RO came into being. Kent RO now is a Rs800 crore company, which has grown immensely.

Q Tell us about some innovations that you have introduced in the market?

KENT holds the credit of introducing path-breaking purification technologies. It is known the world over as the pioneer of RO purifiers. While benefits of RO as a process were known since 1970s, we give it the shape of a usable product. By adding a RO process in addition to UV purification, it becomes superior to purifiers that are solely based on UV pu-



rification. One distinct advantage which sets our purifiers apart from other RO purifiers is its ability to retain essential minerals in purifier water. Conventional RO water purifiers, while removing dissolved impurities, also remove natural minerals that are essential for a healthy life thus rendering purified water tasteless and inadequate for drinking.

Our revolutionary technology of RO+UV+UF+TDS controller purifies water while retaining the essential natural minerals. This technology ensures that the water becomes not only the purest, but is healthy too.

Yet, our purifier is just not an improved technology to clean water. It's a Smart product. Till KENT came about, most other water purifiers came as under the counter or over the counter appliances like the models popular in western countries. But these models were unsuitable for Indian kitchens where oils and spices were a major part of cooking. Most Indian kitchen counters are wiped several times a day to remove stickiness. We changed the game by introducing first wall-mounted water purifiers, which were sleek, easy to operate and aesthetically designed to make Indian kitchens more comfortable.

The RO purification process is essential to remove dissolved impurities like arsenic, fluorides, heavy metals, etc. as they are harmful for health. Conventional RO purification technology, while purifying, rejects a very high percentage of water (around 80 percent) and only 20 percent purified water is recovered. Balance water is wasted and goes down the drain. We have developed an innovative and patented technology which offers 0 percent water wastage in RO purifiers. The heart of this technology is a computer controlled process wherein the membrane is washed automatically and more than

"The Company is also exporting to Sri Lanka, Nepal, Bangladesh and the Middle East. Company's export turnover is around Rs25 crore and we will be targeting Rs50 crore exports in the next two years."

50 percent of water intake is recovered as purified water. The balance rejected water is stored in a separate 'Reject Water Tank', which can be utilised by consumers for household purposes. The net result is 0 percent water wastage.

Being first of its kind, this purifier is Touch Operated with an inbuilt micro-controller which senses water quality on real time basis and displays it on the digital screen. It also senses and displays the total dissolved salts (TDS) in the purified water as well as the filter life. It automatically warns the users when the filter life is less than 60 hours. Whether there is a UV lamp malfunctions or a filter gets clogged or the TDS levels in the water are not within the prescribed levels, the micro system senses and

displays it on the screen for users convenience. The trouble shooting system allows user to diagnose few problems and even suggests common remedies for it. The smart system in SUPERB- RO water purifier allows it to record and display the service history at a call of a button. Our technology has also been validated by UNESCO and certified by world standards like NSF and water quality association.

Q What is the current market size for the water purifier industry in India and how fast is it growing? What are the driving factors for this industry's growth?

The market for water purifiers today has seen a remarkable growth globally amid the acute shortage of clean drinking water that is posing a big challenge to many countries.

Given the increasing awareness, and largely untapped market potential, the sector is growing at a CAGR of more than 24 percent. The industry is projected to hit sales of nearly 2.48 million units in the next two years. According to TechSci



report, RO water purifier is the largest segment accounting for 42 percent of the market in 2011, while offline water purifiers contributed for about 20 percent of the market. However, by 2017, offline water purifier segment is expected to grow at a very rapid pace and increase its share to about 38 percent of the total market and is a key focus area for water purifier manufacturers, due to the large target customer base it offers, is expected to continue its rapid growth.

Q What is KENT RO's share at present in the water purifier market?

Today, as a pioneer of the mineral RO Technology, Kent RO has captured 40 percent market share. We have changed the paradigm in a market which was dominated by ultra-violet (UV) systems. The company has set a great distribution network, putting our products at all retail outlets like Big Bazaar and other white good stores across the country. It is now also easily available on the web. The company is also exporting to Sri Lanka, Nepal, Bangladesh and the Middle East. Company's export turnover is around Rs25 crore and we will be targeting Rs50 crore exports in the next two years.

Q Which are the other products besides water purifier that you are manufacturing?

Kent is working on newer products with health and purification as the base. The firm is looking to grow in segments such as Car Air Purifiers, Air Purifiers, Bed Cleaners, Cold Pressed Juicers, Fruit & Vegetable Purifiers, Gravity Water Purifiers

and water softeners. Manufacturing of each and every product has been done in-house, including the R&D. We hold patents to all products.

Q Tell us about KENT RO's manufacturing capabilities and capacities.

Riding on the success so far, the firm has grown into Rs 1000-crore Company. Kent RO has two manufacturing units at Roorkee in Uttarakhand, having capacity to roll out 5,00,000 water purifiers in a year.

Q Any plans to expand the manufacturing footprint in near future? How will that impact your overall capacity?

With an investment of Rs100 crore, the company is readying up a new manufacturing plant in Greater Noida which will hike up the production. It would be commissioned in 2018. Further, the company plans to double up its manufacturing capacity. By April 2018, the company will be manufacturing one million RO Water purifiers in a month. The company has 15 percent YoY growth. Although demonetisation has affected every industry but still the company aims to achieve 10 percent growth this year.

Q Starting entrepreneurial journey is never easy. And when it involves manufacturing then it becomes all the more difficult. What message would you like to share with our young readers who are looking to start on their own?

Talking about my journey and the challenges, there were those initial challenges that any new start-up would face. With the

other renowned brands already present in the market, Kent was vying for its own special place in Indian kitchens. It took me long to create brand awareness in consumers' mind. Financial self-sufficiency was a big problem too; I had to work in my garage all through and perform multiple tasks as I was the one man army to make my dreams come true. And it did happen!

So the only message which I would like to give to the young startups is that if you have a dream, don't just sit. Gather courage to believe that you can succeed and leave no stone unturned to make it a reality. Focus on your goals and be consistent in your efforts.

Q What do you think about the Government's initiatives like 'Make in India', 'Skill India', 'Start Up India', and 'Digital India'? Do you see such campaigns helping the industry at the ground level?

These are the national flagship schemes which are in line with the vision of making India the Skill Capital of the World, and we highly applaud the initiatives.

"Given the increasing awareness, and largely untapped market potential, the sector is growing at a CAGR of more than 24 percent. The industry is projected to hit sales of nearly 2.48 million units in the next two years."



Automation is playing a bigger role!

Sashi Sairam, CEO, MTAB Engineers Pvt Ltd, says that across the world, customers are striving for increased productivity and quality of the products.

By Niranjan Mudholkar

Q While your firm provides CNC machine tools, its robust portfolio also includes wide ranging solutions like robotics, computer integrated manufacturing systems, Mechatronics and related software, etc. Tell us how are you leveraging on these complementary offerings to facilitate the growth of the Indian manufacturing industry?

Let me start with what is driving manufacturing innovation: Across the world, customers are striving for increased productivity and quality of the products. These are driven by two factors—labour cost and skill. Automation in manufacturing started early and is taking a bigger role in all types of firms: small businesses, large scale manufacturers, retailers. Another factor is the demand for variety from the end users, requiring flexibility in operations. In manufacturing, automation has appeared early and evolved rapidly. CNC itself is a type of automation as is the work that we are doing in the space of robotics, mechatronics and factory automation.

Software and digital information

management are playing a very important role of allowing trial and error of manufacturing and automation to take place in a safe virtual sandbox, before investment and process can be implemented. We offer our robotics and automation solutions directly to our customer as well as other machine tool manufacturers that are looking to integrate automation solutions. Some of the early designers at our firm are now successful product designers contributing to products in the engineering industry. Our training products are used by institutes across India to prepare future employees entering the marketplace. We have been awarded Prime Minister's Award for the robot, Manufacturing Technology's and Innovation awards. We are using the encouragement and skills learnt to take on the challenge of building industrial robots with applications across industries. We are looking into manufacturing CNC machines that can be used in micro-machining, which cannot be easily procured by manufacturers in India.

Q Your firm's journey started with



Software and digital information management are playing a very important role of allowing trial and error of manufacturing and automation to take place in a safe virtual sandbox, before investment and process can be implemented.



technical training and today it is working with some of the finest technical institutes in the country. Tell us more about this.

Our start in the manufacturing sector came as a distributor of imported CNC products in the 1980s. The CNC training market was in its beginning phases. As the economic and political climate changed in the 1990s, we had the opportunity and the desire to begin manufacturing. The early opportunities and the encouragement offered by several heads of departments, directors and faculty gave us the ability to innovate its product lines in the areas of CNC, mechatronics, robotics, FMS and CIM.

Here is another example of trend spotting: In the early 2000s, vocational training in CNC started picking up and the institutions were looking for industrial type machine for their labs. Whether it was price or size of the machines, many labs were still struggling to equip them. That was when Sairaman, Technical Director, and his design team came up with a compact footprint industrial CNC machine that could be used in training at the right price point and at the right size, having a very successful run for several years. This foray into industrial CNC machines was the beginning of our push into the industrial products. We have had many firsts in the Indian market: CNC trainer machines, robotics, Computer Integrated Manufacturing System and now more recently Smart Warehouse Automation System.

As a business strategy, you have had a big focus on the exports market. How are you doing on that front? Has addressing different market needs helped MTAB evolve more in terms of technological innovations?

Our focus on exports has been in two areas: Training Equipment and Dental Machinery. The export market has grown significantly in the last five years, when we brought a dedicated director based in the USA. In Smart Factory Automation and CIM training, we are one of the top five players globally, delivering a comprehensive hardware, software, and curriculum solution to the customers. We work through channel partners in many countries to deliver and support the customers locally.

Continuing from the above question, tell us about your R&D activities?

Our R&D team has more project ideas than time and resources available at any moment. The team works on improvements of existing products as well as bringing new products into the market. The team has several design and analysis tools available to them to conduct their work in-house. Additionally, for specialized expertise, they can count on a network of advisors that can offer their insight.

The team has several responsibilities when it comes to a new product. Once a market opportunity is identified, the design team must collect requisite data with the help of sales & marketing for designing. The design goes through multiple revisions, until approval. Once approved, they work closely with

the purchase team to source components required for building the prototype. The prototype is built with close interaction with the assembly team, with design changes and adjustments along the way. Once the functionality is proven out fully, then the design team is responsible for creating and releasing the official BOM, manufacturing and assembly process, test plan, quality checks.


SMEs form a major portion of Indian manufacturing sector. However, their buying power is limited. How are you reaching out these customers?

MTAB is a relatively new brand compared to many machine tool giants (both Indian and international) that are in the market. So relationship based sale is a big part of how we acquire customers. Our focus is the SME segment of the market. A tremendous amount of legwork is done by our sales team as well as our dealers to secure each customer. We take the time to understand the customer's process to prove out why our solution is the right one for them.



Another area that allows us to have effective conversations with customers is our ability to discuss their automation needs and deliver an integrated solution to meet their process. A good example is a medical component supplier who worked with us to address high rejection rate issue arising from their lines with existing machines.

Have you launched any new product recently or are planning to do so? Tell us about it

Our machine designs are continually evolving to meet customer needs as well as to fit improvements. CHRONOMILL is a horizontal machining center designed for small, high precision parts in engineering, medical, high value jewelry/watches and aerospace areas. DENTAMILL series is a series of dental CNC milling centers that are used by labs to produce We are the first CNC dental machine manufacturer in India. We have built a strong partnership network with local and global companies to enable customers with an end to end solution. 



Demonetisation – A look back at the last two months!

Now that the queues outside the banks have disappeared and the remonetisation has moved ahead, it would be worthwhile to analyse the rationale behind the decision and its impact.

By Arun Jaitley, Union Finance Minister, Government of India

Two months have passed since the Prime Minister announced the decision that high denominational currency notes would cease to be a legal tender. Subsequently those notes have been demonetised. When 86 percent of a country's currency constituting 12.2 percent of its GDP, is squeezed out of the market and sought to be replaced by a new currency, there would obviously be significant consequences of that decision. Now that the queues outside the banks have disappeared and the remonetisation has moved ahead, it would be worthwhile to analyse the rationale behind the decision and its impact.

Steps against Black Money

The Narendra Modi Government had absolute clarity from day one that it would move against the shadow economy and black money. Its first decision was to constitute SIT under the directions of the Supreme Court. The Prime Minister had proposed to the G-20 at Brisbane that international cooperation in sharing information with regard to base erosion and profit shifting should be expedited. The arrangement with the United States furthered this object. The NDA Government completed its agreement with Switzerland that w.e.f. 2019, details of assets held by Indian citizens in Switzerland and vice

versa would be provided to each other.

Since 1996, the Double Taxation Avoidance Treaty with Mauritius was being renegotiated. The treaty effectively incentivised round-tripping. It was renegotiated. Similar treaties with Cyprus and Singapore have also been renegotiated. The Black Money Law dealing with illegal assets outside India opened a window for disclosure with 60 percent tax and provides a ten year imprisonment.

The Income Declaration Scheme (IDS) 2016 was highly successful with a 45 percent tax. The PAN card requirement for cash transaction beyond Rs two lakh put hurdles on expenditure through black money. The Benami law was legislated in 1988 and never implemented. It was amended and has been put into action. The GST, which is scheduled to be implemented this year, will provide for better indirect tax administration and being a more efficient law will check tax evasion. The demonetisation of high denominational currency notes was the big step in the same direction.

The new normal

In the year 2015-16, 3.7 crore assesses (out of the total population of over 125 crore) filed income tax returns. Out of these, 99 lakh declared income below Rs.2.5 lakh and paid no taxes; 1.95 crore declared income less than Rs.5 lakh; 52 lakh



declared income between Rs.5 lakh to Rs.10 lakh, and only 24 lakh declared income above Rs.10 lakh. No better evidence is required to substantiate that both in the matter of direct and indirect taxes India continues to suffer being a hugely tax non-compliant society.

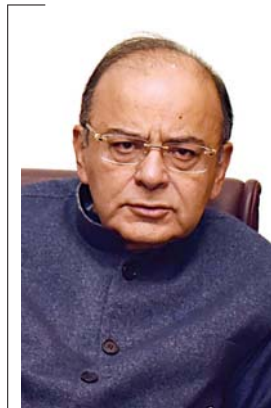
Expenditure required for poverty eradication, national security and economic development have to be compromised with on account of tax non-compliances. For seven decades the Indian “normal” has been to undertake transactions partly in cash and partly in cheque. “Pucca” and “Kachha” accounts are a part of the business language. Tax evasion has been considered as neither unethical nor immoral. It was just a way of life. Several Governments have allowed this “normal” to continue even though this compromised with larger public interest. The Prime Minister’s decision is intended to create a new “normal”. It seeks to change the expenditure pattern of India and Indians. It is obviously disruptive. All reforms are disruptive. They change the retrograde status quo. The demonetisation puts a premium on honesty and penalises dishonest conduct.

The adverse consequences of Cash

Paper currency is a zero interest anonymous bearer bond. It has no name or history attached to it. Crime can take place with or without cash but excessive cash as a medium of exchange is favoured by the underground economy. It results in non-compliance in the matters of tax payments which creates an unjust enrichment in favour of the evader as against the poor and the deprived. Mountains of cash money reach tax havens through the halwala route from the original paper currency. Cash facilitates real time untraceable payments. Cash is the medium which funds bribery, corruption, counterfeit currency and terrorism. Ethical and developed societies aided by technology have consistently moved towards banking and digital transactions as against the excessive use of cash. Paper currency opens the doors for many vices. When Governments are able to collect more tax from tax evaders, they are in a better position to collect less tax from everyone else. Reducing cash may not eliminate crime and terrorism but it can inflict serious blow on them. States have shown that the stores of cash do not disappear on their own till Governments take active steps to reduce the quantum of paper currency.

The magnitude of the decision

The Prime Minister’s decision to replace the high denominational currency and eventually demonetise it required both courage and stamina. The implementation of the decision carried pain. It can lead to short term criticism and inconveniences. Drop in economic activity on account of the currency squeeze during the remonetisation period would have



“The GST, which is scheduled to be implemented this year, will provide for better indirect tax administration and being a more efficient law will check tax evasion. The demonetisation of high denominational currency notes was the big step in the same direction.”




The size of the banking transactions and consequently the size of the economy is bound to increase. In the medium and long run, the GDP would be bigger and cleaner.

a transient impact on the economy. The decision involves high level of secrecy and printing substantial amounts of paper currency, distribution through banks, post offices, banking mitras and ATMs.

The fact that large quantum of high denominational currency has been deposited with the banks does not render this money to be legitimate cash. Black money does not change its colour merely because it is deposited in bank. On the contrary, it loses its anonymity and can now be identified with its owner. The Revenue Department would thus be entitled to tax this money. In any case,

the amendment to the Income Tax Act itself provides that the said money, if voluntarily declared or if involuntarily detected, would be liable for differential and high rates of taxation and penalty.

The situation today

The period of pain and inconveniences is getting over. Economic activity is being restored. The banks today admittedly have a lot more money available in order to lend for growth. Since this money constitutes low cost deposits with the banks, it is bound to bring down the rate of interest. Both these things have already happened. Lakhs of crores, which were floating in the market as loose currency, have now entered the banking system. Not only has the money lost its anonymity, its owners, after being taxed, are entitled to put it to more effective uses. The size of the banking transactions and consequently the size of the economy is bound to increase. In the medium and long run, the GDP would be bigger and cleaner. Money entering into the banking system and officially transacted would give an ample scope for higher taxation – both direct and indirect. The Centre and the State Governments would both stand to gain. The economy would also be serviced by both cash and highly digitised transactions. 

Source: Press Information Bureau



Delphi acquires Movimento

Delphi Automotive PLC has announced it has acquired Movimento, a leading provider of Over-the-Air (OTA) software lifecycle and data management for the automotive sector. Movimento's advanced technology platform enables manufacturers to quickly and efficiently upgrade or fix software at all stages of a vehicle's lifecycle. Its OTA capabilities provide end consumers the ease and convenience of software updates, allowing new features and functionality to be added to their vehicles instantaneously, all the while reducing warranty and service costs for the vehicle manufacturer. "The acquisition of Movimento strengthens Delphi's position as a leading end-to-end systems and software provider to the industry as vehicle connectivity becomes increasingly ubiquitous," said Kevin Clark, president and CEO, Delphi Automotive.

"Movimento's over-the-air capability aligns perfectly with

our Control-Tec acquisition last year, allowing Delphi to leverage big data to offer comprehensive product enhancements and service cost savings to our customers."

Based in Michigan, Movimento supports customer operations globally and has its OTA and cloud technology development in Silicon Valley.

Combining Delphi's system and software expertise with Control-Tec's data analytics and Movimento's OTA services will create an industry-leading, end-to-end connected vehicle platform for our customers that is able to manage vehicle performance data, consumer behavior data, maintenance, system upgrades, mobility services and 3rd party ancillary services.

DENSO and NEC start collaboration

DENSO Corporation and NEC Corporation have recently announced their cooperation in the fields of advanced driver assistance, automated driving, and manufacturing, to help preserve the global environment and create a safe and secure automotive society. The two companies will cooperate based on DENSO's high level of technology and manufacturing capability accumulated through its experience

in the automotive market and NEC's artificial intelligence (AI), Internet of Things (IoT), security, and other advanced technologies, as well as its remarkable achievements in system architecture and operation, which have been developed in its information and communications technology (ICT) services.

In the fields of advanced driver assistance and automated driving, to assess the performance of deep learning approaches to hazard prediction, DENSO and NEC will jointly develop safe and secure driving components with NEC's AI to create hazard prediction technology.

Competition to develop automated driving and vehicle electrification technologies will become more intense and interaction among automotive systems will become increasingly complicated. To develop automotive products effectively, DENSO and NEC will capitalise on the NEC Group's system developers to build a rapid and flexible product development system. Additionally, with further advancement of the IoT, the security of corporate information infrastructure and products will become even more critical. DENSO and NEC will consider how best to collaborate to ensure greater security based on their expertise.

New development centre for autonomous driving



The BMW iNEXT is scheduled for release in 2021 – self-driving, electric and fully connected. To achieve this aim, the BMW Group is combining its development expertise in vehicle connectivity and automated driving at a new campus in Unterschleissheim, near Munich, Germany.

The BMW iNEXT is scheduled for release in 2021 – self-driving, electric and fully connected. A whole range of highly-automated models from all BMW Group brands are set to follow. To achieve this aim, the company is combining its development expertise in vehicle connectivity and automated driving at a new campus in Unterschleissheim near Munich.

Upon final completion, more than 2,000 employees will work on the next steps towards fully-automated driving, from software development to road testing, at the new location.

Volvo Cars adds Skype for Business to its 90 Series cars

Volvo Cars has announced that it will introduce Skype for Business, Microsoft's leading collaborative productivity app, to its new 90 Series cars. Volvo Cars is the first carmaker to launch such an in-car productivity tool.



“We’ve all been there. Sitting in the car trying to join a conference call. You either fumble with or drop your phone while trying to connect or you forget the long pin code to join. It’s not the best way to start an important call in the car. On top of all that your attention is not where it should be – on the road. With the addition of Skype for Business all that goes away,” said Anders Tylman-Mikiewicz Vice President Consumer Connectivity Services at Volvo Car Group.

Skype for Business is actively used by millions of people at work around the globe. In Volvo’s 90 Series cars people will be able to view their upcoming meetings and participant details, and join meetings with one click via the large centre display.

Volvo’s partnership with Microsoft also includes the exploration of using Cortana, Microsoft’s intelligent personal assistant, with the express intention of adding seamless voice recognition and contextual insights to support peoples’ daily lives by actively predicting their needs.

Tata AutoComp completes acquisition of TitanX, supplier of engine cooling

In line with its strategy of expanding globally and fortifying presence in the cooling and emission control segments, Tata AutoComp Systems, announced completion of the acquisition of TitanX – a leading global engine cooling supplier. Speaking on the occasion, Praveen Kadle, Chairman, Tata AutoComp Systems said, “With the successful acquisition of TitanX, we look forward to leverage TitanX’s global presence that fits well into our well-defined global growth strategy. The acquisition further reiterates our commitment in delivering solutions that will cater to the changing needs of global customers. Offering improved products and services are our strength and we are confident that this acquisition will further help provide world-class products and services for the automotive industry.



Ford drives in new autonomous development vehicle

Ford Motor Company introduced its next-generation Fusion Hybrid autonomous development vehicle, just in time for CES and the North American International Auto Show in January.

The new vehicle uses the current Ford autonomous vehicle platform, but ups the processing power with new computer hardware. Electrical controls are closer to production-ready, and adjustments to the sensor technology, including placement, allow the car to better see what’s around it.

New LiDAR sensors have a sleeker design and more targeted field of vision, which enables the car to now use just two sensors rather than four, while still getting just as much data.

The new vehicle also evolves the two main elements to creating an autonomous vehicle – the autonomous vehicle platform, which is an upgraded version of the car itself, and the virtual driver system.

The next-gen Fusion Hybrid autonomous development vehicle follows the company’s current generation, which hit the streets three years ago.

Hyundai partners with ITI in Kolkata

Hyundai Motor India Ltd. (HMIL) has inaugurated of its ITI collaboration program in West Bengal, in partnership with the Ramakrishna Mission ITI at Narendrapur, Kolkata.



As a part of Hyundai’s contribution to the Government of India’s Skill India initiative, HMIL had recently announced partnership with 25 ITI’s in India. The collaboration with ITI’s is designed to ensure community development through enhancement of education standards in line with latest technologies.

HMIL as a part of this alliance will offer students specially designed curriculum, training material, car, engine, gear box and other learning aids. The course content developed by HMIL will form a part of syllabus of institutes 2nd year students enrolled in the Motor Mechanic Vehicle (MMV) program. It will offer exposure to modern automobile technologies thereby increasing employment opportunities and prospects.

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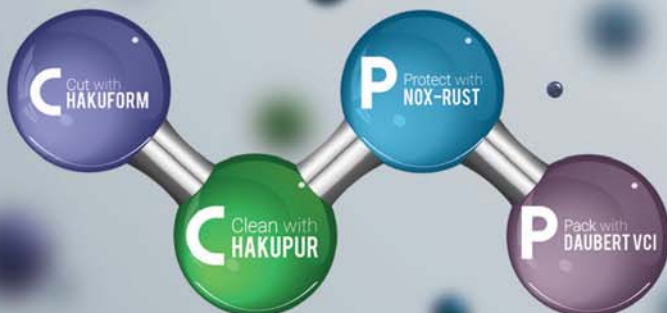
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Inauguration of 2013 edition of Plastivision India



The final road show promoting Plastivision India 2017

Plastivision 2017: a one stop shop for plastics industry

Come January 19, 2017, and the show will set new benchmarks

By Swati Deshpande

Plastivision India 2017 is getting better and bigger compared to its previous edition. More than 1,500 exhibitors are expected to participate in Plastivision India 2017 whereas the organisers are expecting close to 2 Lakh visitors. The business generation is projected to be more than Rs. 2,000 crore. No wonder that it has emerged as one of the top five trade fairs for the plastics industry in the world.

The exhibition has pavilions where similar kind of businesses will be located together such as Automation & Robotics, Plastics in Infrastructure, Green Pavilion, etc. However, the unique pavilions that can be seen are Consultant Clinic and Job & Career Fair. The Consultant Clinic will offer an enthusiast complete guidance — from conceptualisation up to beginning of production — of setting up a plastic related enterprise. On the other hand, Job & Career Fair is a perfect match making place that is aimed at bridging the human talent gap.

Recently, All India Plastics Manufacturers Association (AIPMA) concluded its series of roadshows for Plastivision India 2017 in Mumbai recently. Nikhil Meswani, Executive Director, Reliance Industries Ltd, Prof (Dr) S K Nayak, Director, CIPET and M. P. Taparia, Managing Director, Supreme Industries graced this occasion. Speaking on the current market condition, Meswani said, “The year 2017 will be full of surprises for everyone. Demonetisa-


“Though uncertainties are expected to hover around the industry for few months, the year will bring prosperity as the consumption of plastics is expected to increase.”

Nikhil Meswani,
Executive Director,
Reliance Industries

Plastivision India 2017	
Dates:	January 19-23, 2017
Venue:	Bombay Exhibition Centre, Mumbai
Expected exhibitors:	1500+
Expected visitors:	approx. 2Lakh
Expected business generation:	Rs. 2000 crore
Participating countries:	25

tion has brought in uncertainties in the market.” Further, he is optimistic about the future of the plastics and allied industries with the GST to be implemented soon. He added that “Though uncertainties are expected to hover around the industry for few months, the year will bring prosperity as the consumption of plastics is expected to increase.”

Haren Sanghavi, President, AIPMA welcomed the attendees while Raju Desai, Chairman, National Advisory Board, Plastivision India 2017 briefed the audience on previous editions on Plastivision India. Kailash B. Murarka, Chairman, Plastivision India 2017 detailed on this edition of the event and the innovations brought in the conduct of the show.

More than 2000 who’s who of the industry attended the last Roadshow of the season. This Grand Finale was preceded by nearly 60 roadshows that took place across the country. 

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Machining the future trends

With the new hall constructed at the venue, IMTEX 2017 will be bigger in size than its previous editions.

Eighteenth edition of IMTEX exhibition, 'IMTEX 2017' is slated to be held at Bangalore International Exhibition Centre (BIEC). The international exhibition that gives a platform to the machine tool industry for displaying its state-of-the-art products and technology will run from January 26, to February 1, 2017. The concurrent exhibition, Tooltech 2017, is in its 19th edition and will display a plethora of accessories, metrology and CAD/CAM cutting tools, tooling systems, etc.

IMTEX 2017 will be bigger than its previous editions and will be held in six halls covering a gross area of 66,000 sq mtr. Considering the higher demand for space during IMTEX and Tooltech, BIEC has constructed a new hall of 17,500 sq mtr, which will be inaugurated on the opening day of the exhibition.

Manufacturers, suppliers, researchers and trade associations from 22 countries (Australia, Austria, Belgium, Brazil,

China, Czech Republic, France, Germany, India, Israel, Italy, Japan, Korea, Serbia, Singapore, Spain, Switzerland, Taiwan, Thailand, The Netherlands, United Kingdom and United States) will participate in the seven days exhibition.

The group participation will be from China, Czech Republic, Germany, Italy, Spain, Taiwan and United States. Overall, over 1000 exhibitors are participating in the exhibition.

Throwing light on IMTEX 2017, IMT-MA President P.G. Jadeja said, "Visiting one IMTEX is equal to visiting many countries for sourcing new technologies. We are optimistic that IMTEX 2017 will not only meet but also exceed customer expectations."

He further added, "India has initiated several policies to benefit manufacturing sector. Policy initiatives such as 100 percent FDI in key sectors such as defence, civil aviation, pharmaceuticals, announcement of National Capital Goods Policy, setting up of National Board of Skill Development Certification, etc. have renewed the thrust on manufac-

Facts & figures

Dates: January 26, 2017 to February 1, 2017

Gross area: 66,000 sq mtr

Country participation:

22 countries

Total number of exhibitors:

1,000

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turing. IMTMA firmly believes that IMTEX 2017 will help immensely in bridging the technology gaps, creating new capacities and accelerating technology acquisitions and improving skill levels. By harnessing business relationships machine tool industry can look forward to an era of growth.”

Supporting Jadeja's views, Director General and CEO, IMTMA, V. Anbu added, “Right from the first ever show in 1969 IMTEX has been a driving force for manufacturing growth in India. This will continue to be so with IMTEX 2017 which will have on display the latest metal cutting technologies prevalent in today's manufacturing.” He further added, “With the addition of a new hall which will be inaugurated during the show, exhibition organizers can avail of additional space in future to organise exhibitions. IMTMA is expecting a footfall from over 1,00,000 visitors at this edition of IMTEX.”

For sectors such as auto components, automobiles, aerospace, defence, railways, power, capital goods, consumer goods, space technologies and various others the show will open windows to witness and learn future technologies in metal cutting machine tools. With Make in India initiative gathering pace manufacturing has come into spotlight once again and IMTEX 2017 will serve as a catalyst to push this further. As has been the case over the years IMTEX 2017 will feature various activities for the benefit of the manufacturing industry:

International Seminar on Machining Technologies: To highlight the evolving trends in metal cutting industry, globally, in conjunction with IMTEX, IMTMA has scheduled an ‘International Seminar on Machining Technologies’ on January 25, 2017. The objective of this seminar is to present the latest technological developments in machining which users can adopt in their production process successfully. Through this seminar IMTMA intends to cover the more pertinent aspects of metal cutting processes, its requirement in the manufac-



“Policy initiatives such as 100 percent FDI in key sectors such as defence, civil aviation, pharmaceuticals, announcement of National Capital Goods Policy, setting up of National Board of Skill Development Certification, etc. have renewed the thrust on manufacturing. IMTMA firmly believes

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IMTMA President **P.G. Jadeja**



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Director General and CEO, IMTMA,
V. Anbu

turing industry and the technology gaps that can be bridged. International experts will share their experiences and latest developments. The one day seminar will cover key technology areas related to machine tools and machining, workholding, tools and tooling, metrology & controls, CAD/CAM and grinding & finishing processes.


Reverse Buyer Seller Meet: IMTMA and EEPC India will jointly organise this meet during IMTEX 2017. Dealers, distributors, potential buyers and few key media persons from many countries will be invited to the exhibition. This will be an opportunity to connect with importers of machine tools.

Expo Platform: A networking platform and management system for events that allows visitors and exhibitors to register, gain access to floor plans and product catalogues, manage their schedules, market successfully, create analytics, secure full control of data, establish contact through mobile apps, etc. It also allows visitors to generate their own badge.

i2 Academia Pavilion: The i2 Academia Pavilion at IMTEX 2017 will have participation from around 30 institutions including IITs from all over India. These institutions will get an opportunity to present their innovative research projects on metal working industry through display of posters and take part in award winning competitions.

The i2 Academia Pavilion will help academia participants to update themselves with the current scenario in the machine tool industry, particularly the latest technologies in machine tool building. Industry on the other hand gets an opportunity to network with the academia and pick their products/technology for commercial usage.

Connect: Students can avail this opportunity to gather more knowledge of the opportunities by interacting with industry experts. About 600 students from both mechanical and electrical engineering streams participated in Job Connect during IMTEX 2015.

Jagruti: A programme to familiarise engineering students with the machine tool industry and the technological happenings in this industry segment. Jagruti held during IMTEX 2015 featured 24 participants. 

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AkzoNobel buys BASF industrial coatings biz

BASF has completed the sale of its global industrial coatings businesses to AkzoNobel. The transaction includes technologies, patents and trademarks, as well as the transfer of dedicated production sites in Deeside, United Kingdom, and Vanderbijlpark, South Africa.

As a result of this transaction, AkzoNobel will now operate the global coil, furniture foil and panel coatings, wind coatings and general industry businesses acquired from BASF, as well as the commercial transport business in EMEA. These businesses generated sales of approximately €300 million in



2015. The remaining portfolio of the Coatings division consisting of the automotive OEM and automotive refinish coatings businesses, as well as the decorative paints business with the leading brand Suvinil® in Brazil, had sales of approximately €2.9 billion in 2015. The Coatings business has been further strengthened with the acquisition of Chemetall, a leading global supplier of applied surface treatments, which was closed this week.

Schaeffler to sell cylinder head manufacturing unit to Weber Group



Schaeffler is to sell its Magdeburg-based subsidiary Schaeffler Motorenelemente AG & Co. AG to the family-run Weber Group. The contract for the sale was signed on December 21, 2016. Schaeffler Motorenelemente AG & Co. KG, an indirectly held 100 percent subsidiary of Schaeffler AG, specialises in the mechanical processing of cylinder heads and other complex housings for the automotive industry, which are not an integral part of the Schaeffler Group's core business. During the 2015 financial year, the company generated sales of around 42 million euros. All of the company's 185 employees will be retained by the new owner. A long-term agreement for the company to supply components to the Schaeffler Group was also concluded as part of the transaction. Klaus Rosenfeld, CEO of Schaeffler AG said, "We have decided as part of our 'Mobility for tomorrow' strategy to concentrate on selected core competencies and future fields of development. The sale of Schaeffler Motorenelemente AG & Co. KG is a further step in this direction. It will allow us to free up resources that we can then invest in future fields of development that are important for us." The closing of the transaction is expected for the 1st quarter of 2017. It has been agreed that the details of the transaction will be kept secret.

Sika acquires Rmax Operating, LLC in the United States

Sika has agreed to acquire Rmax Operating, LLC, a US-based market leader in the production of polyiso insulation products for complete Building Envelope solutions (roofing and wall systems). The acquisition brings technology and know-how that will accelerate Sika's growth and drive innovation in the North American market via the strong synergies between the companies. Rmax generated sales in excess of US\$ 75 million in 2016. The transaction is subject to clearance by anti-trust authorities. With headquarters in Dallas, Texas, Rmax has been a market leader in polyisocyanurate insulation technology for over 37 years. At its three strategic production locations (Dallas, Texas; Greer, South Carolina; and Fernley, Nevada) Rmax produces insulation products and accessories that are highly regarded and widely specified for both commercial and residential wall and roof applications throughout the US.

Armacell acquires Oklahoma-based insulation business of Nomaco

Armacell, a global leader in flexible foam for the equipment insulation market, has acquired the Insulation Business of Nomaco. The acquisition of the Yukon, Oklahoma-based manufacturing facility significantly strengthens Armacell's domestic production capacity and regional distribution network. The addition of Nomaco's insulation business complements Armacell's current PE insulation foam product portfolio and increases the customer service levels across North America. As part of the transaction key management functions will join Armacell to ensure business continuity. "The expansion of our manufacturing footprint into Oklahoma increases our distribution power and service levels in the Midwest and the West. Our customers will benefit both from a broader product portfolio, as well as, from stronger technical support", illustrates Patrick Mathieu, President and CEO of Armacell International S.A.

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CAM GRINDING

The many decades of experience in cam grinding are apparent in the non-cylindrical grinding machines of the JUCAM series: The control system with a learning function, the C-axis with a direct drive and many special solutions give camshafts, cam pieces and individual cams of all sizes and shapes a perfect finish.



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Godrej & Boyce readies two batches of women forklift drivers

Godrej Material Handling business of Godrej & Boyce successfully concluded the training of its two batches of women forklift drivers. In 2011, the company under its CSR strategy called 'Good and Green' had launched Godrej Disha to ensure employability for one million youth that will enhance their earning potential. Godrej Disha is the flagship skill training program for the underserved youth. The Godrej Disha Forklift Driver course for ladies started as a gender diversity initiative. The 14 day training for the first batch, which started on December 1, concluded with all the women participants being awarded with a training certificate. Another batch with only women started on December 15.

Women forklift drivers seem to be non-existent in India and this may be one of the very first times such training has been conducted by any company. The training will open new career options for these women. After the training program these women are capable in Material Handling concepts, fea-



tures of the forklift, its performance characteristics, technical specification etc., main parts of the forklift, safety features in the forklift, pre-operational checks, dos and don'ts while operating the forklift – use of the check sheet, practical operation of the forklift like manoeuvring the forklift and stacking / de-stacking loads on racks and parking procedures. In 2011, Godrej formally adopted an overarching CSR strategy called 'Good and Green' with a vision to make social and environment investments to build a greener and inclusive India by adopting a shared value approach. Under Good & Green, Godrej Group works in three areas of Employability, Greener India and Product innovation.

Production technology course by Tata Motors & DPITI

Tata Motors in association with Deshpande Private Industrial Training Center (DPITI) of Vocational Training, has initiated a one-year certificate programme in 'Production Technology', to enhance employability skills of the youth. A learn and earn program, Tata Motors will bear all expenses related to training of the selected candidates, during the duration of their training.



Speaking on the occasion, K Mohan Kumar, Plant Head – Dharwad, Tata Motors, said, "Skill Development is an important pillar in our journey of transformation. Initiatives of 'World Class Quality' and 'Do It First Time Right' will be strengthened through this certification program which will not only help these students in enhancing their skills, but will also be help in meeting industry needs, which will be beyond the classroom training."

As per the MOU, DIVT will provide technical inputs over a period of 12 months and hand hold the youth to be industry ready. Sharing his thoughts on the association, Mr. Prakash Prabhu, Administrator, DPITI, said, "Our Institute has been focusing on providing quality education through its various ITI program affiliated to NCVT and SCVT. This certification program will help the students across Karnataka in building Industry specific skills through its Classroom and On Job Training".

Mahindra takes 3D printing to schools

The Mahindra Group has now designed and implemented a pilot project to bring the benefits of 3D printing to semi-urban and rural India. The project envisages placing 3D printers in a semi-urban / rural setting to enable learning, innovation and potential creation of additional employment opportunities. The Group has thus, presented the B.M. Pawar School in Chakan with 3D printers and has also developed a comprehensive programme to enable students and teachers to realise the true potential of this technology.

"We see 3D printing as the future of technology and a potent tool to help bridge the tech divide between urban and rural India. Through this project, we seek to inspire young minds to think creatively and open up a whole new world of possibilities for themselves and their community. While this is still a proof of concept, we hope it will ultimately reach more schools and offer potential employment opportunities in design and prototyping," said Ulhas Yargop, Group President (IT Sector) & Group Chief Technology Officer, Mahindra Group.



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Internal grinding technology

Internal grinding machines to offer solutions for bore, face and cone grinding of gears and bearings

The company started manufacturing internal grinding machines in 1983 with technical knowhow from Voumard in Switzerland. Today, it has its own design and development team for customising Internal Grinding machines to offer solutions to its customers in the area of bore, face and cone grinding of gears and bearings. The machines are built with finesse skill and quality control to offer process capabilities on the dimensional and geometrical tolerances. PMT offers a complete range of work holding fixtures made to precise accuracies to offer repeatability and consistency of the work clamp-

The machines are built with finesse skill and quality control to offer process capabilities on the dimensional and geometrical tolerances. PMT offers a complete range of work holding fixtures made to precise accuracies to offer repeatability and consistency of the work clamping.



ing. Depending on the work piece Mechanical clamping, diaphragm clamping, shoe centre less magnetic clamping or roller centre less clamping solutions can be selected. Auto loading systems are available to interface with the machines. The machines can be interfaced with multiple grinding spindles to grind multiple bore including OD grinding spindle to grind outer diameters. The machines can be configured with multiple axis options and have choice of machines up to six axis. Special machines for grinding small bores with CBN wheels and diamond rotatory dressers can be offered with emulsion or oil as a cooling media. Steady rest and gauging system can also be interfaced with the machine.

Tools with advanced features



Modern advancements like data exchange and manufacturing automation offer new possibilities for profitability, efficiency and optimisation, particularly for small and medium businesses. With this regard, Sandvik Coromant is showcasing full selection of tooling solutions at IMTEX 2017. Discover how Silent Tools adapters for the CoroTurn SL cutting head create a stable tooling solution for machining component features like the valve seat pocket. The RAL90 milling

cutter, a powerful concept dedicated for pocketing of aerospace frame components in aluminium is also on the display at the show.

Moreover, the company is displaying trouble-free and cost-efficient milling solutions such as CoroMill 390 with size 07 inserts designed for components with limited cutting-depth requirements and CoroMill 745, the company's new double-sided multi-edge tool with positive cutting action. Visitors can learn about insert grade GC1130 with Zertivo technology or CoroMill 415, designed for high feed face milling and pocketing, with ramping capacity.

Additionally, visitors can also take a closer look at CoroTurn 300 and CoroTurn TR to see how these systems deliver long tool life and high surface quality. On the other hand CBN insert grades for hard part turning applications: CB7105, for continuous cut smaller chip loads at high speed and CB7115, for continuous to light interrupted cut or larger chip loads at medium to high speed.

Users will be able to meet demands for high quality, precision and maximum productivity with Solid Round Tools developed for all application types within solid carbide drilling, milling, high speed steel tapping, reaming and threading. See the CoroMill Plura end mill and straight flute tap CoroTap 100 for cast iron machining.



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Contributing to Make in India


Mihir Baxi, President-Global Sales, Jyoti CNC Automation Ltd, Rajkot speaks to The Machinist about the Company's expectations to expand its footprint.

Q Tell us about your key product displays at IMTEX 2017

We are participating at IMTEX 2017 with 26 exhibits, which have been clustered into various solutions such as Entry Level Turning, Productivity, Die-mould & Technology consisting of series of Turning Centers, Vertical Machining Centers, Horizontal Machining Centers, Automation Machines, 5-Axis Machining Centers. Additionally, we are launching five new machines at IMTEX.

Q What are your expectations from this edition of IMTEX?

IMTEX is the biggest platform for Indian and international machine tool market to showcase innovation, technology and

productive solution which brings buyers and sellers under one roof. Since India is foreseeing exponential growth in the near future and wherein we anticipate more MSME customers will come forward to invest in capital goods with respect to the policy liberalisation initiatives recently announced by our PM. Our contribution would align with Make in India concept and mould it up in realistic world. With respect to our focus on increasing our reach in exports market. We expect to attract customers from Middle East, ASEAN Countries and neighbouring countries like Bangladesh as well as Srilanka. We have invited our dealers across globe to witness the technological advancement by us and show them our new product launches. 



Since India is foreseeing exponential growth in the near future and wherein we anticipate more MSME customers will come forward to invest in capital goods with respect to the policy liberalization initiatives.

Expanding horizon

H K Song, Chairman, YG Cutting Tools Corporation Pvt. Ltd. speaks about the company's display at the show and its expansion plans


YG Cutting Tools Corporation Pvt. Ltd. is participating in IMTEX 2017 with its complete range of our products. Informing about the display, H K Song, Chairman of the company said, "New product launches are a part of YG-1 culture. We keep introducing new products with better performance for our customers." Some of the recent launches of the company include: End Mills, TitanNox-Power – For Titanium machining, which is useful for general engineering. Dream Drill High-Feed and Dream Drill Flat-bottom, the hole making tools are useful for various industries. On the other hand, Threading Tools like Synchro Tap and Prime Tap are especially made for automobile and aerospace industries respectively.

YG Cutting Tools Corporation Pvt. Ltd is aggressively expanding its business areas, and now creating footprints in the Indexable inserts sector as well. "It has started humbly with basic inserts, but this is just a start. We are targeting to equip as many as possible fields viz., mill-



"We are very positive about the Indian market and are expecting a major growth. We have set-up the first phase of the new plant in India. We plan to expand the facility in three phases."

ing, drilling, turning, threading as well as boring. Our range of inserts, viz., turning, milling and drilling, will be available from January 2017," Song noted.

Opining on the Indian market, Song asserted, "We are very positive about the Indian market and are expecting a major growth. We have set-up the first phase of the new plant in India. We plan to expand the facility in three phases." Further he also revealed the company's plans to set up R&D centre in India. "This will cater to our local customers." 

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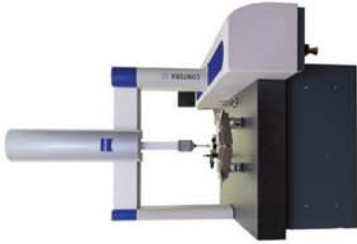
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Understanding the market

Zavenir Daubert participates in the exhibition with hope to have a good visitors' footfall .

Bangalore is a focus market for Zavenir Daubert's Cut Clean Protect & Pack proposition. Elaborating on the same, Balwant Bains, General Manager-Product Management & Marketing of the company mentioned, "IMTEX 2017 is going to help us in examining recent market trends and emerging opportunities in metal working. We plan to showcase our strength - Chemical Process Optimisation with superior economics. Additionally, it shall be a receptive environment to introduce the next generation technologies like HAKUFORM L Series NEAT OILS - fully synthetic base oils (Natural Gas-to-liquid) & premium performance additives HAKUFLUID WATER SOLUBLE CUTTING FLUIDS water based - 100 percent oil free with variable viscosity for range of applications that provide better lubrication and tool life than neat oils." The company is participating in the exhibition for the first time and has high hopes from the trade fair. "It is a reputed and important



"IMTEX 2017 shall give us an opportunity to meet our existing customers & prospects - especially sub-contractors and vendors of our existing OEM customers. Also, we look forward to meet potential cooperation partners and agents"

event where we expect high quality exhibitors and good visitor footfall. It will be good opportunity for us to discuss requests/requirements, exchange experiences, brain storm ideas and gather feedback with industry users and key decision makers," Bains noted. "IMTEX 2017 shall give us an opportunity to meet our existing customers & prospects - especially sub-contractors and vendors of our existing OEM customers. Also, we look forward to meet potential cooperation partners, agents, distributors & employees," he concluded 

Strengthening relationship with customers

Trade fairs act as a platform for networking and fostering new associations with clients and partners.

Ceratizit India Pvt Ltd is participating in IMTEX 2017 mainly with its three latest tools namely A491 cutter, 3x3Matrix, CTCK110 and CTCK120. Speaking on the participation in the exhibition, Chinmoy Jana, AGM -Technical Services, Ceratizit India Pvt. Ltd. said, "A wide variety of customers visit this exhibition therefore, it is a good platform for us to showcase our product innovations."

"Through this exercise, the company plans to generate new prospective customers and strengthen the relationship with existing customer and channel partners."


Elaborating further on the exhibition, Jana mentioned, "Trade fairs promote the conglomeration of various carbide users, machine builders and industrialists from automotive, aerospace, mechanical engineering backgrounds and thus of-

"Trade fairs promote the conglomeration of various carbide users, machine builders and industrialists from automotive, aerospace, mechanical engineering backgrounds and thus offering a good opportunity to showcase our niche products and in turn our manufacturing abilities."



Chinmoy Jana, AGM -Technical Services, Ceratizit India Pvt. Ltd

fering a good opportunity to showcase our niche products and in turn our manufacturing abilities."

Adding further he mentioned that one of the biggest advantages of IMTEX 2017 is that it acts as a platform to improve the networking with Indian as well as international customers. 

Blum New Products Launch in India at IMTEX - 2017



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Location : Hall 2B, Stall No. : B107C



Striving for innovation

Prabhakar J, Head Machine Tool Business, WIDMA, Kennametal India talks about the current market trends and company's plans.

By Swati Deshpande

Q How has been this calendar year for Widma (Machining Solution Group of Kennametal India)?

It has been a flat year for us since the capacity addition in capital equipment has not been significant in the manufacturing industry. However, this has been a very important year for us in terms of the developments under taken at Widma, both in terms of the technology upgrade as well as the foray into new markets

Q Which are the industry (customer) sectors that give you more business? Are you looking at new sectors?

Over 70 percent of our business comes from auto/auto component manufacturing. We have products and solutions offering for engine, chassis and transmission parts, where the accuracies of the finished part is very stringent, with high volume production. Apart from this, we have strong presence in tool manufacturing and tool regrinding sector. We are now penetrating into pump & valve as well as die & mould industry. With the growing demand for energy and rail transport sector, we are extending our market focus to cater this market. Also export to the South East Asian countries and China is another area of focus that we have now.

Q Today, the manufacturing industry demands solutions that address specific requirements in terms of design, machining environment, the material used and the final product. How do you address this?

The market demands have been continuously growing in terms of the machine accuracy, flexibility, performance and the reliability. At Widma, we always look ahead and bring out the technology that is at par with the global standards, bench marking with the best in the industry. Innovation is the key to success and we continuously strive to innovate for offering the best value for our customers. Apart from the machine performance in terms of the speeds and feeds of the machine, we also focus on the machine ergonomics, environmental practices, energy efficiency, aesthetics and operator friendliness. Kennametal gives utmost importance to safety. We use automated process wherever possible especially for the cleaning and part handling.




Optimising the machine drive components such as the electric and servo motor depending upon the application is an important factor for energy saving. In addition to the saving in the direct energy consumption, this will also avoid the excess heat generation and thereby the need to remove the same consuming further extra energy.

Q Customers are now focusing on energy-efficient and environmentally-friendly solutions. What kind of solution do you offer them?

Optimising the machine drive components such as the electric and servo motor depending upon the application is an important factor for energy saving. In addition to the saving in the direct energy consumption, this will also avoid the excess heat generation and thereby the need to remove the same consuming further extra energy. Usage of Direct drives for axis / spindles movements eliminating the losses, Variable Frequency drives for the motors for the machine as well as the accessories such as hydraulic power packs, smaller capacity pumps in conjunction with accumulators, etc. are some of the ways we adopt to make our products more energy efficient.

Q Tell us about latest offerings of Widma ?

We have different product lines in our business viz. Special Purpose Machines, Flexible Machine solutions, Tool grinding (Ecogrind), Special Vertical Turning Lathes (SVTL), Deep hole drilling and Fixturing. Flexibility has become top priority while selecting the machine tools. Recently, we introduced our flex series of multi spindle machines, which produces like SPM without compromising the flexibility. In Ecogrind, we offer latest Crystal model, which can do carbide and PCD grinding in one machine. Further, it is equipped with linear motor feed assembly, which is the latest trend in tool grinding globally. 

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The machine tool industry is the backbone of the manufacturing industry. To help the sector with comprehensive manufacturing solutions, it is critical to have compact, advanced and easy to configure machines. Therefore, the industry constantly demands for slim, light weight, highly flexible cables which not only meet the global standards but also overcome the challenges faced due to harsh environment conditions, continuous motion and high temperature.

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Thanks to the control system with learning function – with which virtually all disturbing variables are compensated – camshafts, cam pieces and individual cams are given a perfect finish. Decades of experience in grinding cams, in combination with the many special solutions and a wealth of expertise, have convinced worldwide.

Creating high quality products

Sunil Badave, Director, Erwin Junker Maschinenfabrik GmbH speaks about the the company's display at IMTEX 2017.

Tell us about your key product displays at IMTEX 2017

We are showcasing, the non-cylindrical grinding machines of the JUCAM series, which impress with precise grinding results in a single clamping set-up.

Thanks to the control system with learning function – with which virtually all disturbing variables are compensated – camshafts, cam pieces and individual cams are given a perfect finish.

Decades of experience in grinding cams, in combination with the many special solutions and a wealth of expertise, we have been serving the global market.

What are your expectations from this edition of IMTEX?


The JUNKER Group is expecting interest-

ing customers and projects during this edition of IMTEX.

As a complete supplier in the grinding sector, the JUNKER Group will offer turnkey solutions to suit the customers' needs, from individual machines to complete production lines.

How do you think this show will help your business?

We want to make Indian visitors understand JUNKER's high technology concepts. This will help them utilise their engineering skills in most efficient way to create high and consistent quality products for world market.


Overall, we would like to meet new and potential customers, with whom we can create long-term customers. 

Enhancing reach

B V Shyam, Managing Director, Blum-Novotest Measuring & Testing Technology Pvt Ltd reveals the company's expectations for IMTEX 2017

Blum-Novotest is participating in IMTEX 2017 with its range of measuring and testing technology. Along with its Roughness Measurement technology, the company is showcasing Laser Micro Compact NT for Tool measurement, breakage detection, run-out control and tool form check; High Speed Probe System TC 50 for work piece set up and measurement and ZX Speed – New Technology Touch probe for Tool Measurement and Breakage detection. Speaking about the response that the technologies are receiving in the country, B V Shyam, Managing Director, Blum-Novotest Measuring & Testing Technology Pvt Ltd says, "We are currently witnessing an increased awareness amongst our

customers in the integration of Production Metrology Systems on the machine. More and more customers are aware of high technology products from Blum and we are expecting a high level of business interaction with our Indian customers."

"Our presence in the Indian market is more than 10 years. This show will provide the required impetus in consolidating our business and to enhance our reach with the entire spectrum of customers – from machine tool OEMs to large, medium and SME sectors in the metal working industry. The show also provides us the platform to introduce our New Technology Products to the Industry to adapt newer technologies to their manufacturing processes," hopes Shyam. 



"This show will provide the required impetus in consolidating our business and to enhance our reach with the entire spectrum of customers – from machine tool OEMs to Large, Medium and SME sectors in the metal working industry."

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Showcasing best technologies

Sanjay Sangam, National Sales Manager, Renishaw Metrology Systems Ltd speaks about the company's showcase and expectations from IMTEX 2017.

Q What are your expectations from this edition of IMTEX?

Being an IMTEX year we always see a surge in demand as a result of displaying our full process control offer during the exhibition. There is no doubt that our metal additive manufacturing (3d printing) offer is already generating significant interest and the launch of the new RenAM500 system will further increase this. We are demonstrating a closed loop future production cell, combining a number of our products into Renishaw's high productivity machining cell. This will use the machining of an enclosure housing to show how measurement data and connectivity can enable highly automated accurate manufacturing with low overall labour costs to be realised.

I feel that this will increase overall interest in process control, and knowledge of the associated benefits it brings.



Q How do you think this show will help your business?

IMTEX gives us a great opportunity to showcase our entire offer, but I have a team of hard working and passionate individuals that are intent on educating the market into the benefits of process control and in cycle metrology 365 days of the year. The key thing with such a large exhibition is to make sure that we manage the opportunity pipeline that is created both quickly and effectively. Treat all leads as potential business equally, and show potential customers the respect they deserve by reacting to their requests within a short a timescale as is reasonably possible. This approach, combined with the ability to often be able to demonstrate actual efficiency and profitability gains means that we have a compelling offer, often with investment

payback times that make the proposed investment difficult not to justify.

Expanding horizons

IMTEX 2017 being 'the' event for the manufacturing industry and EMKAY Tools plans to make most of it.

EMKAY Tools is displaying a complete range of threading taps including application taps, which are developed for specific applications at IMTEX 2017. Speaking on it Ajay Kanoria, EMKAY Tools said, "We expect to interact with newer customers and especially foreign customers."

The company plans to enhance its customer base in the national as well as global market. It is one of key intentions to participate in IMTEX. Speaking on it, Kanoria further added, "As IMTEX is a global event, we intend to fully explore our avenues to boost exports." Additionally the company also plans to identify machinery and equipment for import to supplement assets.

Elaborating on the display, Kanoria mentioned, "We are showcasing our threading taps, which are made from state-of-the-art CNC machines at each stage for improved processes like centerless grinding, flute grinding, thread grinding, chamfer grinding and inspection. With more than 7500 varieties ex-stock and very good inventories, Emkay Tools (ET) is in a

"As IMTEX is a global event, we intend to fully explore our avenues to boost exports. We expect to interact with newer customers and especially foreign customers"

Ajay Kanoria, EMKAY Tools



position to ensure precise delivery schedule any time to cater to the customer requirements,"

The company offers taps for various critical applications like crankshaft, connecting rod, tie rod, cylinder head, butterfly valve, knuckle, crown wheel, etc., in accordance with international standards.

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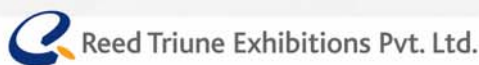


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Training: A strategic investment

Dr. O. P. Goel, Head - Corporate Social Responsibility & Bosch Vocational Training, Bosch Ltd talks to The Machinist about the importance of training and various initiatives that the company takes in this regard.

By Swati Deshpande



Training opens employees to a new world of understanding by not only providing or reinforcing knowledge, but also instilling a sense of confidence to perform better and in the right way. It eliminates assumptions as well as motivates employees when they are exposed to new ideas and methodologies.

Dr. OP Goel, Head - Corporate Social Responsibility & Bosch Vocational Training, Bosch Limited

Q According to you, what role does a training play in the success of the employee and the organisation?

I see training as a strategic investment for the future as it plays a vital role in ensuring employee fitness and growth for continual organisational success. Technology is changing at a rapid pace and all employees need to be trained regularly to keep pace. Training opens employees to a new world of understanding by not only providing or reinforcing knowledge, but also instilling a sense of confidence to perform better and in the right way. It eliminates assumptions as well as motivates employees when they are exposed to new ideas and methodologies. Last but not least, training is an art, a skill which can be acquired, and therefore training is a science too!

Q Lack of skilled labour is one of the challenges for Indian manufacturing companies. What steps does your organisation take to ensure that labour is skilled and knowledgeable to do the given job?

To tackle the challenge of skilled labour in the manufacturing sector in which Bosch Limited operates, all associates are adequately trained by subject matter experts. Training focuses

on technical and social skills along with company-specific skills. On the job, they are being updated with the latest changes and the important aspects to be taken care while working. The company brings out regular publications in print and web (intranet) to update employees with the latest data. Bosch also organises colloquiums to update the employees with the latest product launches and innovations.

Q What steps do you take to enhance employees' skills or to keep them updated with the latest trends/technologies?

Re-skilling is done for employees at all levels whenever a new process or product is introduced. Expert guides run them through the latest technological trends to make them suitable for the changed environment.

Q How do you perceive Government of India's 'Skill Development' program and how do you think it will help the manufacturing industry?

The Government of India's 'Skill Development' program is the right approach and need of the hour. It focuses on the essential

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elements to take manufacturing in India to a few notches above. The manufacturing industry will be highly benefitted to meet the international standards with better quality outputs and meeting deadlines.

Tell us about various training and development programs that you organise.

Bosch provides five types of training and skill development programs:

1. Bosch's Response to India's Development and Growth through Employability Enhancement or BRIDGE is a short-term, job-oriented training exclusively for school dropout youth in the NEET (Not in Education, Employment or Training) category. So far, 4,900 underprivileged youth have been trained and placed through this program as part of the CSR agenda of Bosch Limited.
2. Long-term, career oriented Trade Apprenticeship Training with 1 and 2 years duration in 9 technical trades prepare incoming Apprentices (ITI passed candidates) to skill themselves in a particular trade and establish a career within Bosch or

The Government of India's 'Skill Development' program is the right approach and need of the hour. It focuses on the essential elements to take manufacturing in India to a few notches above. The manufacturing industry will be highly benefitted to meet the international standards with better quality outputs and meeting deadlines.

degree is also being considered. 

outside. This training takes place at the award-winning Bosch Vocational Center, which has produces 237 gold medal winning Apprentices so far at the National level, thereby winning the President of India's Best Establishment Award 52 times, 16 times in a row so far.

3. With the aim of producing high-quality Artisans for India, Bosch has opened the Artisan Training Center in Bangalore, which offers a 9 month training program since December 2015. A batch of 17 trainees have already completed the training, which is based on the German concepts of Gründlichkeit (thoroughness) and Leidenschaft (passion). Two trainers have been trained by a German expert in skills on carpentry, which is the current focus of the training.

4. Bosch Associates are trained with a 3 year Competence Development training program, which includes technical and social skills along with company-specific skills.

5. Bosch Front Line Managers are trained on latest managerial knowhow with workshops and seminars conducted by experts from time to time. Assistance to complete management

Sandvik Coromant becomes DMG MORI's Premium partner



Cutting tool and tooling systems specialist Sandvik Coromant has signed an agreement to become a Premium Partner of leading machine tool manufacturer, DMG MORI. The deal makes Sandvik Coromant the only tooling manufacturer to be named as a DMG MORI Premium Partner, and will serve to further strengthen the relationship between the companies on a global scale. Machine shops around the world will now benefit from the combined knowledge and experience of two market leaders.


As a DMG MORI Premium Partner, Sandvik Coromant will work together with the machine tool builder on initiatives

such as open house events, trade show appearances, technical seminars, website collaboration and the DMG MORI Journal. Specifically, the agreement will give users of DMG MORI machines access to turning, parting and grooving, threading, milling, drilling, boring and reaming tools from Sandvik Coromant, as well as tooling systems and the company's extensive range of knowledge, industry solutions and services.

"This agreement confirms our position as one of our industry's true premium and forward-looking companies," says Klas Forsström, Global President of Sandvik Coromant. "As we join forces with a leading machine tool builder, for exam-

Sandvik Coromant will equip DMG MORI machines right from the start of each project with a wide range of products, services and know-how.

ple on turnkey projects, we take an active role in advancing technology for the industry."

Sandvik Coromant will equip DMG MORI machines right from the start of each project with a wide range of products, services and know-how. For instance, a customised start-up tool kit and service will be supplied with each NLX series universal lathe and NT turn-mill centre. 

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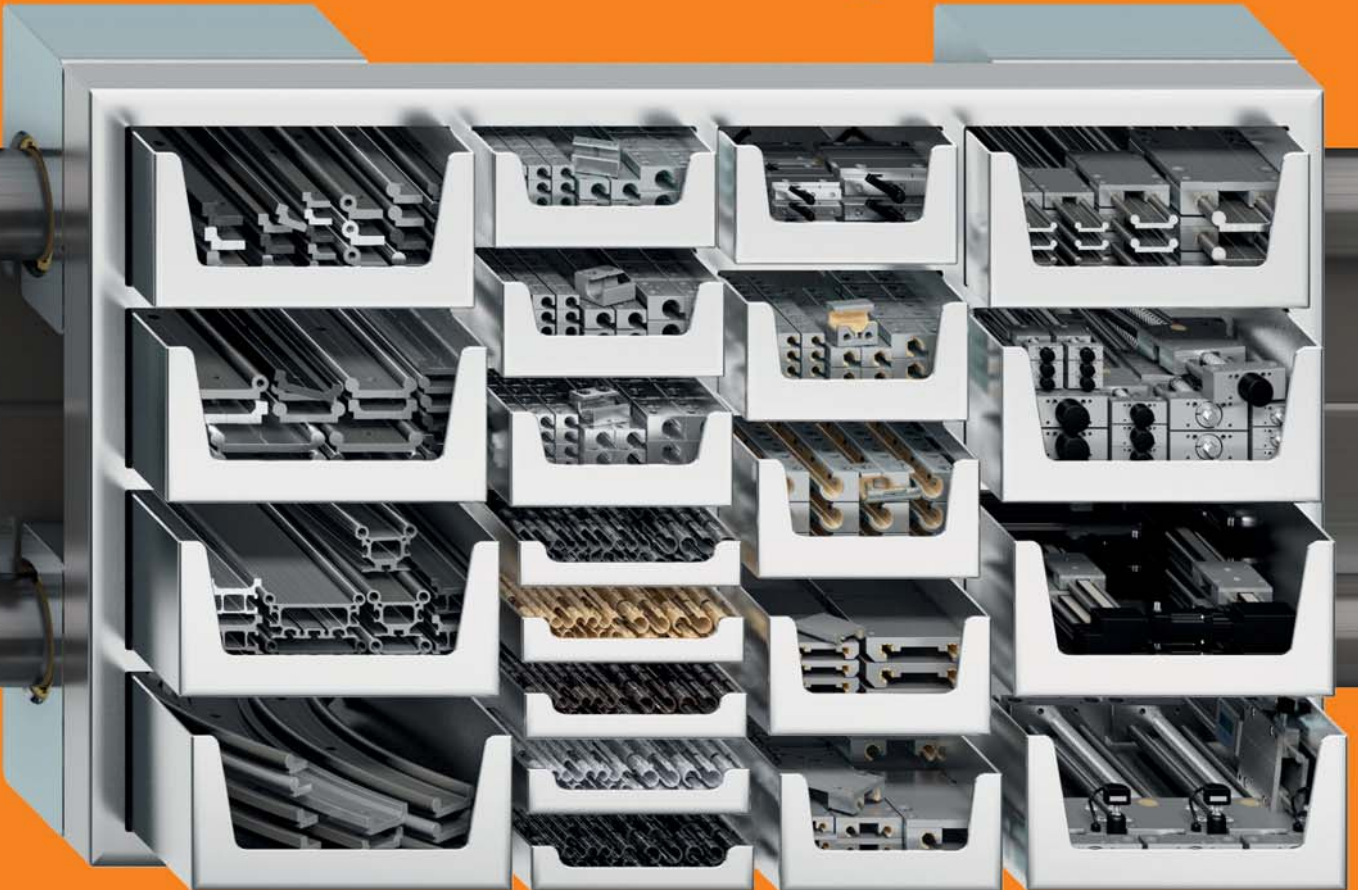
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Shoulder milling system

A high quality milling system with multiple advantages

The new MaxiMill 491 shoulder milling system from cutting solutions by CERATIZIT features eight usable cutting edges per insert and shows excellent performance, quality and price-performance ratio. Thanks to the latest grinding technology, the precision inserts can be produced with tolerance H. This enhances the service life of the cutting edge, allowing top-quality surfaces to be achieved on your component. The various advantages that user gets are exact

The new MaxiMill 491 shoulder milling system from cutting solutions by CERATIZIT features eight usable cutting edges per insert and shows excellent performance, quality and price-performance ratio. Thanks to the latest grinding technology, the precision inserts can be produced with tolerance H. This enhances the service life of the cutting edge, allowing top-quality surfaces to be achieved on your component.



90° profile with eight usable cutting edges per insert, ground precision insert with tolerance H and smooth cut with low power consumption. Additionally, the tool offers universal application including for face milling, shoulder milling, peripheral milling, slot milling, trochoidal slot milling, etc. Other benefits of the system include optimum chip evacuation and excellent economic efficiency regarding the price per cutting edge for 90° shoulder milling. Furthermore, it enables exact 90° profile and perfect axial run-out precision and concentricity. The MaxiMill 491 shoulder milling system features very good suitability for low-power machines and also allows for quick and easy loading of the milling cutter possible.

5-axis machining centre

Amidst the display of various new latest products and solutions, Jyoti CNC Automation Ltd's 5-axis machining centre aims at attracting new customers in various sectors of manufacturing.



The MX 12MT is a multifunction 5-axis machining centre. It is a high flexible machine that enables milling and turning operation in 5-Axis, in one setup part clamping, from roughing to finishing and its weight carrying capacity is up to 4,000kg. MX 12MT features a structure with mobile column, head equipped with integrated torque motor and swivels 45° tilting from -45° to 180°. Moreover, it has powerful spindle with high torque allowing high metal removal rates. Electro-Spindle has two working position — vertical and horizontal. B-Axis, parallel to y axis allows the evolution of the spindle around the horizontal axis. C-Axis rotary table with 250 rpm enables turning of large diameter components. Also, the ma-

chine is equipped with a twin pallet which features changing time of less than a minute and has large number of tool ATC, which are very useful in sector of machine tool industry as well as in defence for heavy jobs.

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Focus on technology

Andreas Zieger, Director, EMAG India Pvt. Ltd. speaks about his expectations and plans for IMTEX 2017.

Tell us about your key product displays at IMTEX 2017

Emag's approach is to use a smart modular machine concept to increase the flexibility for the customer to create every time the best production process. Such high flexible concept requires a smart machine and a modular automation to link machines, similar to the know LEGO block we know from our childhood. Our new modular machine concept separates the three major elements of a machine tool – a solid machine body, the tool or technology part and the automation. With our modular automation system – our EMAG Track Motion, this smart machine module can be linked and one can create simple lines of single machines or fully automated production lines. Currently, we have modules for turning, grinding, hob-

bing, chamfering, induction hardening and all possible to put in lines with the Track Motion system.

How do you look at Indian market?

The IMTEX exhibition is a lead exhibition for India. The reforms of the government pushing the sector and driving the motivation. Internationally the world is increasing the focus on India and that creates demand for capacity and for us very positive for high quality production and more technology.

How will this show help your business?

The political support and the IMTEX is a good base for us. With our technology, we are ready to discuss and support our customers in India, in a common discussion and selection of the best process.



Allied Machine launches new software

Allied Machine & Engineering has announced the launch of the Wohlhaupter Tool-Architect software. Tool-Architect is a configurator for modular system tools that allows customers to virtually build customized tools online using Wohlhaupter parts, now part of Allied's solutions for holemaking and finishing challenges. This program is an online based simulator that puts the Wohlhaupter inventory at the customer's fingertips. It provides a digital bank of every individual part that Wohlhaupter manufactures in either inch or metric measurements.

The user can search this bank through various criteria to find the parts they need to build the custom tool they are imagining. Once a part is selected, the customer follows a series of user-friendly prompts to select more parts and finish building their tool.

Throughout the process the user can monitor the size of their custom tool and ensure that what they build matches their real-life specifications. Once a complete piece is virtually assembled, the program will render the tool in either a 2D or 3D drawing for the customer to view on the computer screen.



Each project can be either saved for later adjustment, or sent through a shopping cart option to Wohlhaupter engineers for an estimated price. By designing custom tools with Tool-Architect, the customer saves the time it would normally take to send desired specifications to a company engineer for design. Rather than wait up to a week to find out if the desired tool can be created as designed, user can immediately check if their project needs adjustment in order to be manufactured. Tool-Architect streamlines the entire process of designing, quoting, manufacturing and shipping custom modular system tools.

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Highest holding forces in small spaces



SCHUNK, the competence leader for clamping technology and gripping systems extends its series of digitally controllable magnetic grippers with the compact SCHUNK EGM-M mono-pole gripper. The smallest SCHUNK gripper so far (26 mm x 98 mm) is still precise and powerful and is suitable for handling parts weighing up to 7 kg. Since its magnetic field reaches to the outer edge, no interfering contours will become a problem. The monopole grippers can be similarly used

as suction cups, can be positioned anywhere on the work-piece, and can be flexibly combined with larger units. As all the SCHUNK EGM magnetic grippers of this series, the monopole grippers are working with energy-efficient electro-permanent magnets. They do not require compressed air or vacuum. Only a short current pulse for 300 ms is required for actuation and deactivation. Since no energy supply is required in activated condition, the parts keep reliably gripped even in the case of an emergency stop or a sudden loss of power.

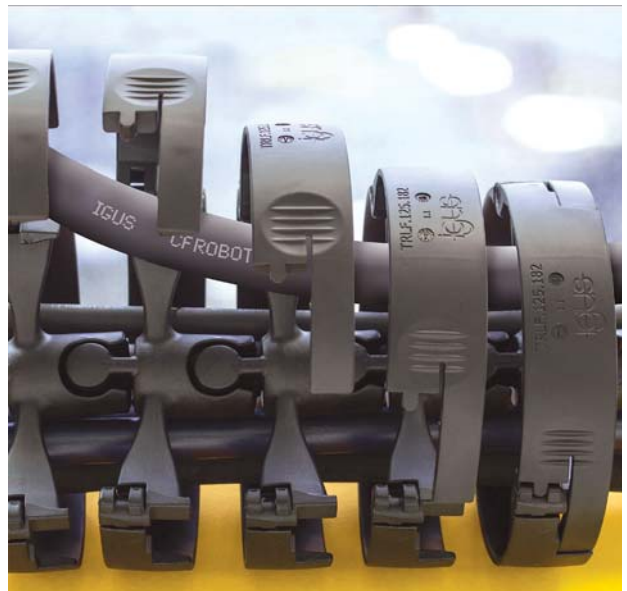
The SCHUNK EGM-B bi-pole gripper was designed for handling heavy and complex ferro-magnetic parts. On option, they are available with one, two, or four pole pairs in different arrangements. Pole extensions allow them to be adjusted to the individual handling objects. Different workpieces can be alternately handled by every SCHUNK magnetic gripper and five sides of the workpiece are freely accessible. Their low deadweight allows a high dynamic for challenging applications. Since the grippers meet protection class IP52, they are the ideal solution for flexible loading of machine tools. The magnets are available in pole sizes 30, 50, and 70 mm. They can be easily equipped with pole extensions via thread and pin holes.

Energy supply for robots in a new size

The motion plastics specialist igus has recently expanded its range of multi-axis energy chains and introduces a new size for the lightweight triflex TRLF. With 125 mm diameter, this is the largest in the range and can safely guide even more cables and hoses. The e-chain for torsional movements is impressive with fast assembly and disassembly, which significantly reduces shut-downs.

For this reason, it is extremely popular with robot manufacturers and users. Industrial robots have become indispensable in production today, as they save a lot of labour and time. In order to achieve this in the equipment on the robot itself, the motion plastics specialist igus has developed the multi-axis triflex TRLF energy chains, which are now available in a new size.

The 'L' in the product name stands for 'light' because material is saved through the open design of the individual links, but at the same time the cables and hoses are still guided safely. The 'F' stands for 'flip open' and describes the mechanism very well: "Each single chain link has three pivotable cross bars that can be opened up at any time by hand or with a screwdriver," explains Harald Nehring, authorised agent for e-chainsystems, igus. With the new size TRLF.125 with a nominal diameter of 125 mm, even large and/or stiff hoses or a large number of individual cables can be inserted quickly and easily.



Quickly assembled, safely guided: By dispensing with continuous support elements like steel cables or spring elements, the assembly and disassembly of triflex TRLF is as easy as the filling. The chain can be extended any time by snapping on new links using the ball-and-socket joints.



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Show your Business!

Industry specific exhibitions and trade shows can bring huge benefits to companies who know how to make the most of them. **T K Ramesh**, CEO, Micromatic Machine Tools Pvt Ltd lists the opportunities and helpful strategies.

Striking up business relations doesn't get any more direct than participation at industry focused exhibitions and shows. Sneak a peek into the strategies and budgets of the world's most successful companies and you're bound to find exhibitions figuring strongly. No other medium physically showcases the value proposition of a company the way exhibitions do.

Set a measurement framework

To make informed decisions, it is easy to see why measuring exhibition results is not only very important, but essential:

Investment justification: Measurements help in identifying the best shows that align with a company's business targets.

Improving activities: Measurements guide management before, during and after each exhibition to improve team performance.

Target-driven activities: What gets measured gets done. The team should be told what results management seeks – and



that they are measuring!

Identify

Measuring exhibitions is not as simple as counting the visiting cards that have been collected or the visitors registered in the stall. Several things need to be measured at the same time: the market, the exhibitor's activities (Product & service, Promo-

Measurement framework for probable targets

Strategic Goal	Suggested Metrics	Notes & Suggestions
1. Sales	No. of A, B, C leads, etc.	Use quality rating system
1.1 Generating sales leads	A-Ready to Buy, Large Order, Etc.	Use your sales conversion rate to measure value of leads
1.2 Direct sales	Orders taken/Revenue	At show, and in following weeks and months Lifetime value of new customers/dealers
1.3 Building contact database	No. of new contacts	Use also a quality rating
2. Customer Relationships	No. of customers met & recorded	You might pre-determine a desired activity (e.g. demo, presentation of new features cost benefits Etc.)
2.1 Building relationships with current customers	Number of updating sessions held	--do--
2.2 Educating customers	No. and value of sales to customers	Add on feature, new sales
2.3 Upselling/Cross-selling customers	No. and quality of letters got	
2.4 Generating customer testimonials	No. and value of lapsed customers met	Record Success & further Follow up
2.5 Regaining lapsed customers	Number & quality of feedback sessions	Survey form / Questionnaire
3. Market Research		Test a different offer each day?
3.1 Test marketing a new product or service	No. of impressions at, during & after show	
3.2 Test marketing campaign		
3.3 Researching brand awareness/perception		

tion, Price) and the competition on the same parameters. The exhibitor needs to identify their objective of participating in an exhibition and set targets against the objective. Then using the simple framework, develop the measures that are appropriate to these needs and targets.

Quantify

The best targets are quantified, as quantifiable targets drive action. When it comes to hazy qualitative targets, we should find possible ways to measure and build the metric into the target itself. Example: Instead of a target ‘to get media coverage’, say, “have five articles or product reviews printed in the show newsletter”.

Prioritise

The list of targets will have to be realistic and prioritized. So instead of just sales-lead targets, companies should capture all of the value they can get from their exhibition activities by listing (and pursuing) as many targets as could apply. Everyone on the stand must understand these targets, the priorities and the measurement system for the exhibition.

Evaluate

After the exhibition is complete, do have an in-stall debrief meeting. Yes, all are tired and want to close and leave the minute an exhibition is done, but a short de-briefing session with all stand staff is an important learning step while it’s




Sneak a peek into the strategies and budgets of the world’s most successful companies and you’re bound to find exhibitions figuring strongly.

fresh. Write a brief key points report.

Once the team gets back to the office, they can summarize the results so far, but keep the books open – new business can come in for weeks and months after an event. The show report should be updated to reflect that. The best exhibitors don’t just measure the number of leads generated, but also consider long-term value of new business.

Repeat

Consistent presence at the best shows goes a long way into building up a company’s market presence. Exhibition reports should be shared with key managers from sales, marketing and top management. When the next year’s show comes up, all will have a pretty complete idea of the value of their participation. The target is to improve the company’s exhibition marketing over time. The measuring and reporting should become second nature – an integral part of the company’s exhibition activities. Once that happens, the improvements will follow. 

Powder metallurgy taps

Along with the standard taps, Emkay Tools offers customised solutions for tapping needs. Know more about it.

Emkay Tools is presenting its wide range of taps at this edition of IMTEX. The company’s Fluteless Taps are designed for machine tapping in ductile materials.

Along with it the company is also displaying Spiral Fluted Taps, Taps for Cast Iron, and Nib Taps. In addition to their standard range of taps, the company also manufactures customised taps. Many new products such as Powder Metallurgy (PM) Taps, Through Coolant Taps, Carbide Taps, etc., are being introduced for the benefit of its customers.



Specialised taps

Powder metallurgy

Powder metallurgy high speed steel grade is engineered for high red hardness, high wear resistance, tool life, heat resistance, toughness, strength and performance under difficult cutting conditions with higher cutting speeds for increased productivity and tool life.

high speed steel grade is engineered for high red hardness, high wear resistance, tool life, heat resistance, toughness, strength and performance under difficult cutting conditions with higher cutting speeds for increased productivity and tool life.

The structure of carbide is very stable with consistent sub-micro grain particles and hard in nature with character, more resistant to abrasion, pressure, heat and material adhesion.

Importantly, the performance of taps with through coolant holes is higher than the same taps used with external lubrication. These taps allow better evacuation of the chip from the cutting area itself.

An holistic approach

Danobat Group plans to focus on wide variety of industries

Latest developments and technologies such as turning, grinding and milling-boring machines of Danobat and Soraluce brands will be showcased at India's one of biggest metal-cutting machine tool exhibition, IMTEX 2017.

During this edition of IMTEX Danobat Group will emphasise on its latest solutions for different industries such as;

- energy, including solutions for windmill parts such as the hub and nacelle, solutions for hydro, gas and steam parts like compressors and turbine cases, thermal energy solutions, and developments for oil & gas parts such as tubes, pipes, balls and valves among other components,
- solutions for capital goods and yellow goods components such as long reach boom arm, main booms, bucket, mining components, gearbox cases, machine tool components such as columns, etc.,
- solutions for the railway industry where Danobat Group offers stand alone machines and turnkey projects for the production and maintenance of the rolling stock. The



company will also showcase the case study of the project developed for Rail Coach Factory (RCF), Rae Bareli, a fully automatic axle, wheels and wheelset machining, assembly and inspection line, that turns out a new wheelset every 18 minutes,

- Also, solutions for the automotive industry, such as Danobat grinding and turning machines for crankshafts, transmission parts, shafts, etc.

Vertical hobbing machine

A modular machine that can be configured for a wide range of applications.



EMAG KOEPFER, a company with years of success in the gear cutting field, has demonstrated its capabilities in a multitude of projects for a broad clientele. Hobbing technology used in the new modular hobbing machine VL 4 H is the experts' answer to the demands of high-volume manufacturing.

This machine can be configured for a wide range of applications. The high-

performance drives used in the working spindle and the hob enable high speeds and torques, ensuring fast, precise and cost-optimised gear production. The machine allows the dry gear hobbing of workpieces up to 200 mm in diameter and module 4. The optional measuring system for part alignment can be expanded

by adding a sensor system for positioning. It is installed outside the machining area where it is protected from chips and dirt; it can also be extended and retracted as required. This not only allows adjustments to be made to the machining operations at any time, it also permits seamless documentation for production quality assurance.

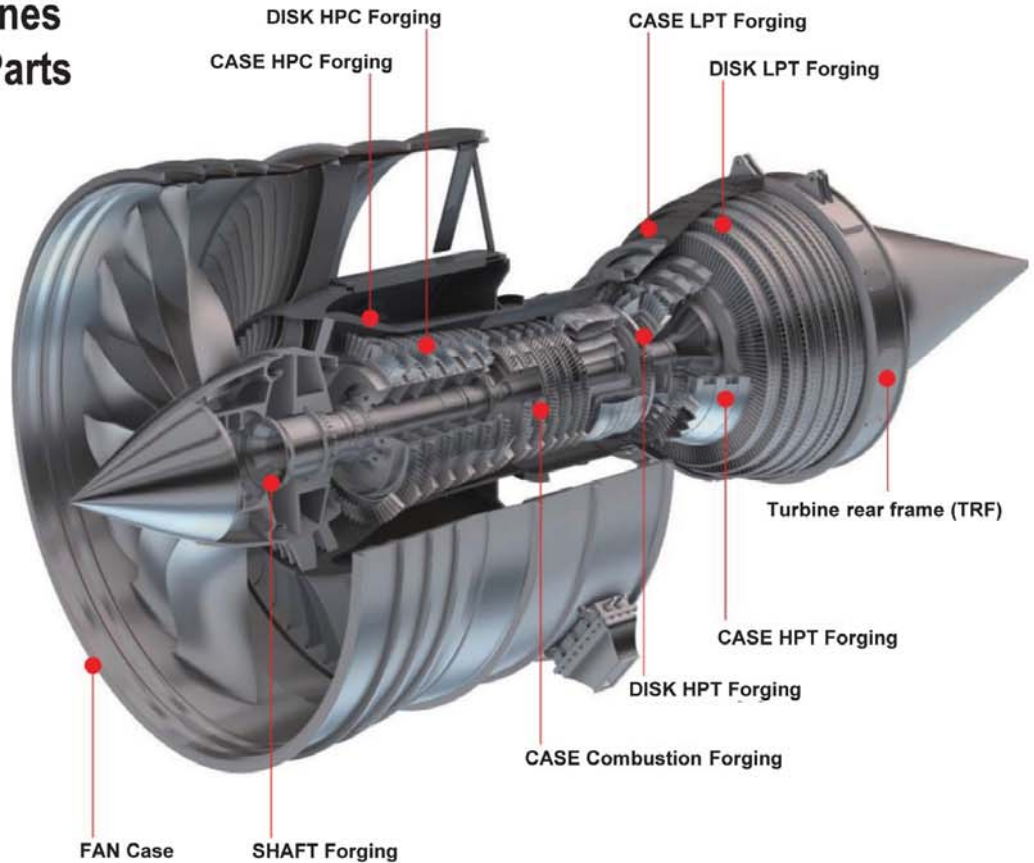
High degree of freedom for users

The new VL 4 H from EMAG KOEPFER offers users a multitude of possibilities. As shown in the example, it can be used as a standalone machine for gear cutting, or for combined hobbing/chamfering. This machine can also be part of a production line, which is easy to do, thanks to the advantages of EMAG's modular machines. In all cases, the user benefits from the many possibilities that the machine offers."



Materials for Aerospace Engines and Structural Parts

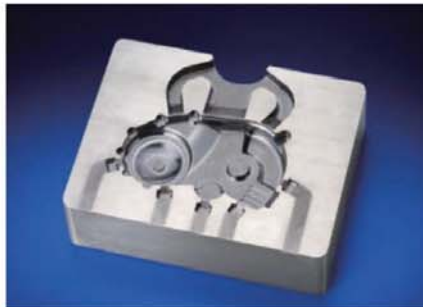
Materials for aerospace engines and structural parts, such as landing gears, must be durable to withstand high-temperature, high-pressure combustion gases, high-speed revolutions, or repetitive heavy loads for an extended period of time. Therefore, such component materials must be highly reliable and durable. Our materials for aerospace components are highly acclaimed and trusted thanks to our special melting technologies and manufacturing processes that have been nurtured over the years.



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www.hitachi-metals.co.jp/e

Operating and control system

A central component of DMG MORI's customer-oriented innovation strategy is the app-supported CELOS operating and control system, which the company introduced approximately 3 years ago. Since then, it has been continuously and very specifically developed. Using a common interface for machine and office PC, both manufacturing and production planning staff can manage, document and visualize the sequence of jobs and processes as well as the machine data.

Along with its tasks on the factory floor, CELOS also enables data to be exchanged with high-level structures thanks to its open architecture. It therefore enables the customer to fully integrate his machines into the company organisation while, at the same time, creating an interface between the machining process and cyber-physical production systems of the future. The advantages for day-to-day operation are: a time-saving of 30 percent for set-up, and half the effort and time required for calculating technical values or for searching for important data are just one example of savings, which can be achieved with CELOS. Thanks to the continuous development of further future-oriented applications, CELOS ensures a trouble-free introduction of Software Solutions for Industry 4.0.

An example is the CELOS CONDITION ANALYZER. In conjunction with the I4.0 sensor pack, on the one hand, this provides the user with a perfect software tool for monitoring



It enables the customer to fully integrate his machines into the company organisation while, at the same time, creating an interface between the machining process and cyber-physical production systems of the future.

machine condition and machining process, enabling him to carry out timely performance and condition analyses directly at the machine or externally via our CELOS PC. Additionally, in the second step, the data gathered by the sensors and locally conditioned can be forwarded to a cloud platform. Here decisive knowledge for a reliable 'predictive maintenance' solution can be derived using an algorithm-based long-term evaluation. Customers therefore save maintenance costs and have an effective tool for substantially avoiding unplanned downtimes.

Roughness measurement in machine tools

Blum-Novotest Measuring & Testing Technology Pvt Ltd to display its roughness measurement gauges at IMTEX 2017



'Producing the highest quality within the shortest period of time' is the target of a machining production. Therefore, not only the dimensional size accuracy is of vital importance but also the surface quality must fulfil the requirements. BLUM surface roughness gauges close this gap within the process chain: Thanks to the proven hardware and ingenious software, poor surfaces can be detected automatically and rapidly on the machine tool. As a result, the user gets 100 percent good parts and maximum productivity.

Surface roughness gauges by BLUM are specially designed for the extreme requirements of high-productive machining centres. They are coolant-resistant and IP68 rated, making them entirely suitable for machine tools.

It offers benefits such as automated measurement without manual intervention by the operator, poor surfaces are already recognised in the machining centre, no continued production

Surface roughness gauges by BLUM are specially designed for the extreme requirements of high-productive machining centres. They are coolant-resistant and IP68 rated, making them entirely suitable for machine tools.

of NOK-parts due to downstream, external measurement. Additionally, the gauges also help in recognising problems in the cutting process. Furthermore, the tool helps in reducing cost by reducing rejects and enabling tools to be used until by the end of service life.

India's first international stock exchange opens in Gujarat

Prime Minister Narendra Modi inaugurated India's first international stock exchange - India International Exchange - at the Gift City recently. PM Modi has called it a 'momentous occasion for India's financial sector'. He shared that the project took shape in the year 2007 and the vision was to create a world class Finance and IT zone for India, to provide services not only to India but the entire world. He recalled that he had visited the Bombay Stock Exchange in June 2013 and had invited BSE to set up a world beating International Stock Exchange. India International Exchange will trade in equity, commodities, currencies and interest rate derivatives in the first phase. Later, it will trade equity instruments of Indian and foreign companies. Masala bonds will also be available for trading here. "Many more companies from Asia, Africa and Europe should be able to raise funds from this important International Finance Centre," Modi said.



AkzoNobel India opens specialty coatings facility at Noida

AkzoNobel has inaugurated the first-of-its-kind Specialty Coatings production facility and colour laboratory in Noida, Uttar Pradesh, a satellite town 25 km from New Delhi. This new facility



is intended to service its customers in the consumer electronics, automobile and cosmetic industries.

With an investment of € 0.4 million (Rs Three crore), the new site will manufacture 600 kl of coatings annually, thus catering to the localisation drive undertaken by many large companies. Being situated in India, the site will supply AkzoNobel's coating systems faster to manufacturing companies in the country. Already commissioned, the facility is in its first phase; the second phase is likely to be completed by the end of 2016, with scope for further expansion.



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Since 1945, Deublin has emerged from a small rotating union manufacturer in Waukegan, Illinois, USA to having worldwide presence across 4 continents in 17 countries, an excellent Distribution network and considered as World Leader for innovative products for machine tools industries.



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Advantages of Through - Spindle Coolant (TSC)

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Seals are the heart of a Rotating Union. They must contain very high pressures while rotating at a very high speed. At 20,000 rpm, the seals of a Daublin Union 1129, 1109 or 1114 series are moving at a relative speed of 5 meters/second while containing 140 bar of fluid pressure!

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- Pop-off™.
- AutoSense™.
- All-Media.



1123-001-301

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Global Engineering Services at your Doorstep

Indexable insert thread milling cutter

The new thread milling cutter combines all of the benefits of thread milling and thread tapping.

With its T2711/T2712 indexable insert thread milling cutter, Walter is launching a completely new tool for machining larger threads with nominal diameters of 24 mm and above, with multiple cutting rows and an adjustable coolant supply with selectable radial or axial coolant outlets. The new milling cutter is equipped with specifically developed thread milling inserts having three cutting edges apiece, soft-cutting geometry and a special chip breaker designed for thread milling. It can be used universally for thread depths of up to $2.5 \times DN$ and a pitch range of 1.5 mm to 6 mm or 18-4 TPI, and is suitable for all materials from the ISO material groups P, M, K, S and H up to 55 HRC. Multiple thread sections can be machined simultaneously with high cutting parameters, enabling machining times comparable to those of thread tapping and forming to be achieved. However, in addition to quick machining, users also benefit from the high process reliability of the thread milling process and the cost benefits of an indexable insert tool. Alongside ease of handling and excellent



Multiple thread sections can be machined simultaneously with high cutting parameters, enabling machining times comparable to those of thread tapping and forming to be achieved. However, in addition to quick machining, users also benefit from the high process reliability of the thread milling process and the cost benefits of an indexable insert tool.

thread quality, the high level of productivity at low cost per thread is the greatest benefit of this tool for its users. In a test involving large-scale crankshaft machining, the new thread milling cutter reduced costs by 60 percent.

High-speed contact scanning system

The system records a constant stream of accurate 3D points across the part surface

Hall 3A,
Stall B123



At IMTEX 2017, Renishaw will be exhibiting its game changing SPRINT system, which brings exceptional, high-speed, high-accuracy scanning to CNC machine tools.

The SPRINT system records a constant stream of accurate 3D points across the part surface, and analyses this data in real time on the CNC machine tool controller, to provide game-changing opportunities for automated in-process control on high-value CNC machines.

The SPRINT system incorporates a new generation of on-machine scanning technology that will deliver a step-change in the benefits of process control, enabling fast and accurate form and profile data capture from both prismatic and complex 3D components.

For blade manufacture, the SPRINT system provides unprecedented

For blade manufacture, the SPRINT system provides unprecedented capability for blade tip refurbishment and root blending applications.

ed capability for blade tip refurbishment and root blending applications. For multi-task machining applications, the system offers users completely new process control capabilities, including exceptionally repeatable diameter measurement cycles.

Additional functionality offered by the SPRINT system provides a rapid health-check of a CNC machine tool's linear and rotary axes in seconds, making it possible to implement a daily machine monitoring regime with little or no operator involvement.



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NEW: »zidCode« for easy and safe tool data transfer!

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»pomBasic«
Compact solution for a universal tool inspection



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Vertical tool presetter and measuring machine for a professional start



»threadCheck«
The high-end universal measuring machine for helical tools

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machine

igus® solutions for machine tools

tools...

plastics for longer life®... igus®

... www.igus.in/machinetools ...

safe quality & save money

Increase reliability, confront challenges, avoid expensive downtime

e-chains®:

- Chip-resistant
- Oil-resistant
- Corrosion-free
- Low vibration
- Energy-efficient
- Lightweight and cost-effective

chainflex® cables:

- Specifically developed for highly dynamic applications
- Oil-resistant (UL-/EAC-/CTP compliant)
- Coolant resistant
- Tested & guaranteed!
- For smallest installation spaces
- Cost-effective, also as harnessed cable

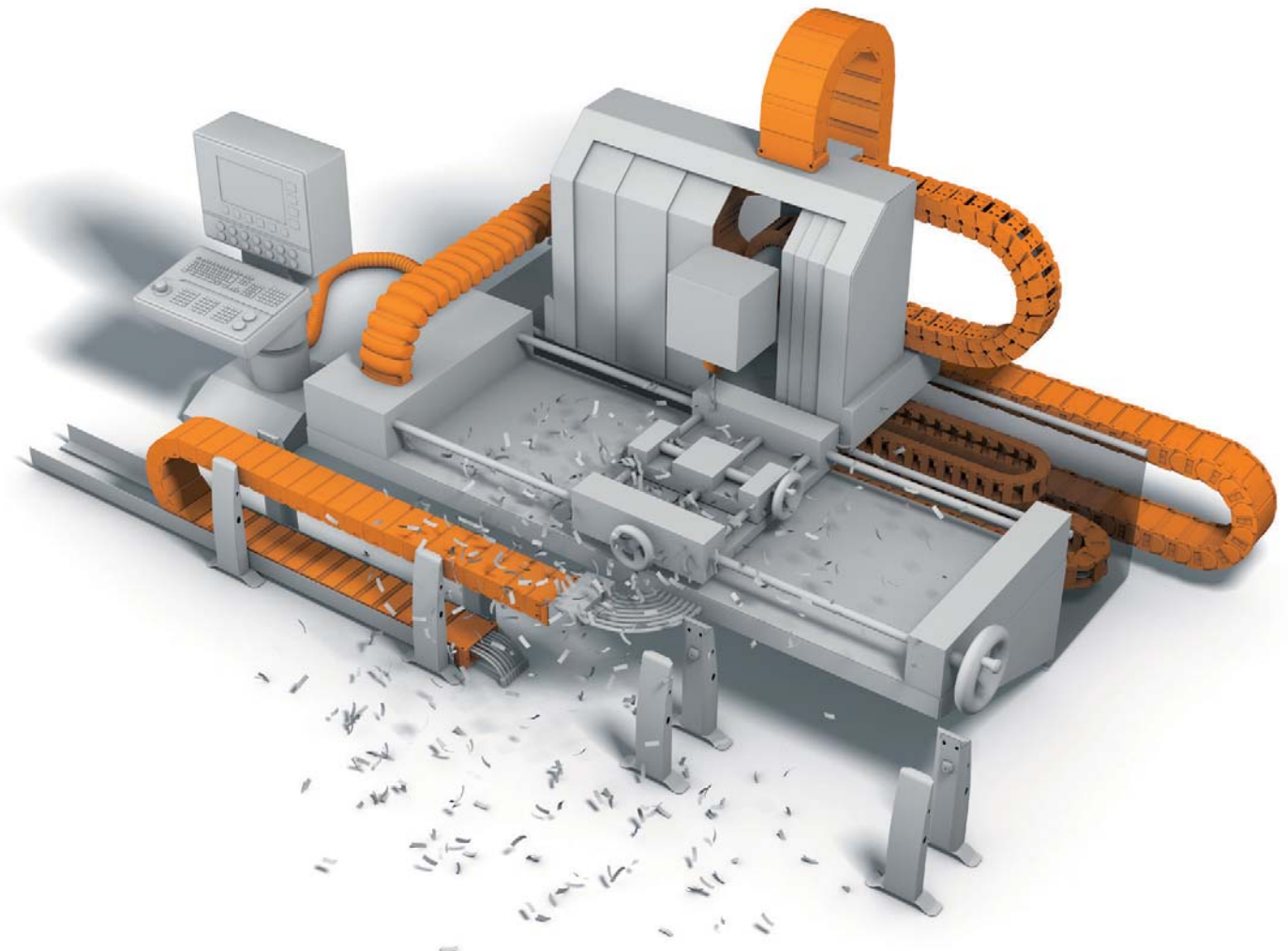
dry-tech® bearing technology:

- Lubricant-free
- Dirt resistant
- Maintenance-free
- Predictable service life

 www.igus.in/e-chains

 www.igus.in/chainflex

 www.igus.in/dry-tech



Challenges ...

... in the machine tool industry.

Hot chips

igus® solutions as protection for cables and hoses

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Oil and coolant flow

igus® solutions for use in oily environments

Page

14 | 15

High dynamics

igus® lightweight solutions for high cycle times and low wear

Page

16 | 17

High vibrations

Low-noise and low-vibration solutions for better milling, turning, and machining finishes.

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High maintenance effort

igus® solutions for "fit and forget"

Page

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High design-engineering effort

Time and cost-effective igus® solutions from a single source

Page

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Benefits:

+ Cost savings

reduce process costs by outsourcing design-engineering

Page

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+ Guaranteed reliability

Unique guarantee model for cables

Page

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+ Energy efficiency

Reduce power and operating expenses

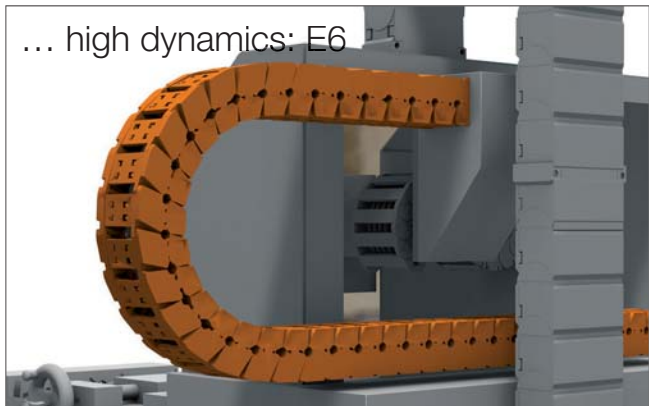
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igus®.in/machine tools

energy chains® and cables.

... high dynamics: E6



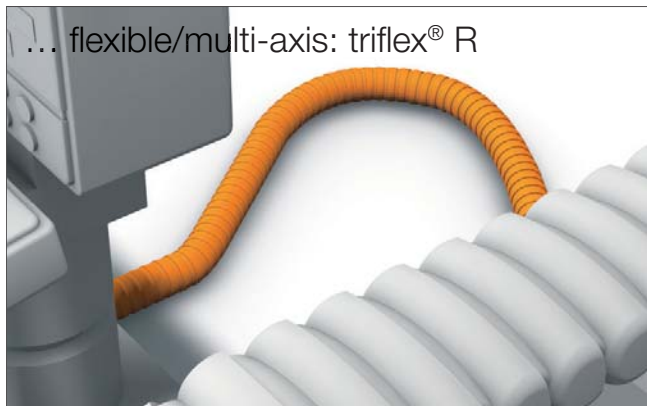
... fail-safe cables:
chainflex®



... unsupported:
E4.1



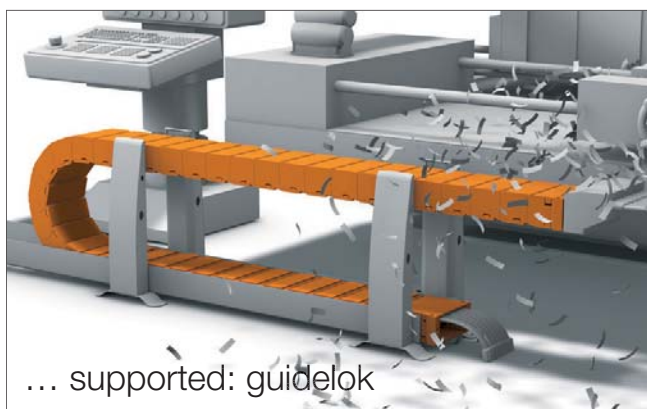
... flexible/multi-axis: triflex® R



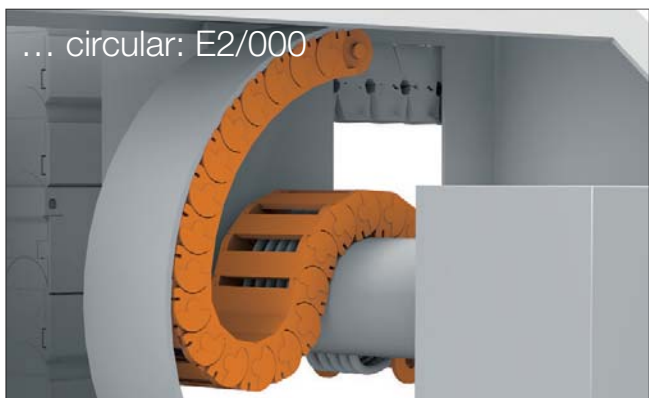
... rotated sideways: E4.1



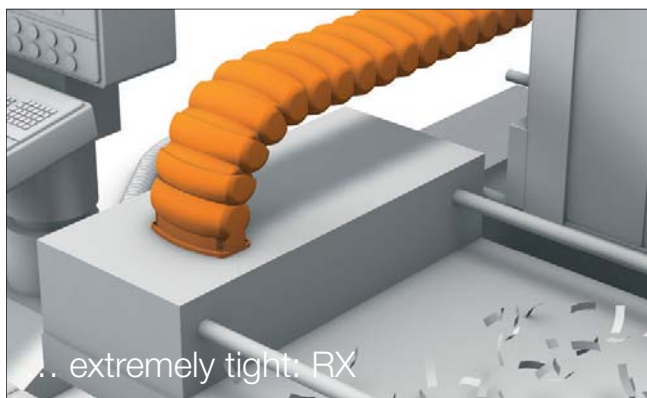
... supported: guidelok



... circular: E2/000



... extremely tight: RX



**Ready-to-install, maintenance-free,
reliable and cost-effective –
igus® solutions for machine tools.**

Particularly for the machine tool industry, high machine productivity is the basis for sustainable competitiveness in world markets. You depend on suppliers who can guarantee high process reliability under challenging operating conditions.

igus® provides lab-tested solutions for any challenge in the machine tool sector that will increase the reliability of your machine.



Kiran kurian

Industry Manager – Machine Tools

igus® India

Phone: +91-80 45127805

Mobile: +91-93 41957166

Email: kiran@igus.in



Phillip Hagedorn

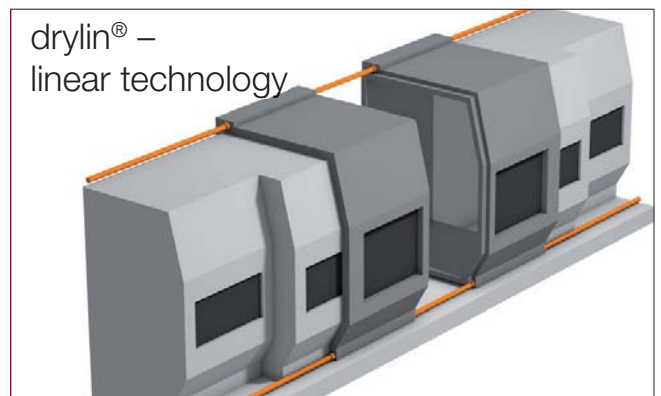
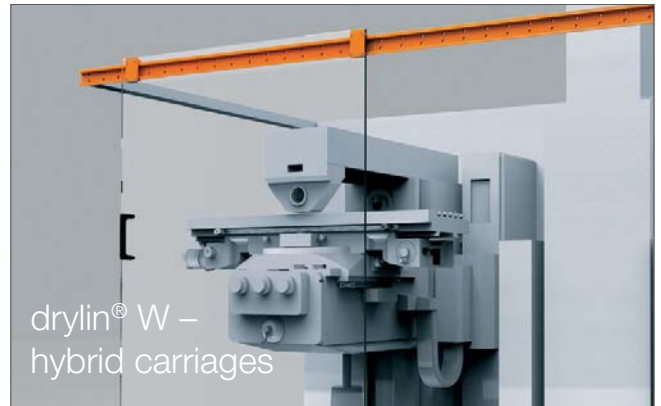
International Industry Manager –
Machine Tools

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Polymer plain bearings.



igus® motion plastics® ...



... in machine tools



igus® RX e-tube – ideal in the direct chip area, IP protection class 40.



Dry-running igubal® plastic spherical bearings – no chip adhesion.



Brass chips and oil/coolant – igus® RX e-tube protects reliably.



For long travels in the chip area – guidelok horizontal guides up to 50 m.



igus® E2 e-tubes, upright and rotated by 90° in the chip area.



Holding chainflex®-cables in e-chains® for motion-control applications.

Reliably in use ...



A wide range of e-chains® in a CNC machine tool – hanging, upright, rotated, and unsupported.



Combined motion with an igus® E6 readychain®.



Horizontal guidelok upper run guide for long travels in chip areas.

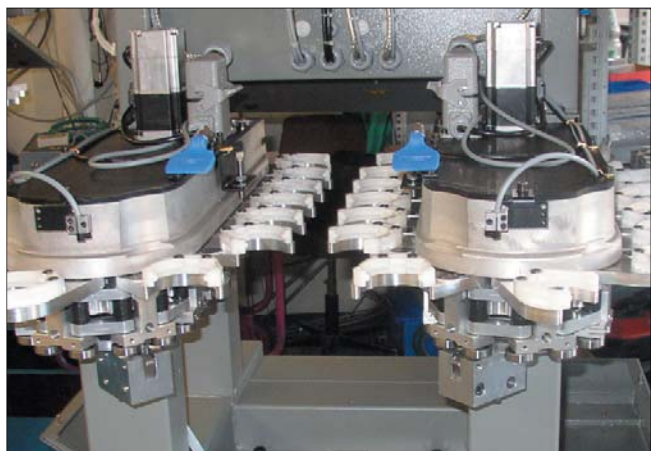
... increase service life



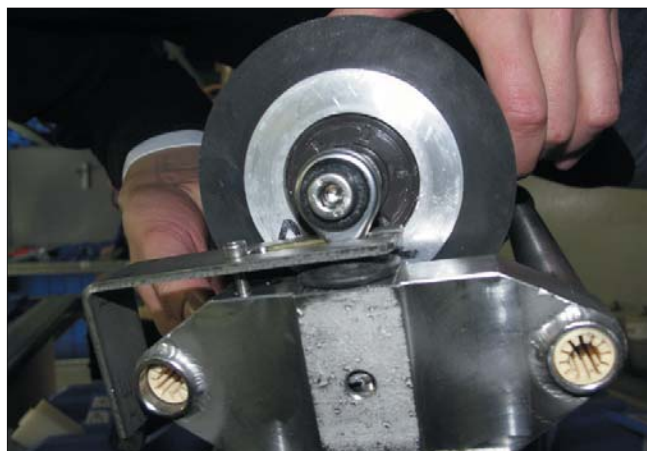
e-chain® E6 in a CNC grinder:
its low weight supports particularly smooth motions.



Top condition even after 9 years: e-chain® in a high-precision lathe and grinding machine.



Enormous cost advantages and high resistance to wear favour the use of iglidur® D plain bearings.



iglidur® plastic plain bearings in lathes and grinding machines for the printing industry.

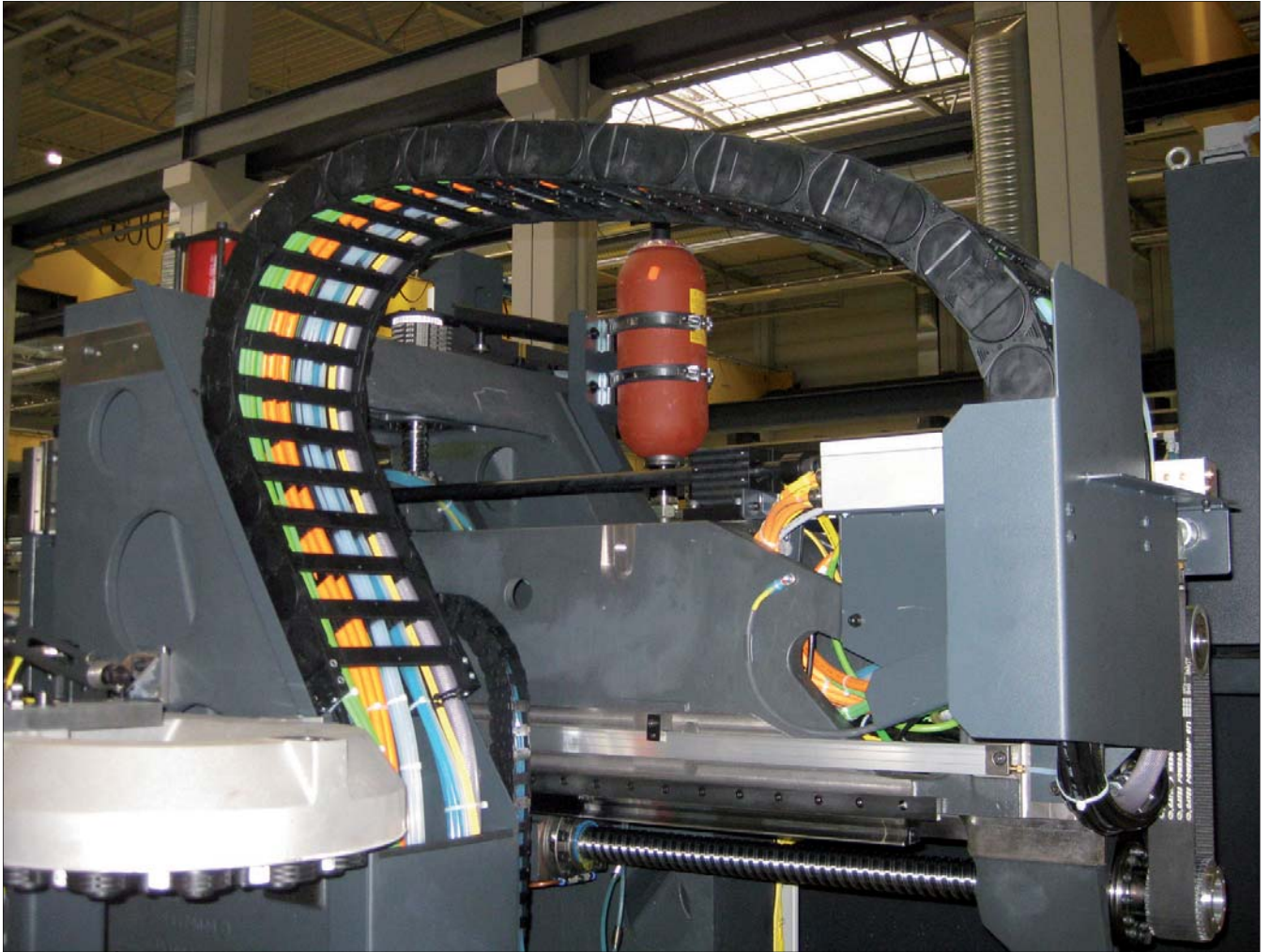


Saving space: the X-axis of the energy chain lies on the upper machine cover.

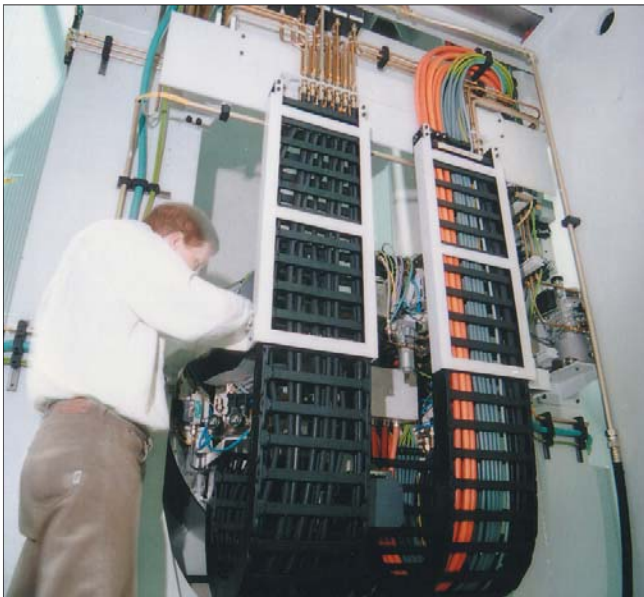


RX e-tube: problem-solver on the machine tool in the chip area.

Reduce costs ...



Sliding column machine: to keep installation space and costs for the e-chainsystem® very low, an igus® E4.42 Series was installed upright with single-sided radius in the travel.



The ready-to-install igus® readychain® saves costs and time.



The e-chain® can also be supplied without camber if space is limited.

... increase technology



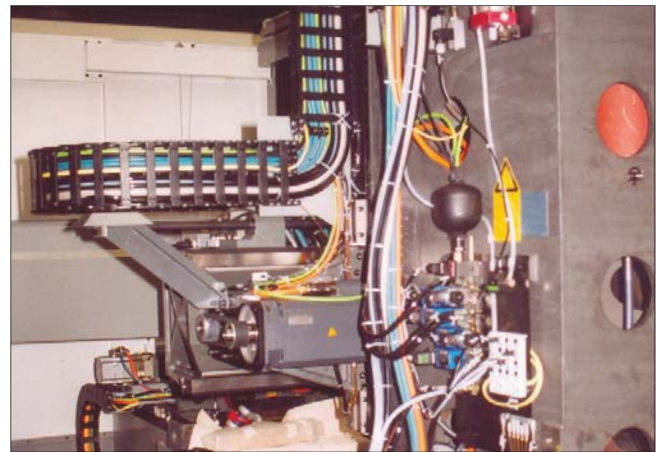
Machine doors with maintenance-free guide using drylin® linear technology.



Dirt and chip-resistant – drylin® linear technology.



Several e-chains® and chainflex® cables in various installation methods.



Many igus® e-chains® with chainflex® cables in an X/Y gantry.



Permanently reliable data transmissions, e.g. with chainflex® cables harnessed to DriveCliqu standard.



chainflex® cables are reliable even in oil and coolant.

Protecting cables ...



Heat-resistant against 850°C hot chips: igus® RX e-tube as HT configuration (optional).

Components in machine tools are exposed to rough operating conditions. High machining speeds and the continuously optimised production capabilities of numerically controlled machine tools result in large machining volumes per unit of time. Hot chips significantly compromise the service life of cables and hoses. Over the mid-term this results in machine failures accompanied by expensive downtime. Downtime negatively influences the most important quality characteristic: machine productivity.

The need to ensure the reliability of your machine tools calls for the use of chip-resistant products.



Tightness test in the igus® lab, Cologne.

... even against hot chips

Chip tight igus® e-chain®, for example:



New R2.75: cost-effective e-tube with 75 mm inner height.

www.igus.in/R275



RX: extremely tight tube for the direct chip area.

www.igus.in/RX



R4.1 light: lightweight, tough, and snap-open e-tube.

www.igus.in/E41



E2/000 e-tube: small e-tube, snaps open on both sides.

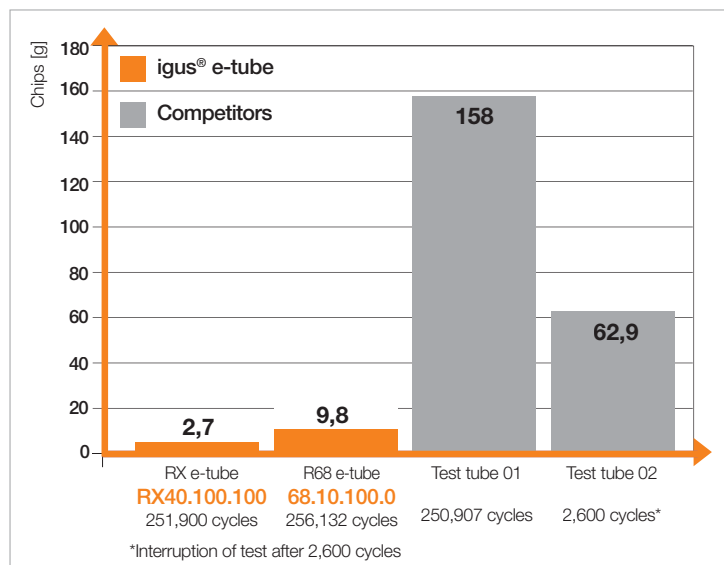
www.igus.in/E2000

Explore more e-chain® solutions for machine tools at:

www.igus.in/machinetools

Tested!

In the largest lab of its kind, igus® Cologne



Extreme chip tightness

Reliable tightness under realistic environmental conditions – chip penetration test: various tube version were exposed to a defined chip volume. After 251,900 cycles, only 2.7 g of chips were found in the interior of the RX tube

From the field



Long service life ...



Cable service life test at the igus® lab, Cologne.

Flexible cables in energy chains need special properties to tackle many cycles, high speeds and accelerations, in addition to challenging environmental conditions. In particular, resistance to aggressive media, such as oil or coolant, must be ensured.

Components in machine tools must comply with extreme demands, such as EMC safety and compliance with standard, such as NFPA 79, UL, CSA, VDE, EAC & CTP to ensure the reliability of your energy supply and world-wide use.



Media resistance testing on chainflex® cables

... in oils and coolants

Media-resistant igus® chainflex® cables, for instance:

From the field

IGUS® CHAINFLEX® CF77.UL.D

CF77.UL.D control cable for high load requirements, resistant to oils and coolants, flame retardant, notch proof, free of PVC and halogen, minimum bending radius up to 6.8 x d.

IGUS® CHAINFLEX® CF240.PUR

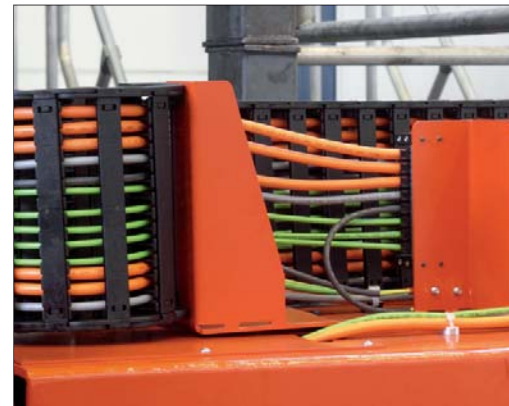
CF240.PUR data cable for high load requirements, shielded with 90% cover, resistant to oils and coolants, notch proof, PVC-free/halogen-free, flame-retardant, minimum bending radius up to 10 x d.

IGUS® CHAINFLEX® CF111.D

CF111.D / CF113.D measuring system cable for high load requirements, shielded, resistant to oils and coolants, notch proof, flame-retardant, minimum bending radius up to 7.5 x d.

IGUS® CHAINFLEX® CF270.UL.D

CF270.UL.D / CF27.D servo cable for high load requirements, shielded, resistant to oils and coolants, notch proof, flame-retardant, PVC-free/halogen-free, minimum bending radius up to 7.5 x d.



Explore more chainflex® solutions for machine tools at:

www.igus.in/chainflex

 **Tested!**

In the largest lab of its kind, igus® Cologne



Test: chainflex® cables in oil

Service life and durability tests on various igus® chainflex® cables, moving in e-chains®, in a selection of oils.

High cycles and dynamics ...



High dynamics test on igus® chainflex® cables in e-chains®.

The economic use of machine tools depends on the speed at which the tool can be moved across the workpiece contour. The maximum attainable travel speed and acceleration determine the cycle time of the production process and therefore the production costs.

In addition to using highly dynamic and high-performance drive systems, reducing the moving mass by employing lightweight components is necessary to keep speeds high and machine vibrations as low as possible.

The machine tool industry depends on lightweight products that can tackle highly-dynamic applications.

No corkscrew after 5 million double-strokes.



Competitive products:
corkscrewing after 145,000 double strokes.



igus® CF27:
no wear, even after 5 million double strokes!

... no failures

Lightweight igus® e-chains®, for example:



E6.1: maximum dynamics and lower weight. 37 dB(A), filled quickly.

www.igus.in/E61



E4.1 light: lightweight, tough tube. Cost-effective and filled quickly.

www.igus.in/E41



E2.1: small, lightweight, tough. Smallest e-chains® from 10 mm.

www.igus.in/E21



E2/000: cost-effective allrounder. Lightweight and versatile.

www.igus.in/E2000

Explore more e-chain® solutions for machine tools at:

www.igus.in/machinetools

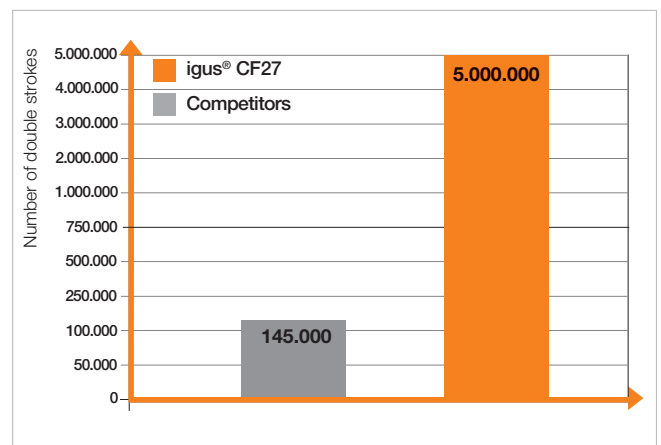
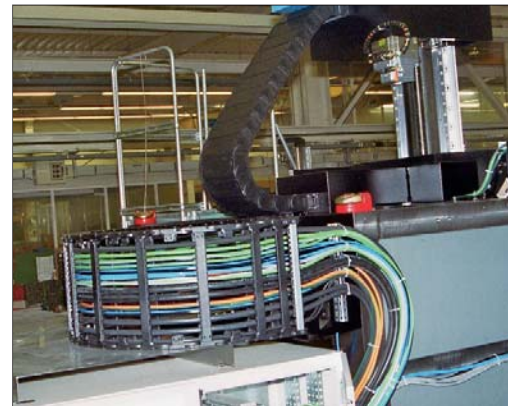
Tested!

In the largest lab of its kind, igus® Cologne

Due to the wide range of cable grades, the best possible customer solution is selected based on the customer's specific dynamic requirements.

Tested: 41 million strokes at 25% under-bending CF5.10.25 control cable lasts more than 41 million double strokes at 25% under-bending. chainflex® lasts - proven in test No. 2233 of more than 600 parallel tests conducted by the 1,750 m² test lab, the largest of its kind for flexible cables.

From the field



Minimise vibration ...



Smooth operation is a condition for clean machining and milling finishes.

The precision of machine tools continues to increase. In combination with the increased level of automation, machinery is subjected to increasing characteristic vibration requirements to ensure the best possible machining and milling finish.

As the level of technology increases, the use of cables and hoses that need to be guided with energy chains also increases. The required motions create vibrations in the trough and the moving end that can negatively influence the machining result and the entire production process when these exceed a certain tolerance band.

With international competition, the machine tool industry depends on premium products that are differentiated

from competitive products based on productivity and accuracy. Factors that limit the performance of machine tools must be overcome with innovative technologies. Suppliers of quality machines therefore depend on energy supply systems that minimise vibrations and chatter.

... smooth operation

Easy running igus® e-chains®, for example:



E6: high dynamics e-chain®, 38 dB(A), 10 m/s²,
29 - 80 mm inner height. www.igus.in/E6



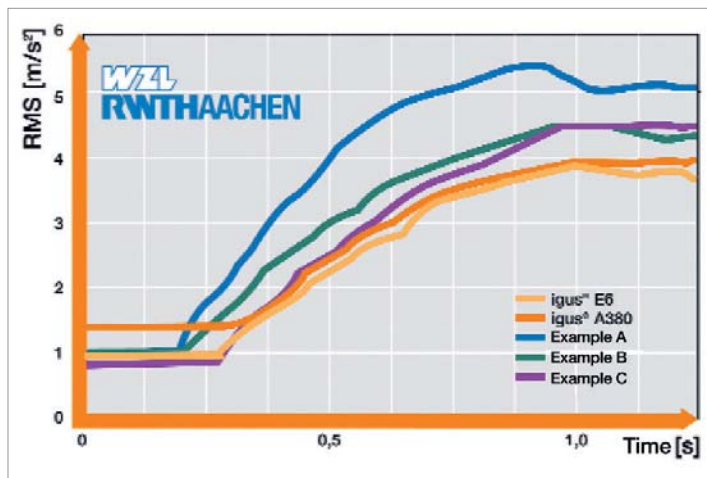
R6: high dynamics e-chain, from 38 dB(A), 10 m/s²,
29 - 52 mm inner height. www.igus.in/E6

Explore more e-chain® solutions for machine tools at:

www.igus.in/machinetools

 **Tested!**

In the largest lab of its kind, igus® Cologne



Vibration properties WZL RWTH Aachen.

Study by the Machine Tools Laboratory and Business Operations (WZL) at RWTH Aachen on "Vibration Tests in Energy Supply Chains". Results: the "E6" energy supply system made by igus® GmbH, Cologne, is characterised by extremely low vibration and smooth operation.

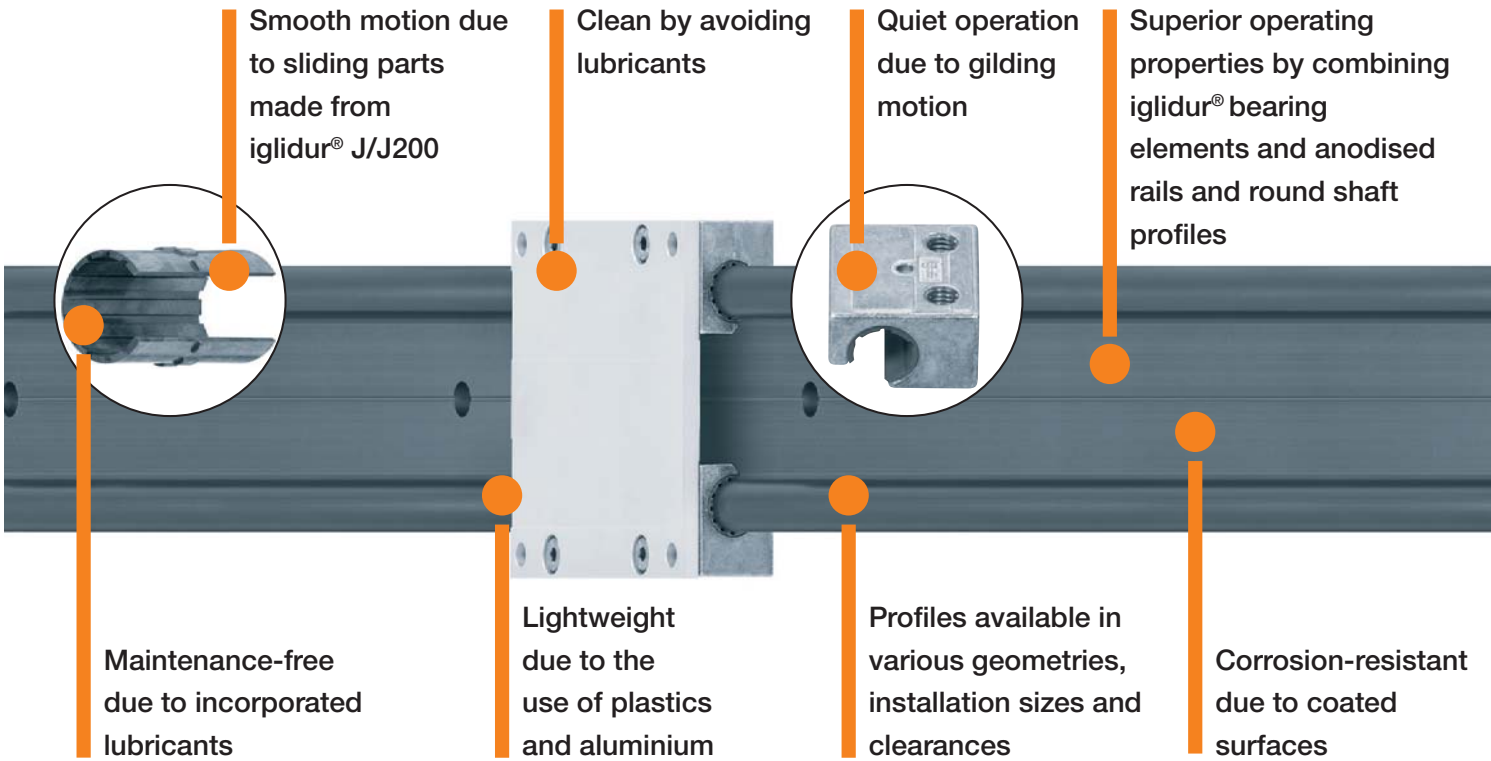
Free whitepaper regarding this topic at:

www.igus.in/machinetools

From the field



Reduce maintenance effort ...



Maintenance-free drylin® linear technology solutions.



drylin® W

- Large linear construction kit
- Single and dual shaft profiles
- Many options of bearings, housings, functions, complete carriages



drylin® N

- Low-profile guide in 4 sizes
- Low installation height 6 - 12 mm
- Rail widths from 17 mm to 80 mm
- Numerous carriage options – also with camber



drylin® Q

- Torque resistant square linear guides
- Carriages with individually adjustable clearance
- Variable fastening options

 www.igus.in/drylinW

 www.igus.in/drylinN

 www.igus.in/drylinQ

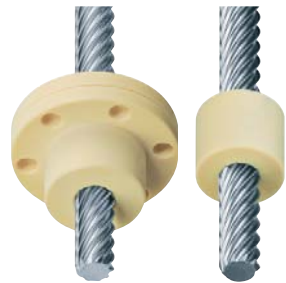
... avoid lubricating

drylin® lubricant-free linear technology

drylin® is a product range of lubricant-free linear plain bearings based on the principle of gliding instead of rolling. Tribo-optimised iglidur® high-performance polymers are used as glide surfaces. drylin® linear systems travel in dry-running mode and are maintenance-free. Linear guides on rails or round shafts are available. drylin®-drive technology can supply ready-to-connect systems with lead screw drives or toothed belt drives, with or without motor. In addition to the lack of maintenance and lubricants, the focus is also always on toughness and resistance to influences, such as dirt, water, chemicals, heat, or shocks.

- Insensitive to dirt due to dry operation
- Insensitive to impacts and vibrations
- High static load capacity
- Suited for short-stroke applications
- High speeds possible up to 10 m/s and accelerations up to 100 G
- Low magnetism

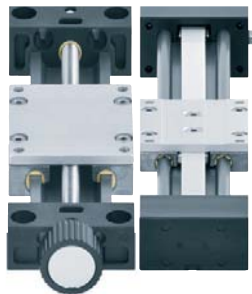
 www.igus.in/drylin



drylin® SD

- Systems consisting of lead screw nut and lead screw
- dryspin® high-helix threads, efficient and long-lasting
- Self-locking trapezoidal and metric threads

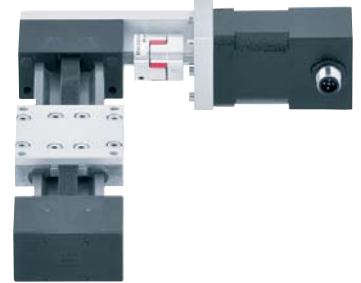
 www.igus.in/drylinSD



drylin® drive technology

- Linear modules with lead screw drive or toothed belt
- For manual or electrical adjustments
- Can be configured with custom stroke lengths

 www.igus.in/drylinSHT



drylin® E drive technology

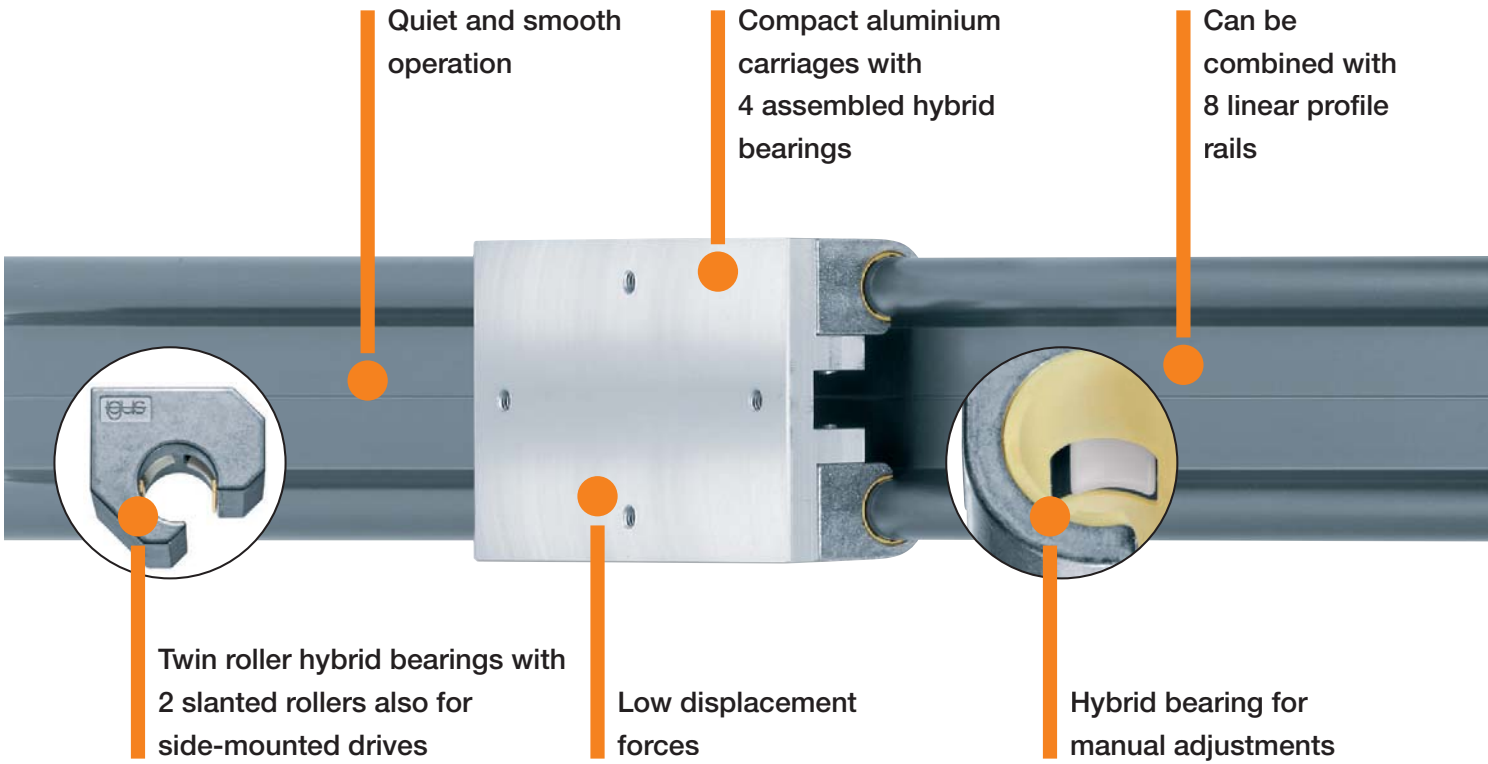
- Linear axis with stepper motors/ DC motors
- Fail-safe due to the use of encoders and limit switches
- Can be combined for gantry configurations

 www.igus.in/drylinE

From the field



Dry operation ...



Quiet and smooth operation

Compact aluminium carriages with 4 assembled hybrid bearings

Can be combined with 8 linear profile rails

Twin roller hybrid bearings with 2 slanted rollers also for side-mounted drives

Low displacement forces

Hybrid bearing for manual adjustments

Maintenance-free drylin® linear technology solutions.



drylin® WJRM

- With one or two rollers
- Plain bearing plastic rollers
- Use with 8 linear profile rails

 www.igus.in/WJRM



drylin® WWH

- Complete system: hybrid carriage with rollers
- Low displacement forces
- Smooth and quiet operation

 www.igus.in/WWH



drylin® WWR

- For lateral adjustments
- Compact design
- Guided by twin rail, no support required

 www.igus.in/WWR

... no chip adhesion

Combined gliding and rolling for low drive forces – drylin® WJRM.

drylin® WJRM hybrid bearings offer a unique lubricant-free combination of plain and roller bearings. The integrated rollers achieve low drive forces, while the gliders protect against lateral forces at the same time. This makes drylin® WJRM-hybrid bearings ideal for manual adjustments in door applications (e.g. machine doors, safety doors), but also in mobile operator panels. The efficient design with plastics and zinc die-casting also cuts costs. WJRM hybrid bearings can be used on various hard-anodised aluminium profiles from the drylin® W linear construction kit.

- Smooth operation
- Low-profile installation method
- Transverse and abuse forces are easily absorbed by gliding elements
- Location on rail eliminates seizures
- Matching guide rails from coated aluminum
- Low drive force requirements
- Cost effective

 www.igus.in/drylin

Tested!

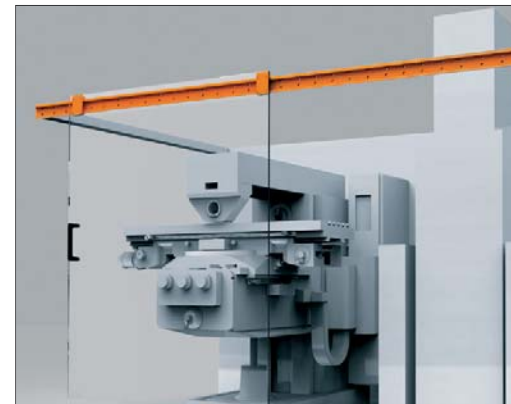
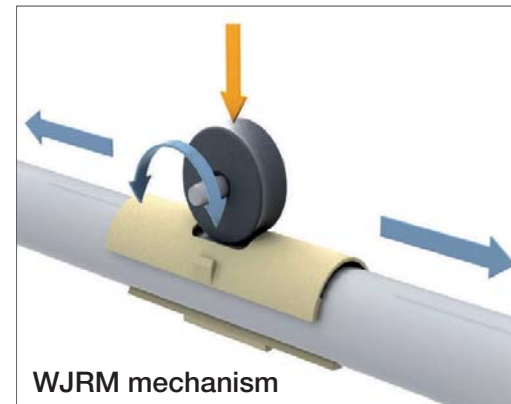
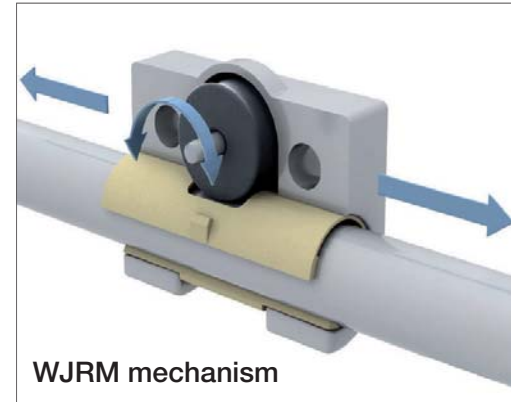
In the largest lab of its kind, igus® Cologne



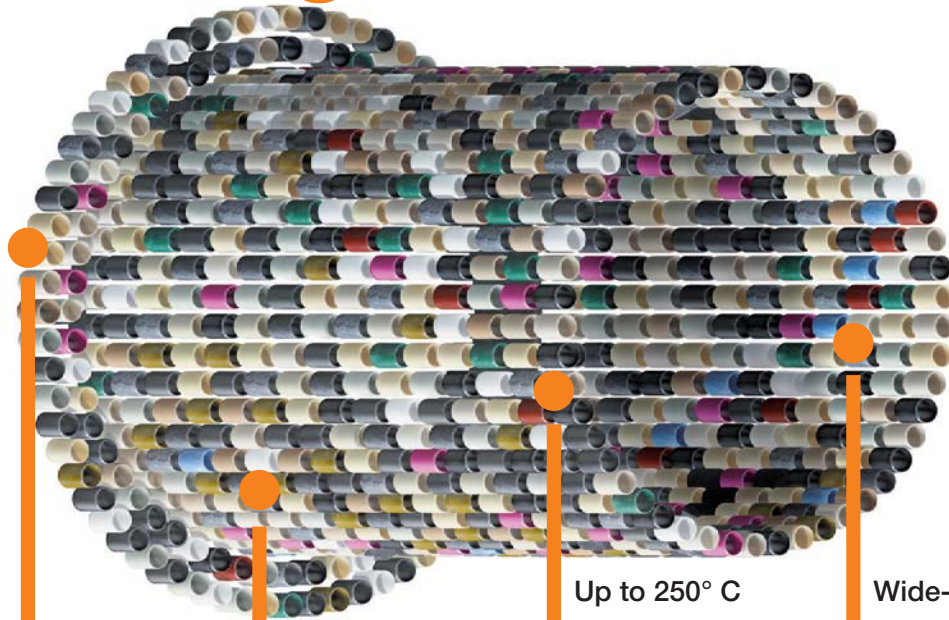
Chip test drylin® linear technology.

Service life and wear test on a drylin® linear guide in a chip drum with aluminium chips.

From the field



Fit and forget ...



Predictable service life

More than 8,500 dimensions from stock

Up to 250° C continuous use temperature (depending on material)

Wide-ranging design options, as injection-moulded or machined parts, to your specifications



iglidur® G – the allrounder.
The best-selling iglidur® plain bearing world-wide.

 www.igus.in/G



iglidur® J – fast and slow motion.
Low friction, low wear.

 www.igus.in/J



iglidur® Q – suited for high loads.
Plain bearing solution for long service lives at high to extreme loads.

 www.igus.in/Q



iglidur® M250 – heavy and rugged.
Excellent vibration damping.

 www.igus.in/M250



iglidur® W300 – the endurance runner.
Low wear on all shafts.

 www.igus.in/W300



iglidur® X – The high-tech problem-solver.
High resistance to temperature and chemicals.

 www.igus.in/X

... increase service life

Lubricant and maintenance-free plain bearings made from high-performance plastics – iglidur®.

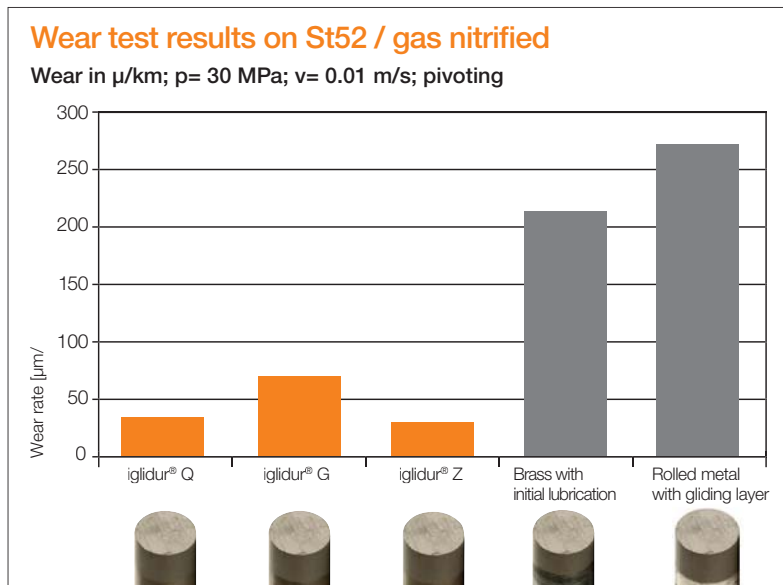
No lubricating and reduced maintenance effort, while cutting costs and increasing service life, everything from stock and delivered promptly - that is the essence of the idea. iglidur® plastics have been extensively tested with respect to wear and friction values, including other relevant material properties. iglidur® polymer plain bearings from igus® represent the step from plastic bushings to tested and therefore predictable machine component.

- Highly wear-resistant polymers, improved with fine-tuned additives of reinforcement materials and solid lubricants
- Tested by the thousands, proven by the millions
- Lubricant-free, maintenance-free, cost-effective, predictable, and versatile

 www.igus.in/iglidur

Tested!

In the largest lab of its kind, igus® Cologne



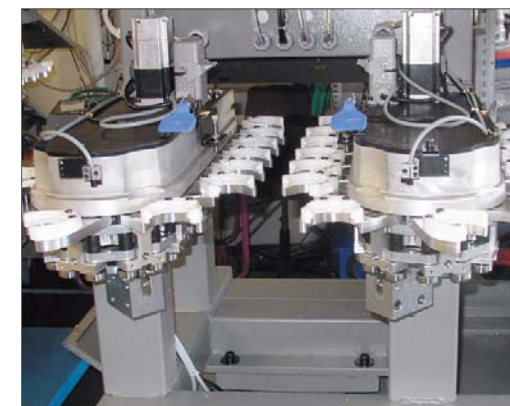
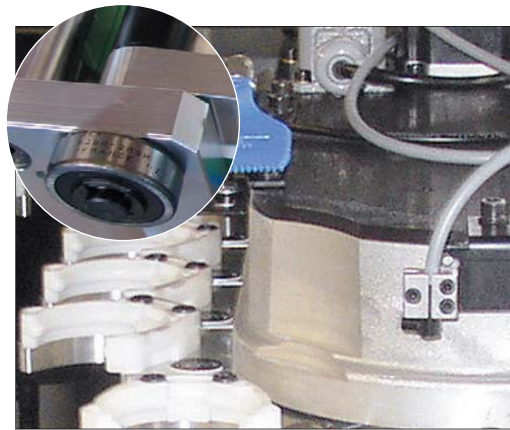
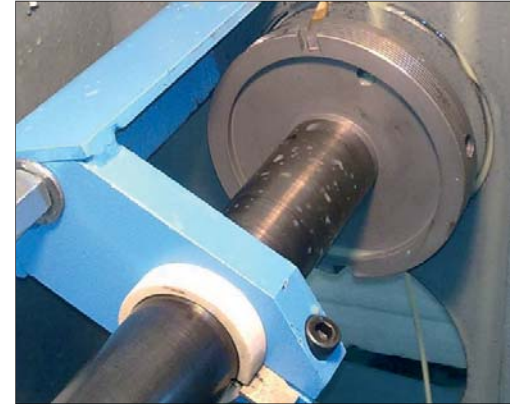
"Swivel" test

Objective: wear test for iglidur® plastic plain bearings against metallic plain bearings.

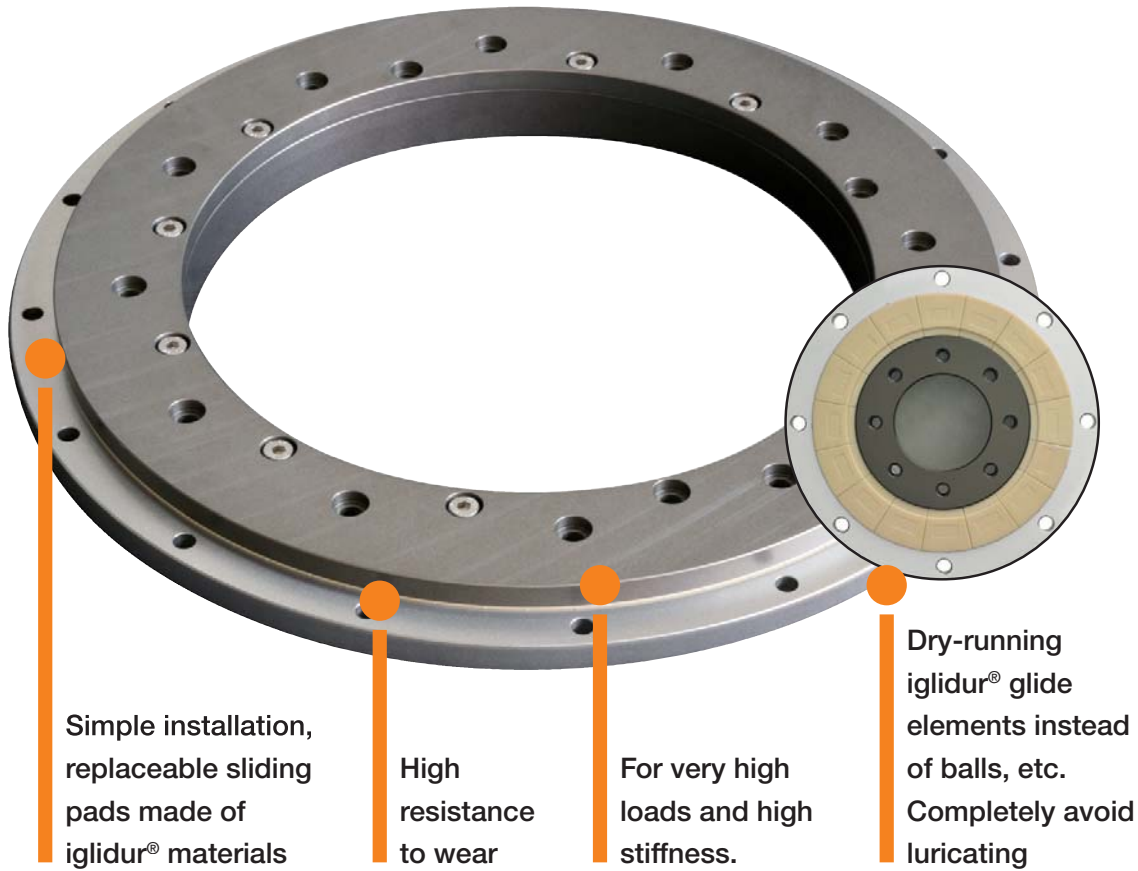
Test setup: swivel test on a shaft with a weight of 1,200 kg.

Result: all tested iglidur® materials exhibit significantly lower wear than metal plain bearings. The shafts of the metal plain bearings exhibit significant wear and are therefore unsuited for further use.

From the field



Ready-to-install solution ...



Maintenance-free iglidur® PRT slewing ring bearing solutions.



Slewing ring bearing - design 01.

Slewing ring with high stiffness, useable up to +180° C, high chemical resistance.



Slewing ring bearing - toothed.

For all 6 sizes of the design 01, 4 standards are available for the toothing of the outer ring.



Slewing ring bearing - design 02.

Slewing ring with extremely low weight. Outer ring made of anodised aluminium or stainless steel (V4A).



Slewing ring bearing with square flange.

The smallest PRT slewing ring bearing in installation size 20, with space saving square flange for direct assembly onto flat surfaces.

... lubricant-free bearings

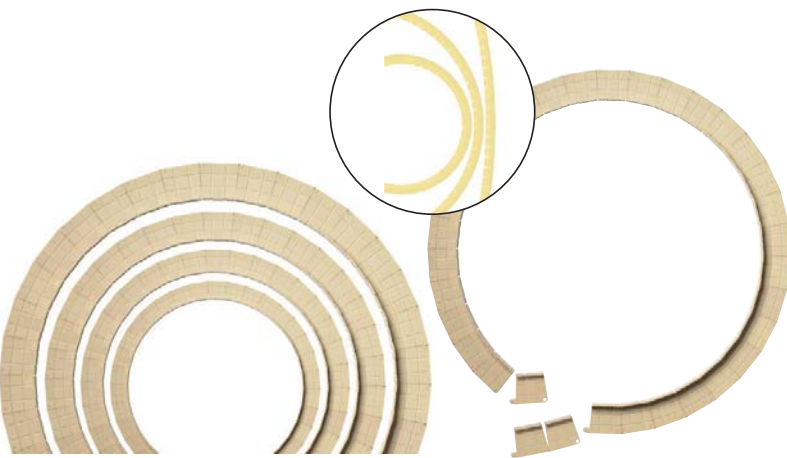
Polymer slewing ring bearing - iglidur® PRT

igidur® PRT is a low priced, low maintenance slewing ring bearing with tribo-optimised iglidur® polymer sliding pads. The gliding elements operate completely without maintenance and lubrication. The housing components of the slewing ring bearings are made of aluminium, and the counter-partners of the sliding pads are hard-anodised. All fastening screws are made of stainless steel. Depending on the number of elements, slewing ring systems are possible with inner diameters from 0.5 to 5 m.

- Ready-to-install solution
- Tough, corrosion-resistant for high loads
- For use in changing ambient media
- Maintenance and lubricant-free
- For low to medium surface speeds
- Also with toothed outer ring

Explore more slewing ring bearing solutions for machine tools at:

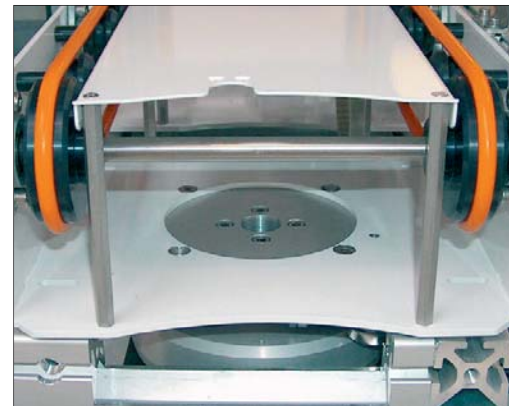
 www.igus.in/PRT



Universal glide elements – customise your own plain bearing supported slewing ring systems.

Using the flexible iglidur® PRT universal gliding elements, large, plain bearing supported slewing ring systems can be custom fabricated based on design 01. Depending on the number of elements, slewing ring systems are possible with interior diameters from 0.5 to 5 m – we will happily support you with the design and detailed layout.

From the field



Loads up to 2 tonnes.

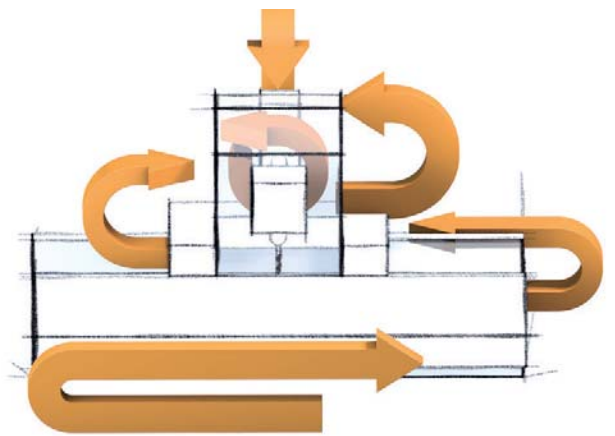
Reduce design-engineering effort ...



Delivered ready-to-install – igus® readychain®.

When considering the increasingly dynamic requirements of the machine tool industry, designing energy supply systems is becoming increasingly complex. The trend is going toward compact designs and energy-efficient lightweight solutions, which are driving ever more difficult design specifications.

Designing the energy supply system involves mechanical and electrical engineering experts. Regular project review meetings are necessary. The interfaces between the functional departments invariably results in efficiency losses. Valuable time is lost in world-wide competition, while process costs are also increasing. The need for fully harnessed energy supply systems grows. By deciding to work with a specialised supplier, efficient project management can be ensured at maximum quality.



Open-Space Service: cut down on design, engineering and development time

Provide us with your installation space and your requirements and we will design our energy supply system with mounting parts or bearing technology for your machine.

Find an in-depth OpenSpace video and more information online:

 www.igus.eu/openspace

... Save time and reduce costs

igus® solutions from a single source.

readychain® – fully harnessed energy chain systems in 3-10 days.

700 systems per week in 11 readychain® factories around the world – assembly time optimised to raise your cash-flow

- Eliminate storage costs for cables, e-chains® and connectors
- Cut turnaround times in half
- Flexibility when orders vary
- Reduce the number of suppliers and orders by 75%
- Minimise your machine downtimes
- System guarantee - depending on application

 www.igus.in/readychain

readycable® – fully harnessed cables from 24-48 hrs. or same day.

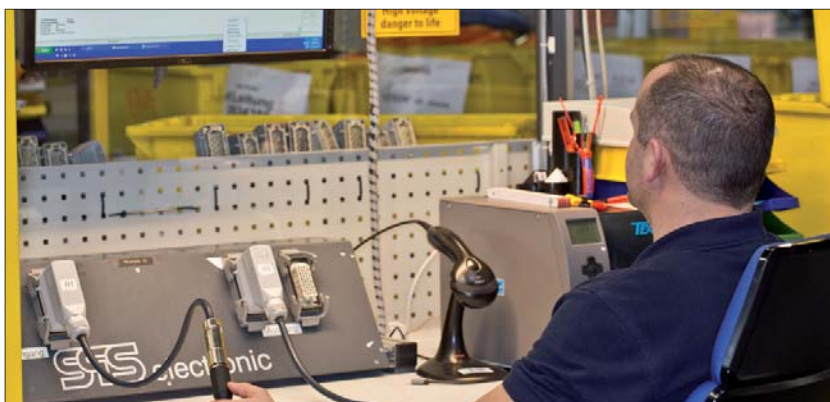
igus® provides more than 2,830 harnessed cables for drive technology pursuant to 20 different manufacturer standards. Professionally produced, 100% tested.

- Servo, power and signal/encoder cables
- No cutting charges, no surcharges for small quantities and packaging
- Cable length accurate to the centimetre per customer spec
- Smallest bending radius from 7.5 x d
- Reduce storage costs and increase cashflow

 www.igus.in/readycable

Tested!

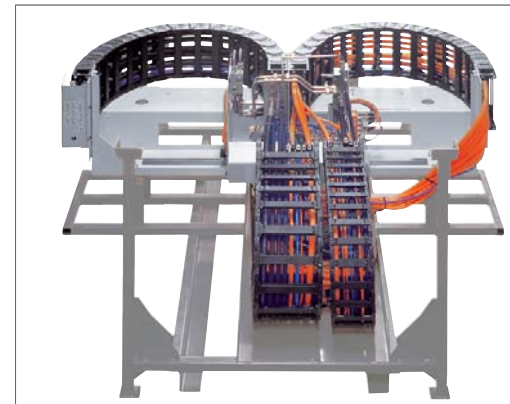
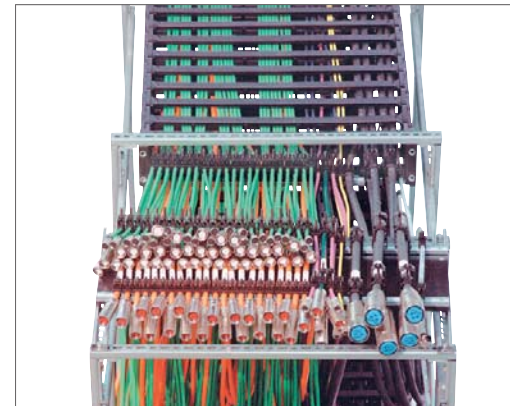
In the largest lab of its kind, igus® Cologne



Cable testing

100% testing of all harnessed cables – extensive quality assurance during assembly.

From the field



Reduce process costs ...

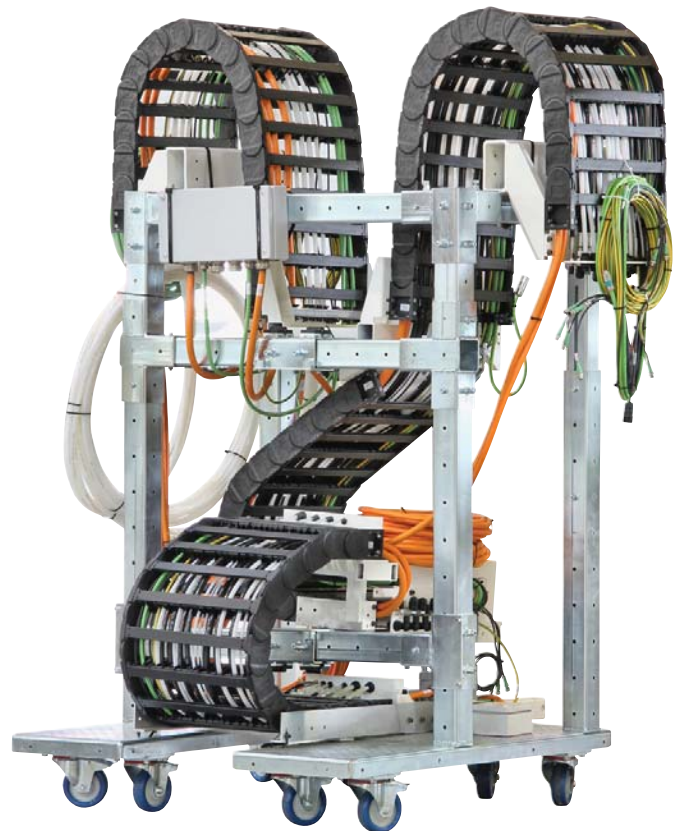
Hours instead of days: the modular rack for ready-to-install e-chainsystems®

Leaner design, even more economical

The telescoping and modular transport and assembly rack for harnessed energy supply systems in small and large version.

- Use on significantly smaller applications now even more economical
- Option to adapt to the large readychain® rack
- More detailed adaptation to customer applications

 www.igus.in/readychain-rack



... Standard.



... light.

... assembly racks

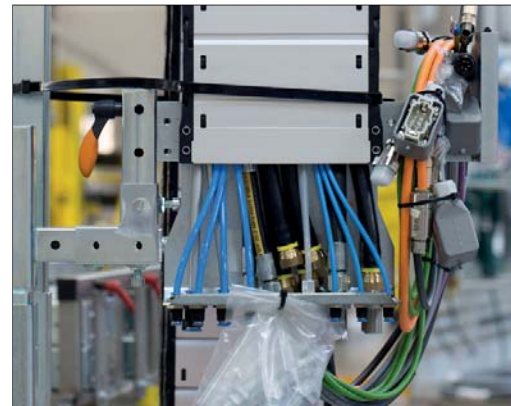
A detailed look:

The assembly-transportation – readychain® rack

igus® has been relying on harnessed readychain® systems for approximately 20 years. In order to bring the systems quickly and reliably to the machine, igus® has developed a telescoping, modular transportation rack that can be adjusted down to the millimetre to the interface of the respective machine within one working day.

- Modular supports and braces
- Telescoping, length adjustment possible at any time
- Indexing mechanism for retroactive attachment of components
- Moving and transporting is child's play due to purpose-built travelling unit
- Continued use of resources due to
- Reuse of individual components
- 50% reduction of process costs across the entire process

 www.igus.in/readychain-rack



Benefit ...

readychain® partner program.



3 paths to a harnessed e-chain®.

System guarantee for fully harnessed energy supply systems, regardless of who performs the assembly (you, your harnesser, or igus®), on request, including project planning and production support for your production/partner when igus® does not perform the assembly.

www.igus.in/readychain-rack

What we also do:

- Customer-specific guarantee documentation
- Customer-specific fabrication certificate
- Fabrication/training certificates
- Project development

Tested and proven igus® components, strain reliefs, accessories, e-chains®, cables and connections.

Project planning, prototype production, guarantees, online tools, and other services

readychain®:
harnessing
by igus®

Harnesser

Mechanical engineer:
Cables for internal
harnessing

New: igus® readychain® partner programme

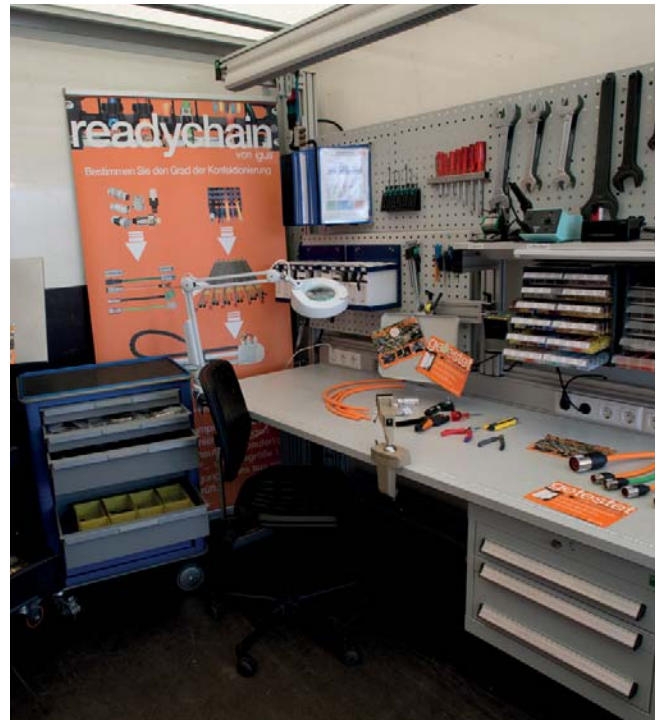
... Cost savings

Reduce process costs online with new igus® services und igus® online tools.

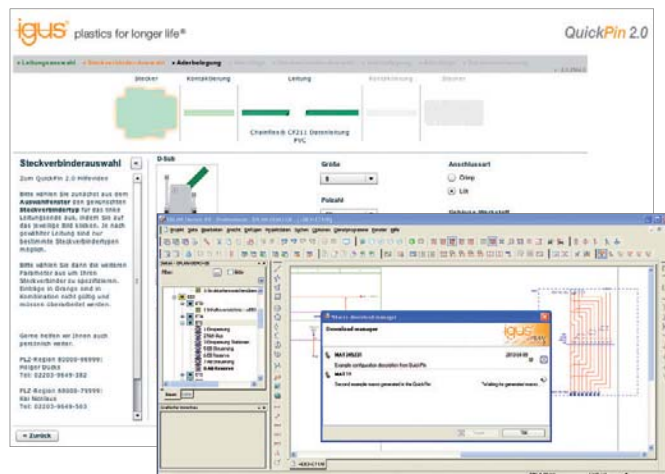


readychain® truck: cut production time

The readychain® truck serves a variety of purposes, including on-site prototype building, series supply to customers, or training in the "rolling igus factory". We will demonstrate our readychain® rack directly on your machine or at our facility in Cologne.



www.igus.in/readychain-rack



Cut down on configuration time ... of harnessed cables.

- Download the free QuickPin add-in from the igus® website without registering
- Key parameters of existing cable types are cross-referenced
- Fast and easy editing of macros

www.igus.eu/quickpin



chainflex® PUR-Servoleitung, Siemens Standard, Basisleitung, 7,5 x d

Leitungsaufbau 3G1

Technische Angaben

- Ölbeständig
- Hydrolyse und- mikrobebenständig
- Temperaturbereich (bewegt): -35 °C bis +100 °C
- Nennspannung: 300/500 V
- Mindestbiegeradius für Einsatz in E-Ketten®: 5 x Leitungsdurchmesser
- Farbe: Stahlblau (vergleichbar RAL 5011)

Preis

1 Stk. 75,56 EUR/Stk. + 12,52 EUR/m
3 Stk. Auf Anfrage
zzgl. Kupferzuschlag

1 Stück 1 m [in Warenkorb übernehmen](#)

Save money with the readycable® finder

Quickly find harnessed drive cables iaw. manufacturer standards: the output is an overview of the most important information, such as jacket material, oil-resistance, and bending radius.

www.igus.eu/readycablefinder

Benefit ...

Guarantee Club in three levels – 18, 24 or 36 months.

Scope of the guarantee.

The guarantee claim for each status level is limited by the timeframe as of the purchase date or the accumulated double strokes, whichever is reached first. We will promptly replace the cable piece goods for a guarantee claim.

The turnover of piece goods included in all shipments is counted toward the annual turnover. This includes chainflex® piece goods and chainflex® piece goods that were installed in readycable® and readychain® products. Copper values are not included. The Gold or Silver status expires when falling short of the annual turnover threshold, due to a missing certification, or by cancelling programme participation in writing.

The annual recertification is performed between 01 DEC and 31 JAN. This programme is voluntary and provides the customer with a guarantee on chainflex® cables in the catalogue product range. With respect to time, even the shortest igus® guarantee period exceeds the statutory minimum guarantee period, which is limited to only 12 months.

A condition for the guarantee is operating the cable within the operating parameters specified in the catalogue for the relevant cable series.

 www.chainflex.eu/garantie-club



... guaranteed reliability

The three levels of club membership.

igus® services*:

Status level "orange"

Scope: 18 month guarantee, 5 million double strokes

Condition: starting at EUR 1 turnover/year, on-site certification by the sales consultant

- Guarantee stickers to label your machine

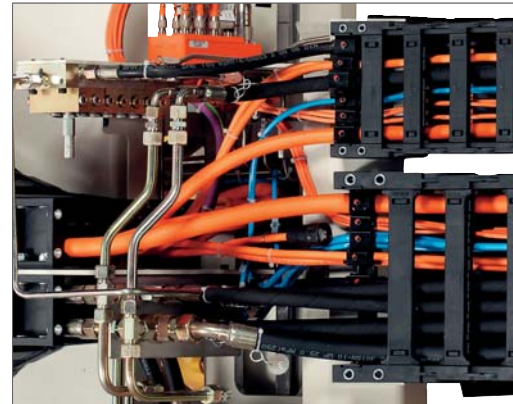


Status level "silver"

Scope: 24 month guarantee, 7.5 million double strokes

Condition: starting at EUR 10,000 turnover/year, on-site certification and training by the sales consultant

- Guarantee stickers to label your machine
- Comprehensive consultation and training for potential improvements for handling and assembling cables, reducing process costs, and optimising complete e-chainsystems®

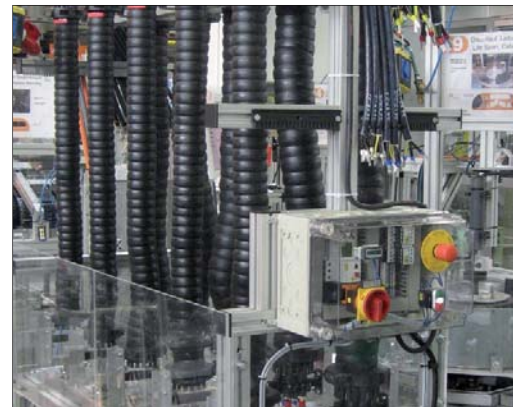


Status level "gold"

Scope: 36 month guarantee, 10 million double strokes

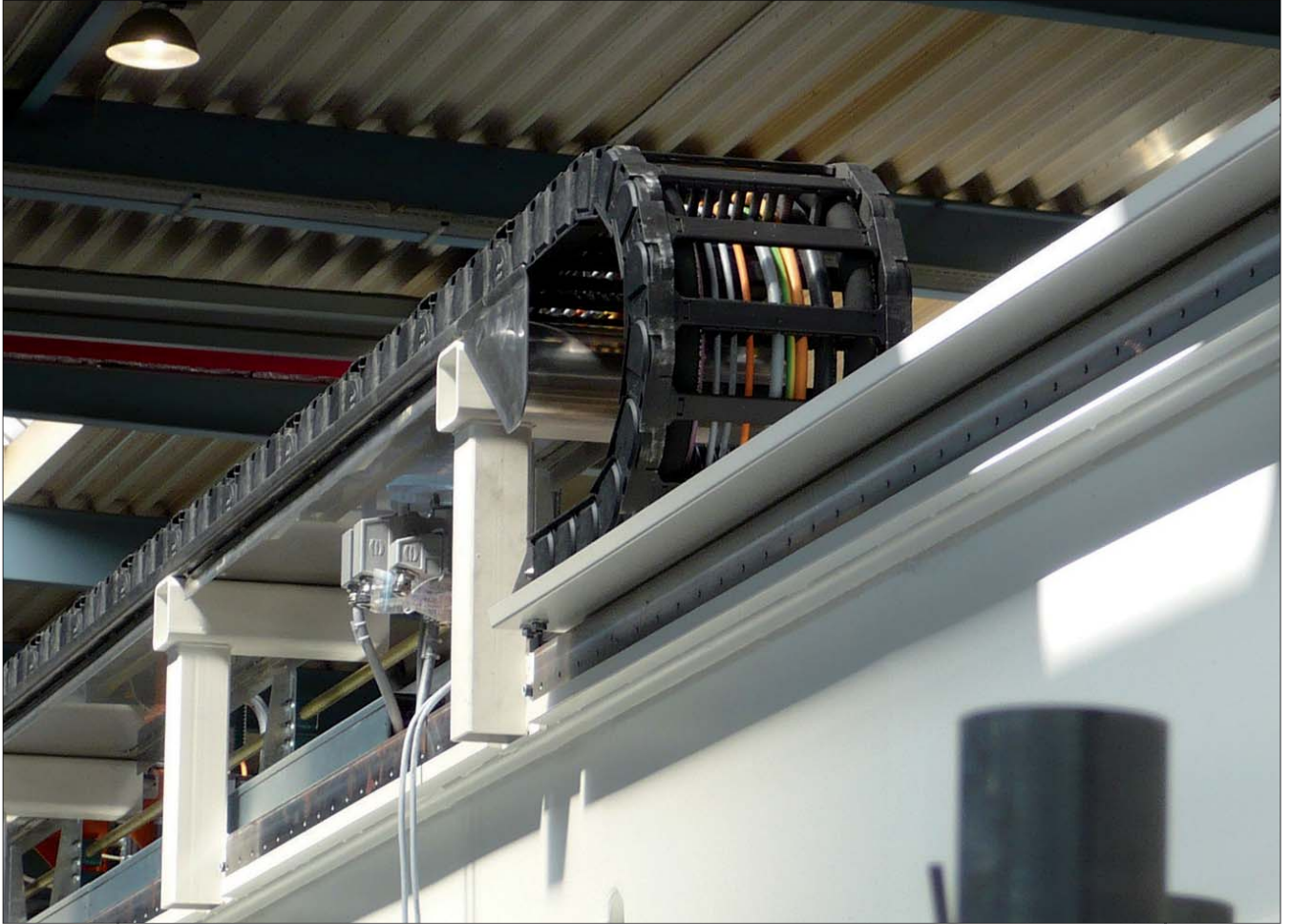
Condition: starting at EUR 100,000 turnover/year, on-site certification and training our the sales consultant and our product management

- Guarantee stickers to label your machine
- Comprehensive consultation and training for potential improvements for handling and assembling cables, reducing process costs, and optimising complete e-chainsystems®
- Presentation of novelties as part of an in-house trade fair at the customer
- Free one-day seminar about cable technology, configuring dynamic applications



* not applicable for the chainflex® M cable product range

Benefit ...



e-chains® for "green" automation provide a wide range of savings potentials, e.g. for sheet-metal fabrication.

Green, fast, saves money.

Energy efficient plastic energy chains and cables reduce consumption by up to 57%

Energy chain systems not only transport energy, data and media to machinery and equipment. They also have an influence on their energy costs. How much pull and push force, in other words drive power, is required at a given speed to move an energy chain? How light but at the same time rugged must energy chains be designed so that as little energy as possible is consumed and motors including drive control areas small as possible, and frequency converters and mechanics are adequate? Modern plastic energy chains and chainflex® cables help in this case to equip and operate machinery in an energy-efficient and cost-effective manner.

Benefits:

- Saving energy – helps the balance sheet and the environment
- Smaller motor with less power sufficient
- Smaller, lower cost motor control modules sufficient
- Smaller sized machines and equipment possible

... Energy efficiency

Breakthrough in "green" production automation.

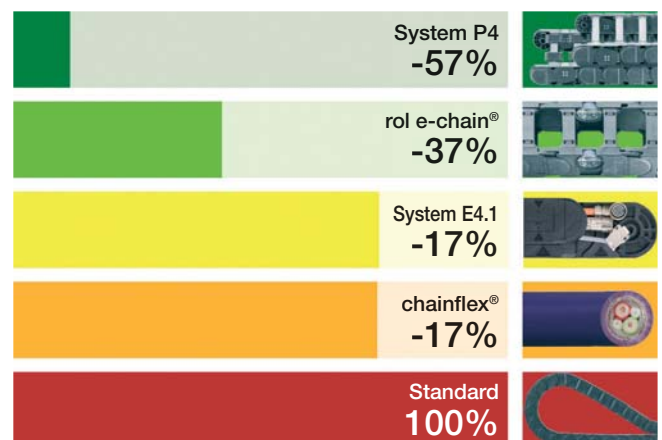
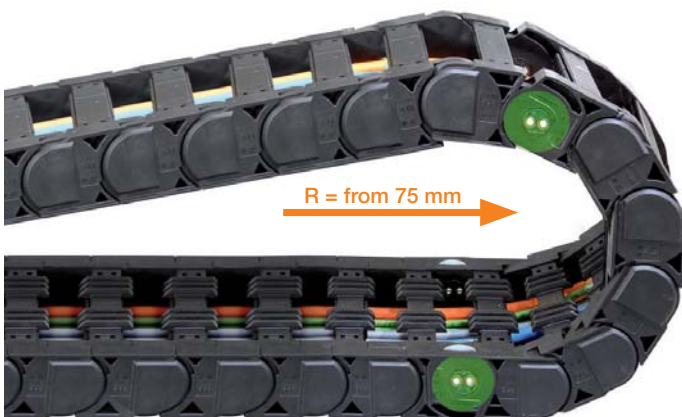
System P4 helps to dramatically cut costs, since a combination with chainflex® cables can reduce the drive forces required to move the system by as much as 57%. This is possible because the P4 e-chain® does not glide but rolls instead when moving.

This is only one option for designing more energy-efficient machinery with igus®-products. For instance, igus® has been relying on "light" energy configurations, which are 30 percent lighter than dimensionally equivalent products while still being very tough. igus® lightweight solutions need less drive power, are lower cost than standard products and facilitate energy-efficiency by reducing energy consumption, and promote compact design approaches by way of appropriately smaller motors.


chainflex® cables also reduce the weight. Employing high-grade jacket and insulation materials can result in weight savings of 5 to 30 percent. This reduces drive power by 17 percent. High-grade abrasion resistant jacket materials facilitate particularly thin-walled extrusions, which results in weight savings of up to 18 percent. In addition, using high-grade materials for insulating materials facilitates high electrical performance with small electrical cross-sections. Weight reductions of up to 30 percent can be achieved this way.

 www.igus.in/energyefficiency

From the field



Energy-efficient e-chainsystem® P4 – rolling instead of gliding.






plastics for longer life®


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Order fast
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Home > Machine tools



New: 30% cost-efficient cable product range chainflex® M

Your contact

Markus Kogelmann
 ☎ +49 8237 9529736
 » Your requirements?

» Home
 » Products
 » Applications
 » Email the product expert
 » Sample request
 » Request a quote
 » Newsletter

No minimum order value
 7⁰⁰ - 20⁰⁰
 Delivery+Consultation
 Delivery from 24h*
 Free samples
 Is something not to your liking? / Feedback

More than 100,000 products available!
 Delivery and consultation


Modern components for your machines

igus® products for the machine tools sector
 High quality for less - plastics for longer life®

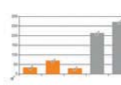
Machine tool manufacturers and their suppliers are confronted with major global challenges. Competition is intensifying further, price pressures are increasing, as is the demand for local production. We provide new ways to produce your machine tools cost-effectively for the world market, and to place your confidence into the quality and the innovations that represent the igus® brand.

» **Reliable products at affordable prices**

"Open-Space"-Service
 Konstruktionszeit sparen mit "Open-Space"-Service
 » "Open-Space"-Service




Verschleißversuche Wellen
 Verschleißversuche Wellen
 » Verschleißversuche Wellen




Energieführungsketten und flexible chainflex®-Leitungen
 Robuste und saubere Energieführung


Programmübersicht E-KettenSysteme®
 E-KettenSysteme® Online-Katalog - Produktauswahl
 » Programmübersicht E-KettenSysteme®




Übersicht E4.1
 Eine für alles
 » Übersicht E4.1



Übersicht RX Rohre
 E-Rohr mit späneabweisendem Design
 » Übersicht RX Rohre




Montageservice
 Sichern Sie sich eine fehlerfreie Montage, vermeiden Sie Stillstandszeiten und zusätzlich Kosten...
 » Montageservice




Anwendungsbeispiele mit Baumaschinen


Schwerlasttransporter
 Bei der Konstruktion eines ausziehbaren Schwerlasttransporters sind robuste Energieketten technisch und wirtschaftlich die erste Wahl.
 » Schwerlasttransporter




Ramm-Bohrgerät
 Das Ramm-Bohrgerät erzeugt beim Arbeitsvorgang starke Vibrationen und Schmutz.
 » Ramm-Bohrgerät



Laufrollen am Minibagger
 Verbesserung von Lebensdauer



Bagger
 Bagger für schwere



Find and calculate faster

The screenshot shows the 'QuickChain.100' software interface. At the top, it says 'igus® plastics for longer life®' and 'QuickChain.100'. Below this is a progress bar with steps: 'Lösungen', 'Maße und Bewegung', 'Design und Umgebung', 'Auswert der E-Kette', 'Innenauflegung', and 'Stückliste'. The 'Design und Umgebung' step is currently active. The interface is divided into several sections:

- Einbauart:** Radio buttons for 'freitragend', 'gleitend', and 'hängend'. There are also checkboxes for 'Beurteilungsbegrenzungen vorhanden' and 'Festpunkt nicht mittig des Verfahrweges'.
- Performance:** Input fields for 'Geschwindigkeit' (5 m/s), 'Beschleunigung' (10 m/s²), 'Doppelhöhe / Stunde', and 'Zusatzlast' (0.934 kg/m). A checkbox 'Querbeschleunigung tritt auf' is present.
- Diagram:** A 3D diagram of a chain on a track with a 'Verfahrweg' of 2500 mm.
- Dimensions:** Input fields for 'Minimale Innenhöhe', 'Maximale Außenhöhe', and 'Minimale Innenbreite'.
- Radius:** An input field for 'Minimale Biegeradius'.

 At the bottom, there are navigation buttons: 'Zurück', 'Zurücksetzen', '64 Serien, 8188 Artikel', 'Teamwork', 'Konfiguration', 'Hilfekonakt', and 'Weiter'.

i For any task – in any quantity

Different industries need different solutions. Whether in mechanical engineering, automobile manufacturing or in the robot industry – igus® offers customised support for specialised applications.

igus® already has many years of experience and specialised resources for many industries

www.igus.in/quickchain100

www.igus.in/industries

Expert for system design and calculations for travels up to 100 m

Simply enter your application's environmental parameters into the e-chain® expert. The expert will propose the matching solution.

You can find a wide range of other online tools, such as configurators, service life calculators, and product finders at www.igus.in/onlinetools

This screenshot shows the 'Design und Umgebung' step of the QuickChain.100 software. It contains several sections for inputting environmental and material data:

- Bestform:** Checkboxes for 'Eingrenzen' and 'nur Rollen'.
- Witterung:** Checkboxes for 'Wind', 'Regen', 'Schnee', and 'Eis'.
- Schmutzbelastung:** A list of materials like 'Metalle', 'Sand', 'Kies', etc., with checkboxes for 'Grub', 'Mittel', and 'Fein'.
- Vibrationen, Schläge oder Stöße von außen:** Radio buttons for 'mittel' or 'stark'.
- Temperatur:** Input fields for 'Durchschnittlich', 'Minimal', and 'Maximal' temperatures in °C.
- Flüssigkeiten / Chemikalien:** Checkboxes for 'Säure', 'Alkohole', 'Kunststoffe', 'Wasser', and 'Öle'.
- Luftfeuchtigkeit:** Input fields for 'Durchschnittlich', 'Minimal', and 'Maximal' humidity in %.
- Sonstiges:** Checkboxes for 'Nukleare Strahlung (> 3000 r/h)', 'UV-Strahlung', 'ESD/EMV', 'Benzol', 'UL-V2', and 'geräuscharm'.

 At the bottom, there are navigation buttons: 'Zurück', 'Zurücksetzen', '64 Serien, 8188 Artikel', 'Teamwork', 'Konfiguration', 'Hilfekonakt', and 'Weiter'.

This screenshot shows the 'Auswert der E-Kette' step of the QuickChain.100 software. It displays the final configuration and a 3D model of the chain system.

- E-Kette®:** A list of selected chain types with their respective article numbers and dimensions. For example, 'Chainflex CF130 UL, Bleuabdeckung PVC' with Art.-Nr. 1400 065 125.0.
- 3D Model:** A 3D rendering of the chain system installed on a track, with various components labeled with numbers 1 through 6.
- Summary:** A box showing 'Anzahl: 5 verwendet: 5'.

 At the bottom, there are navigation buttons: 'Zurück', 'Zurücksetzen', '64 Serien, 8188 Artikel', 'Teamwork', 'Konfiguration', 'Hilfekonakt', and 'Weiter'.

Research & Development



Better products for less - a key element: the industry's largest test lab. 1,750 m² lab, more than 15,000 tests and 2 billion test strokes per year.

The igus[®] lab and field experience

Cutting costs while also guaranteeing maximum process reliability – only those who conduct intensive research and testing will successfully bridge this gap. The industry's largest test lab conducts more than two billion test cycles per year on a total of 107 test rigs.

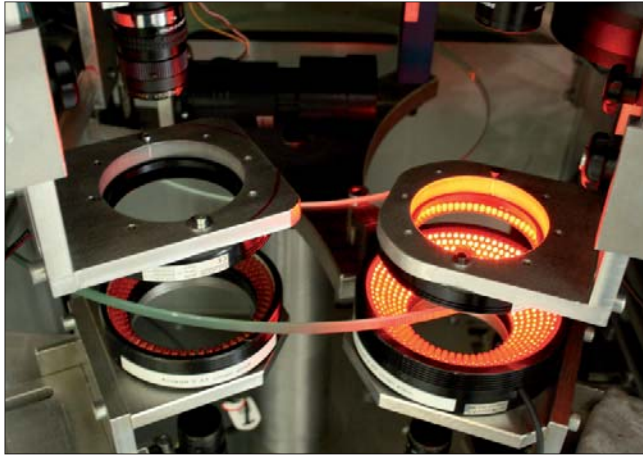
Our mechanical engineering components pass the litmus test presented by production reality, because they have already passed this test before leaving the igus[®] warehouse.



Tribology testing in the plain bearing lab, igus[®] Cologne.

 www.igus.in/test

15,000 tests per year



The igus® quality assurance

The quality policy of igus® is based on the objective to identify and meet customer needs, and to always be a competent and reliable supplier. igus® has always been committed to produce products at the best available quality level, and to consistently develop innovative solutions.



<input checked="" type="checkbox"/> Höchste Standzeiten im Trockenlauf	<input type="checkbox"/> Preisgünstig	Zulässige statische Flächenpressung (23°C) 18 Mpa
<input type="checkbox"/> Schmutzresistent	<input type="checkbox"/> Unterwassereinsatz	Obere langzeitige Anwendungstemperatur 203 °C
<input checked="" type="checkbox"/> Geringe Reibwerte	<input type="checkbox"/> Gut bei Kantenpressung	Untere Anwendungstemperatur 0 °C
<input type="checkbox"/> Hohe Chemikalienbeständigkeit	<input type="checkbox"/> Schwingungsdämpfend	
<input type="checkbox"/> Geringe Wasseraufnahme	<input type="checkbox"/> FDA-konform / Lebensmittel	
<input type="checkbox"/> Artikelauswahl (nur für Artikel mit Lieferprogramm)		
Wellendurchmesser <input type="text"/> Keine Auswahl		
<input checked="" type="radio"/> metrisch <input type="radio"/> imperial		

Für Sie geeignete iglidur® Lager:

Standards	Spezialisten ab Lager	Spezialisten auftragsbezogen
<input checked="" type="checkbox"/> iglidur® G	<input checked="" type="checkbox"/> iglidur® A180	<input checked="" type="checkbox"/> iglidur® B
<input checked="" type="checkbox"/> iglidur® J	<input checked="" type="checkbox"/> iglidur® A200	<input checked="" type="checkbox"/> iglidur® C
<input checked="" type="checkbox"/> iglidur® M250	<input checked="" type="checkbox"/> iglidur® A290	<input checked="" type="checkbox"/> iglidur® D
<input checked="" type="checkbox"/> iglidur® W300	<input checked="" type="checkbox"/> iglidur® A350	<input checked="" type="checkbox"/> iglidur® GLW
<input checked="" type="checkbox"/> iglidur® X	<input checked="" type="checkbox"/> iglidur® A500	<input checked="" type="checkbox"/> iglidur® H2
	<input checked="" type="checkbox"/> iglidur® J350	<input checked="" type="checkbox"/> iglidur® H220
	<input checked="" type="checkbox"/> iglidur® C500	<input checked="" type="checkbox"/> iglidur® J200
	<input checked="" type="checkbox"/> iglidur® F	<input checked="" type="checkbox"/> iglidur® T220
	<input checked="" type="checkbox"/> iglidur® H	<input checked="" type="checkbox"/> iglidur® UW500
	<input checked="" type="checkbox"/> iglidur® L250	
	<input checked="" type="checkbox"/> iglidur® M14	
	<input checked="" type="checkbox"/> iglidur® M16	
	<input checked="" type="checkbox"/> iglidur® M18	
	<input checked="" type="checkbox"/> iglidur® M20	
	<input checked="" type="checkbox"/> iglidur® M22	
	<input checked="" type="checkbox"/> iglidur® M24	
	<input checked="" type="checkbox"/> iglidur® M26	
	<input checked="" type="checkbox"/> iglidur® M28	
	<input checked="" type="checkbox"/> iglidur® M30	
	<input checked="" type="checkbox"/> iglidur® M32	
	<input checked="" type="checkbox"/> iglidur® M34	
	<input checked="" type="checkbox"/> iglidur® M36	
	<input checked="" type="checkbox"/> iglidur® M38	
	<input checked="" type="checkbox"/> iglidur® M40	
	<input checked="" type="checkbox"/> iglidur® M42	
	<input checked="" type="checkbox"/> iglidur® M44	
	<input checked="" type="checkbox"/> iglidur® M46	
	<input checked="" type="checkbox"/> iglidur® M48	
	<input checked="" type="checkbox"/> iglidur® M50	
	<input checked="" type="checkbox"/> iglidur® M52	
	<input checked="" type="checkbox"/> iglidur® M54	
	<input checked="" type="checkbox"/> iglidur® M56	
	<input checked="" type="checkbox"/> iglidur® M58	
	<input checked="" type="checkbox"/> iglidur® M60	
	<input checked="" type="checkbox"/> iglidur® M62	
	<input checked="" type="checkbox"/> iglidur® M64	
	<input checked="" type="checkbox"/> iglidur® M66	
	<input checked="" type="checkbox"/> iglidur® M68	
	<input checked="" type="checkbox"/> iglidur® M70	
	<input checked="" type="checkbox"/> iglidur® M72	
	<input checked="" type="checkbox"/> iglidur® M74	
	<input checked="" type="checkbox"/> iglidur® M76	
	<input checked="" type="checkbox"/> iglidur® M78	
	<input checked="" type="checkbox"/> iglidur® M80	
	<input checked="" type="checkbox"/> iglidur® M82	
	<input checked="" type="checkbox"/> iglidur® M84	
	<input checked="" type="checkbox"/> iglidur® M86	
	<input checked="" type="checkbox"/> iglidur® M88	
	<input checked="" type="checkbox"/> iglidur® M90	
	<input checked="" type="checkbox"/> iglidur® M92	
	<input checked="" type="checkbox"/> iglidur® M94	
	<input checked="" type="checkbox"/> iglidur® M96	
	<input checked="" type="checkbox"/> iglidur® M98	
	<input checked="" type="checkbox"/> iglidur® M100	

Extensive test database

What is probably the world's largest database was created from more than 15,000 test. This database gives us the ability to select the right product for your specific application.

i Better for the environment

Because iglidur® is free of lubricants, no contaminants are discharged to the environment. Even the low weight of iglidur polymer plain bearings render it ecologically valuable.



i motion plastics®

For 50 years, we have been driven by a single vision – motion plastics®: innovations from plastics that move machinery.

Our core technology is tribo-polymers – high-performance plastics that we optimise for friction and wear. The technology has made us into the world-wide leader for developing and manufacturing energy supply systems and plain bearings.



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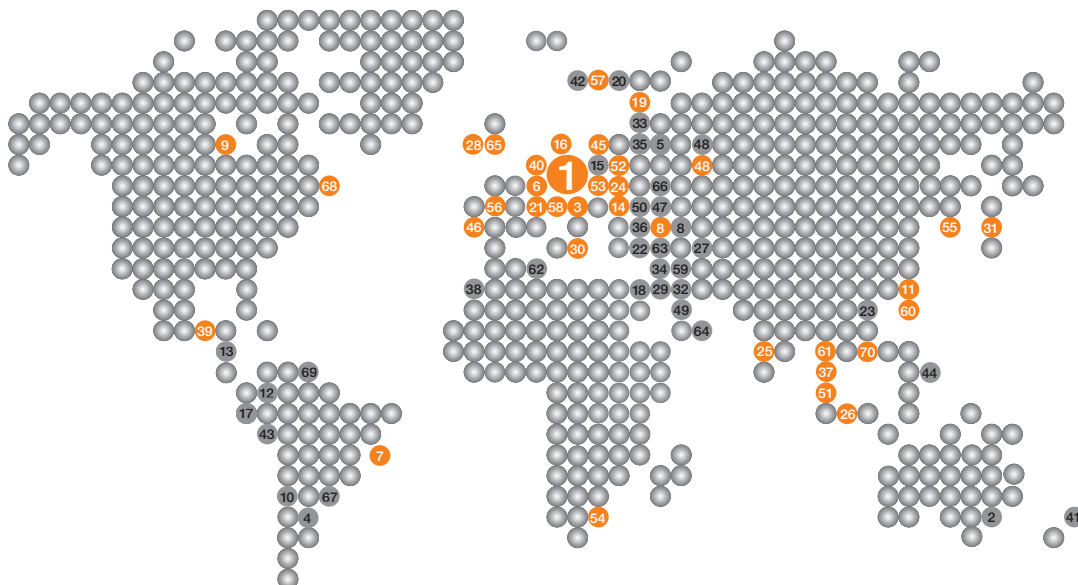
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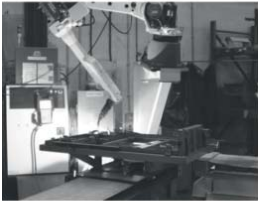
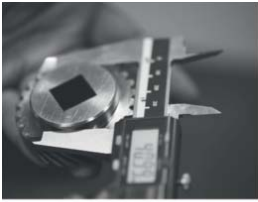
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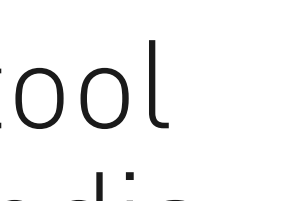
TRAK-ing

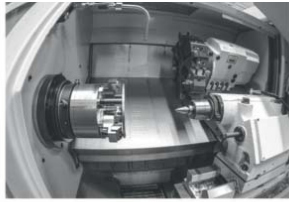
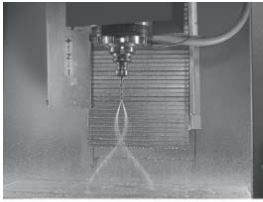
Productivity
for Success





The largest machine tool group in India





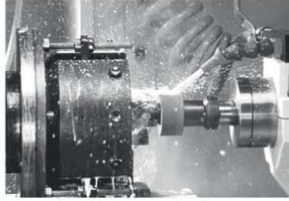
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MILLING SOLUTIONS



BEARING HOUSING							
16	5	2	0				
40	H2 53	H3 53	H4 26				
0	0	6	6				
53	H6 53	H7 40	H8 44				
5	0	0	35				
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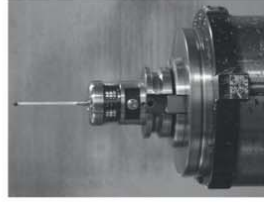
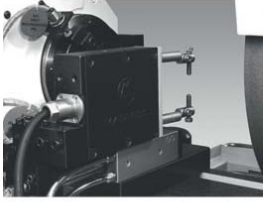


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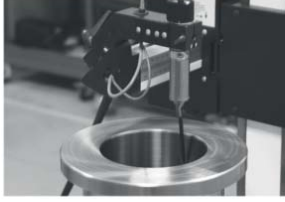


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SALES & SERVICE



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AUTOMATION SOLUTIONS



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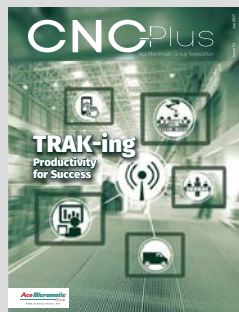
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Cover Page:

Industrial Internet of Things (IIoT) is all about connecting employee, machine and management into one continuum for improved productivity. The cover image illustrates the multilateral nexus that enables real-time information, prompt support and uninterrupted functionality on the shop floor.



06

**TRAK-ing
Productivity
for Success**

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Ring in the new...

Welcome back, and wish you all a very happy new year! With your continued support, we will keep working on our group philosophy of creating "Value Through Technology". Our conscious efforts in 2017 will be keeping the ideals of "Make in India" at the forefront.

Our new product, the Next Generation Precision Grinder, an indigenous high precision cylindrical grinder from MGT has been made in collaboration with IIT - Madras and Advanced Machine Tool Testing Facility (AMTTF).

The collaboration is in line with our commitment to engage with academia and industry to promote knowledge and develop new technology.

For a closer look at our entire product and service array, do visit us at IMTEX 2017, from January 26 to February 1 at Bangalore International Exhibition Centre, Bengaluru. Our homegrown latest technologies and solutions will be on display at the Ace Micromatic Group Pavilion in Hall 4, Stall B106. Furthering our customer engagement endeavour, on February 14 we officially raise the

curtain on our new Tech Centre in Rajkot - another step bringing us closer to our customers to meet their expectations and join them in their growth story.

One future trend knocking on our doors already is the Industrial Internet of Things (IIoT), aka Smart Manufacturing or Industry 4.0. Our step to embracing it is the Manufacturing Intelligence suite, from AMIT, the cover story on insightful experiences of our customers

of its successful implementation and utility.

We remain committed to bring you through CNC Plus engaging content regularly. To this end, I am happy to announce our new collaboration with Magic Wand Media Inc, a content marketing and branding team with

profound experience and intrinsic knowledge of the Indian manufacturing industry.

We solicit your feedback.

Keep them coming!



T K Ramesh, CEO
Micromatic Machine Tools

Visit us at
IMTEX 2017
Ace Micromatic
Group Pavilion
at Hall 4, Stall B106
Jan 26 to Feb 1
BIEC, Bengaluru



TRAK-ing

Productivity
for Success



While Industrial Internet of Things (IIoT) is all the rage in production these days, actual implementation of IIoT-based technologies comes with its own set of challenges and rewards. We bring you three success stories from our valued customers who implemented the AmiT – TPM-Trak®, a manufacturing intelligence suite from the Ace Micromatic Group and are now reaping the benefits in productivity, employee performance and better understanding of their machines.

The long-anticipated future is here, and IIoT is a reality in the manufacturing sector today. Simply put, IIoT-based technologies help us “see” each unit in a manufacturing setup during production, allowing better control and analysis of the process. It is the first step towards real Smart Manufacturing. “Whether you call it IIoT, Smart Manufacturing or the German term Internet 4.0, it is the buzz word in the manufacturing industry, indicating integration of sensors, communication technology, and software all put together as one solution,” expounds Product Head, Manufacturing Intelligence, Ace Micromatic Manufacturing Intelligence Technologies Pvt Ltd (AmiT), M N Somashekhar, Vice President, Projects, Bharat Forge Ltd, Sagar Inamdar explains the company’s perspective for implementing IIoT: “We wanted to optimize and automate to keep our productivity going up.” Ask Executive Director, Manufacturing RJJ Engineering Pvt Ltd, Kamaal Qasmi who has recently purchased the AmiT TPM-Trak® observed a jump in productivity. “It is not possible for

the supervisor to go and monitor each machine manually,” notes Qasmi, “but with this system we can monitor all the machines at one go on one system. We have seen an increase in productivity by 10 per cent.”

Supplying his own experience at Samarth Engineering Services, Managing Director Prashant Shete

shares, “With the help of TPM-Trak® software, we were able to manage production schedules meticulously and save ourselves from buying an extra machine. It helped us to reduce our investment. The working was healthy and very predictable.”

Emphasizing on the relevance of IIoT in the industry

today Regional Lead-Western India, AmiT, Rammohan Yadati describes the current scenario, “Indian companies are at an early stage of adoption in the IIoT journey. Readiness largely depends on maturity profile of the individual company in terms of processes, IT infrastructure and alignment and sponsorship from

The Internet of Things (IoT) has the potential to impact everything from new product opportunities, to shop floor optimization, to factory worker efficiency gains that will power top-line and bottom-line gains.

Goldman Sachs, in its report The Internet of Things: The Next Mega-Trend



» We are on a mission to double our revenue by 2020. We will not be increasing our man force but our technology force, integrated with automation."

Vice President, Projects, Bharat Forge Ltd, Sagar Inamdar



TPM-Trak® installed on machines at RIJ Engineering Pvt Ltd



» We can now monitor the production on hourly basis. After installing the TPM-Trak® we have seen an increase of 10 percent productivity."

*Executive Director,
Manufacturing,
RIJ Engineering
Pvt Ltd,
Kamaal Qasmi*

senior leadership. Many companies are taking up IIoT programs by involving domain experts, system integrators and technology OEMs to understand and benchmark several aspects of manufacturing productivity."

The Product

Yadati further adds, "We have been the first mover in providing Industry 4.0 and Industrial IoT solutions in manufacturing space in India, and continue to create robust innovation which can deliver quick, tangible benefits to customers. Our solutions span different areas of Industry 4.0 such as Real-time OEE & Production Analytics; Process Energy Monitoring; Online Inspection & Poka Yoke; Visual Factory & ANDON; Workflow Apps; Machine Diagnostics; and Assembly & Conveyor Monitoring." Being a part of the machine building Group, AceMicromatic, AmiT is fully prepared to serve the manufacturing industry in IoT space, developing smart machine technology for CNC turning, machining and grinding machines.

The Customers

Bharat Forge Ltd is world's largest crankshaft manufacturing company. While

the company deals in a variety of products, the backbone is automotive – crankshaft, steering knuckle, drive and transmission channels. The company has also diversified into gear shaft and turbocharger business; besides interests in aluminium and most recently, defence and locomotive.

Samarth Engineering Services are manufacturers of small precision components, with a product basket including poly groves pulley, valve cap components etc. and belting out around four lakh components per month. RIJ Engineering Pvt Ltd is an integrated OE Gear manufacturer, providing high quality machining support to the automotive sector in India. Its clientele includes Tata Motors, Mahindra & Mahindra, Fiat India Automobiles Ltd, Dana Spicer, VE Commercial Vehicle Ltd, Eaton, etc. All manufacturing processes are performed in-house, with a production capacity of two lakh components per month.

Foray into TPM

For Samarth Engineering, the 2008 recession was a wake-up call to take a hard look at the way they were producing. "At the suggestion of Managing Director, AmiT, Chandrashekhar Bharti we implemented TPM-Trak® on four machines, and the



results were very effective,” shares Shete. At present, the company is making components for Indo Schöttle Auto Parts Pvt Ltd, Turbo charger for Tata and components for Borg Warner. Sensing a need to expand, the company is moving from its current 2500 sq ft facility to a 10,000 sq ft industrial space next year. AMG will accompany them to the new setup, Shete confirms. Detailing the objective of buying TPM-Trak® for RIJ Engineering, Qasmi puts, “We have hundreds of machines and it is difficult to monitor productivity of each machine manually. We were looking for an automated product which could give all information on machine productivity and provide unfiltered information without any intervention or manipulation so that we could monitor the machine productivity transparently.” Having found encouraging results after the first TPM-Trak® installation around 10 months ago the company got it installed on 32 machines in two plants at different locations.

The challenge

Shedding light on the project at RIJ Engineering, Yadati shares, “We came across the challenge to harmonize the best practices and requirements across plants

which have different processes and skill levels for technology adoption.” He moves on to the Bharat Forge story, a company that in Yadati’s words, “is passionate about IIoT, and the projects at BFL are technically challenging. Working with corporate sector such as BFL involves discussions and co-ordination with several stakeholders to finalize requirements of the solution and methods of execution. Providing training to different levels of the work-force in different departments/teams to suit the usage and skill sets was another challenge.” Every project brings its unique set of challenges, and the same was true for Samarth as well where the first task was to overcome the hesitation or prejudice in the minds of the work-force. “A monitoring solution was being perceived as a ‘policing tool’,” recalls Yadati, “At Samarth Engineering, team members had to be educated about the importance of fact-based working and adoption of IT-based solutions in manufacturing shops. It was explained to them that the objective is on addressing process related issues that would subsequently help increase their own productivity. Today, at Samarth



» With the help of TPM-Trak® software, we were able to manage production schedules meticulously and save ourselves from buying an extra machine. It helped us to reduce our investment.”

*Managing Director,
Samarth
Engineering
Services,
Prashant Shete*



Manager Productions, Samarth Engineering Services, Manu Panicker elaborating on the advantages of installing TPM-Trak in their plant



» We are in this industry since more than 10 years. We have eight products with integrated productivity, monitoring solution, TPM-Trak®. All our products are integrated in such a manner so as to benefit from the latest Smart Manufacturing technology."

**Product Head,
Manufacturing
Intelligence,
AmiT,
M N Somashekhar**

Engineering, all 14 CNC machines are enabled with TPM-Trak®. Workers review their performance themselves using TPM-Trak® dashboards."

The Transformation

The leap of faith in purchasing TPM-Trak® was duly rewarded in each case. For Qasmi, the first benefit was that automation meant no manipulation of data. "The best part is the report gets generated timely and reaches us on the set schedule," he affirms, "We have 400 people and our first shift starts at 6 a.m. With the Implementation of this system the tracking is easy. "RIJ engineering is using TPM-Trak® OEE monitoring and add-on IoT alerting modules," Yadati adjoins, "At RIJ Engineering, technical pre-requisites such as getting the required signals from machines for TCS_PLC variant involved the coordination between their electrical maintenance team, AmiT team and MMT team. AmiT also helps the customer to identify right choice of IT infrastructure. Today, RIJ TPM-Trak servers are available remotely to AmiT technical team in Bangalore which allows RIJ users to interact with AmiT team at any time to clarify the doubts or

get required technical help."

Production reports for RIJ have become timely and more constructive too. "TPM-Trak® gives an insight timely on each machine's production capacity, idle time, set-up time, all correlated with the operator. Hence, we now understand every operator's strengths and weaknesses, as well as the kind of training they require. We develop a matrix based on the report in terms of every operator's output," says Qasmi.

Leveraging the most

Samarth Engineering is using TPM-Trak® OEE monitoring solution. Noting his satisfaction, Shete says, "We have developed capacity calculation software, where we enter the part names, cycle time and man hours. It instantly generates data on capacity, based on which we can decide if we are falling short and need to outsource some of the components. We are working with 90 per cent productivity. We have confidence and back up, and software never betrayed us. Productivity of TPM-Trak® is 85-90 per cent."

"The TPM-Trak® is an innovative product in our sort of manufacturing set up," Qasmi declares, "The idle time and wastage of components have reduced drastically. We can now monitor the production



Operators at Samarth Engineering align with the company's philosophy of growth and understand the value of being monitored



» Challenges can be either technical or personnel related. Both can be overcome by working closely with the customers, and generous interaction to educate and address all concerns of the employees before installation."

Regional Lead-Western India, AmiT, Rammohan Yadati

on hourly basis. After installing the TPM-Trak® we have seen an increase of 10 percent productivity." RIJ Engineering is affirmatively on board for more connectivity, confirms Qasmi, "Ultimately we want to connect all the machines – the entire plant. The software provides us the productivity we are looking for."

CNC^{Plus}

We are grateful to our customers for their support and contribution to the cover story.

**Bharat Forge Ltd
RIJ Engineering Pvt Ltd
Samarth Engineering Services**



CNC^{Plus}
Ace Micromatic Group Newsletter

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Rajkot to get a TECH CENTRE



To serve its customers better, Micromatic Machine Tools Pvt Ltd (MMT) has announced the opening of its Tech Centre at Rajkot on Feb 14, 2017.

Spread across a sprawling area of 9,400 sq ft, the state-of-the-art Tech Centre is slated to provide myriad training programs from basic CNC machine operating, advance training, machine maintenance training, component cycle time study, fixtures solution, to production improvement and so on to its customers. With an objective to increase awareness and knowledge on CNC machines amongst its clientele, MMT intends to work closely with its customers and provide them with application support.

During the opening of the Tech Centre next month, there will be an array of wide range of machines from the Group such as: Ace: SJ400-LM, SLC-16-LM. AMS: VMC 850V and MGT: SGA-40.

The Rajkot Tech Centre will be inaugurated at the hands of Managing Director, Echjay Industries, Parasbhai Doshi; Chairman, Amul Group, Sureshbhai Patel; Managing Director, Rolex Rings, Manishbhai Madeka and Managing Director, Fm-PBW, Maheshbhai Patel.

MMT started its Gujarat branch in 2004. Since then, the company's customer base has expanded to an impressive number of 1,435 using 2,840 machines. Catering to the requirements of diverse industry sectors from automobile, die-mould, agriculture submersible pumps, hydraulic and surgical implants, these customers have always found machines from the Ace group very reliable.

CNC^{Plus}

MMT started its Gujarat branch in 2004. Since then, the company's customer base has expanded to an impressive number of 1,435 using 2,840 machines.

To know more contact us: E:connect@acemicromatic.com

CMV-350 TS

Twin Spindle Column Moving Machining Center CMV-350 TS, a compact machining center is designed for outstanding dynamic rigidity while its isolated working zone enables better chip and coolant management system.



Benefits of CMV-350 TS

- Two parallel spindles machining two identical work pieces at once
- Large reduction in the cost per component due to reduction in Cycle time per component
- Optimal reduction when multiple components are machined each cycle
- Two times the productivity within a footprint only slightly larger than that of a single spindle machine
- Reduction in the manpower requirement, resources maintenance cost
- Reduced Power consumption
- Perfect balance of Productivity & Economy
- Ideal for high volume production of identical components

Cutting edge features

- Twin spindle column moving type VMC
- Center distance between two spindles: 350 mm
- Faster Pallet changer (Turn table) – Pallet changing time of 8 sec with 600 kg load per side
- Large table size of 1100 x 500 mm (2) – Can accommodate Rotary table on both sides
- Chip to chip time of 4 secs- ATCs attached to column

Showcasing **THE BEST!**

As a leading brand in the Indian machine tools space, Ace Micromatic Group will once again occupy a prime position in IMTEX 2017 in Bengaluru. Our booth at the exhibition will feature some of our latest and most popular solutions in Turning, Milling, Grinding, Machine Building, as well as IoT and Smart Manufacturing.

Array of Solutions & Products on display

Turning

- Compact - High Performance Turning Centre
- Precision-CNC Sliding Head Automat
- IoT Enabled Machines
- Productivity Enhanced by Automation Solutions
- Shaft Turning Solutions

Milling

- End to End Automation Solutions
- High Dynamics 5 Axis Machining Center
- High Productive Twin Spindle Machining Centers
- High Speed Drill Tap Machining Centers
- High Speed Compact VMCs

Grinding

- CNC Internal Grinder
- CNC Centerless Grinder
- Technology Corner
- Value Added Services Corner

Machine Building

- Servo Turrets
- ATC for Universal Machining Centre
- ATC for HMC and VMC & ATC for Drill Tap Centre
- CNC system for Turning & Milling Machines
- Servo Motors and Drives

IoT & Smart Manufacturing

- MachineConnect
- eSHOPx Digital Factory
- TPM-Trak OEE & Visual ANDONs
- Process Energy Monitoring
- Assembly Conveyor Monitoring
- Customer Support
- Value Added Services
- Application Support & Training
- Channel Partners & Financial Solutions

iG-150U

High precision 2/3 Axes CNC Cylindrical Internal Grinding Machines are ideal for variety of internal, external and face grinding applications

Features

- Twin spindle application for grinding stepped bore of different ranges in single setup
- Compact foot print for machine mounted accessories for plug and start
- Automation with Robot and Gantry
- Wheel Spindle RPM ranges 7500 to 105000 for higher material removal ensuring consistent, enhanced quality



Trailblazer PRECISION IN GRINDING

Objective

Development of an indigenous cylindrical grinding machine equivalent to the best in class grinding machine in the World.

Frame-work for the design, building & testing of a similar Next Generation high Precision Grinding Machine (NGPG).

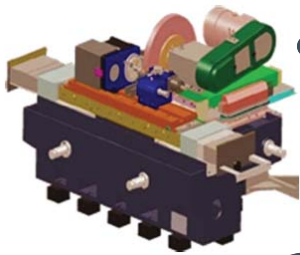
The team

NGPG was developed with the collaborative efforts of IIT-Madras, MGT, PSA office-Govt. of India, IMTMA and AMTTF. Progress was reviewed quarterly & monitored by the PRMC (Project Review Monitoring Committee)

Performance targeted for the Next Generation Precision Grinder (NGPG)

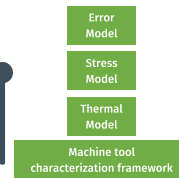
Specification as per ISO 2433:1999 (E)	Reference machine	SH-63 machine	Project target
Circularity (μm)	0.7	1	0.5
Consistency of diameter ($\mu\text{m}/\text{mm}$)	1/300	4/300	1/300
Process scatter after (30 minutes warm-up (dimensional stability without guage) μm (dimensional stability without guage) μm)	5	10	<5
Process scatter for 8 hour duration (1 typical production shift)	25	35	<25

Grinding wheel Surface Speed (Maximum Speed for characterizing the performance of grinding machine)			
Conventional wheel (660mm x 60mm)	60	60	60

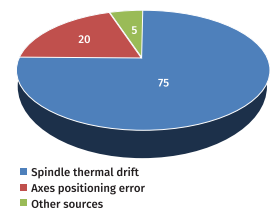


- Project sanction by OPISA
- IITM and MGT partnering together
- Identification of indigenously developed machine
- Setting of target for NGPG

- Development of machine characterization framework
- Identification of precision influencing elements of machine



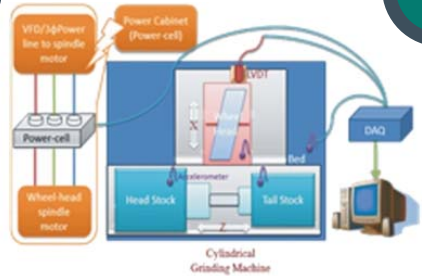
Percentage contribution of error sources



2012

2013

2014



- Development of Diagnostic tool for process characterization
- Development of Machine tool testing protocol with AMTTF
- Benchmarking with world class machine

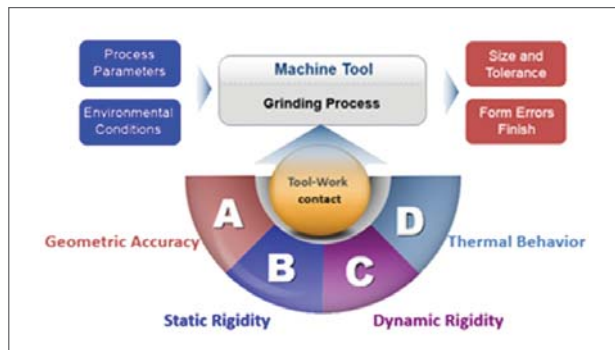
The Approach

To make a characterization framework for evaluating the performance of a High Precision Grinding Machine.

To conduct the testing and compare both the MGTL machine and the World class cylindrical grinding machine for the Geometrical, Static, Dynamic & the Thermal characteristics

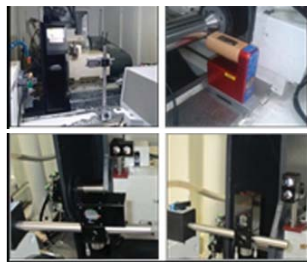
- To set goals for the NGPG machine
- To develop design, manufacturing & testing Guidelines for the NGPG
- To build the NGPG, verify the set targets & deliver it to IIT-M (for further research work)

Performance Evaluation of Machine Tool



NGPG - PRMC committee members Prof N K Mehta (IIT - Rorkee Chairman), Mr Neeraj Sinha (Member Secretary - PSA office GOI), Prof P V M Rao (IIT - Delhi), Dr R Balasubramaniam (BARC - Mumbai), Mr P J Mohanram (IMTMA - Bangalore), Mr B R Mohanraj CMTI - Bangalore, Mr T Parabrahman (ex MD, KTTM-not present), reviewing the progress of NGPG machine building at MGT Bangalore plant.

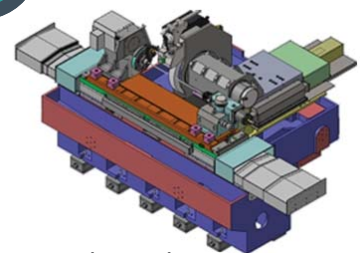
- Suggestions to upgrade the machine to NGPG
- Enhancement of Design, Manufacturing and Assembly process at MGTL



2015

2016

- Design validation with exp. Results
- Building of NGPG machine.
- Testing & Realization of NGPG Machine.



To know more contact us: E:connect@acemicromatic.com

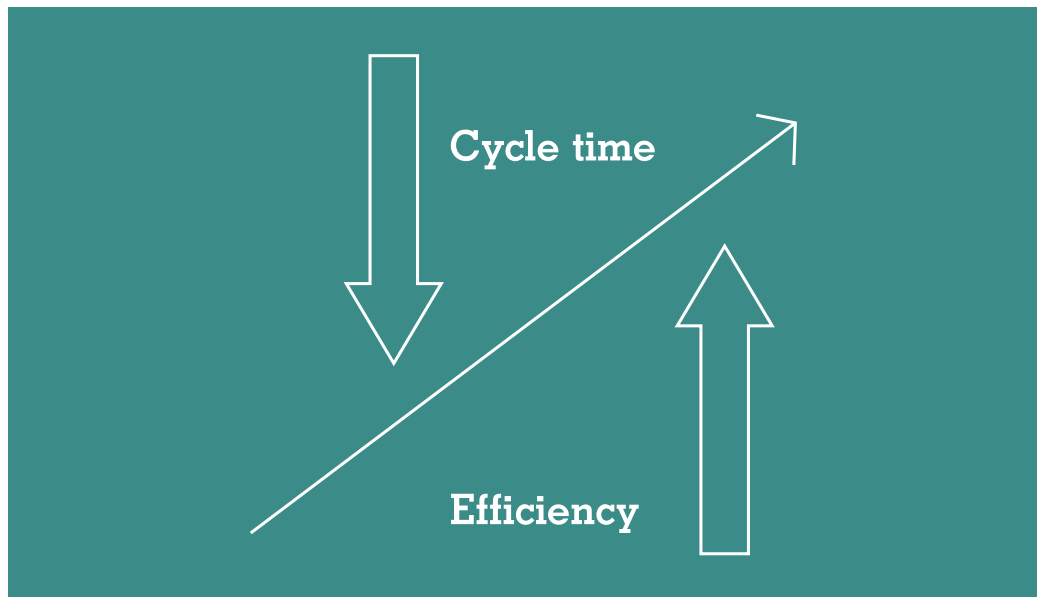
Getting Maximum OUT OF RESOURCES

Timely and regular audit of the machine tool setup can be of immense value in extracting the most output from existing resource without additional investments. We began an educational series on the subject in the last edition with a brief overview of general turning. We continue the journey here with aspects of grooving on turning centres. An insightful read...

Productivity is one of the utmost important aspects of any manufacturing unit, may it be big or small. Paying attention towards small but important things can help the unit save time & cost and enable better efficiency. As it is said, 'size does matter', is true in the case of manufacturing. Not only the type of tool but also size of the tool matters. In this

regard, a regular audit of the job conducted can give you an insight about how the tool is used. It will further help you in selecting a tool that is ideal for the job. While grooving, keeping an eye on small details such as tool's width will result in better tool life thus, cost saving.

Here is how you can achieve more through right tool width selection.



CASE 1: TOOL WIDTH SELECTION

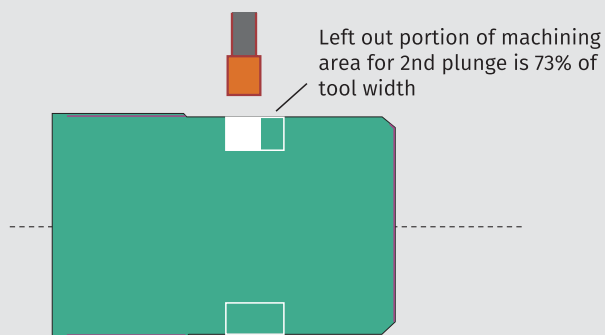
If groove width is bigger than tool width: **we have to decide as to how many plunges we would require to finish the operation.**

Multiple plunges:

- 1st plunge covers 100% of tool width
- 2nd and subsequent plunges will cover the cutting width upto 60-75% of the tool width

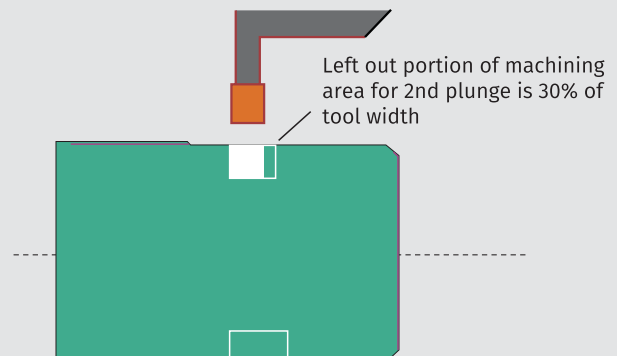
Case OK

	mm	
Groove width	5.2	
Suitable tool width	3	
1st Plunge	3	100%
2nd plunge	2.2	73%



Case not OK

	mm	
Groove width	5.2	
Suitable tool width	4	
1st Plunge	4	100%
2nd plunge	1.2	30%





TWO PLUNGE CUT:

No. of edges engage during the plunge cuts:

- During 1st plunge both edges of insert are engaged
- During 2nd plunge only 1 edge is engaged, this creates imbalance in tool life.

Example:

If we produce 100 parts with 2 plunge cuts:
As per the below picture:

Left edge	Right edge
	
<ul style="list-style-type: none"> • Engages once per component. • For 100 parts engages 100 times 	<ul style="list-style-type: none"> • Engages twice per component • For 100 parts engages 200 times

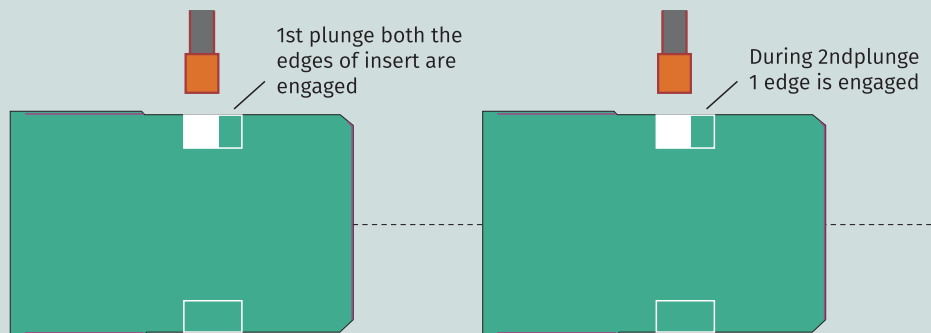
Result:

Imbalanced tool life

- Left edge is used 50%
- Right edge is used 100%

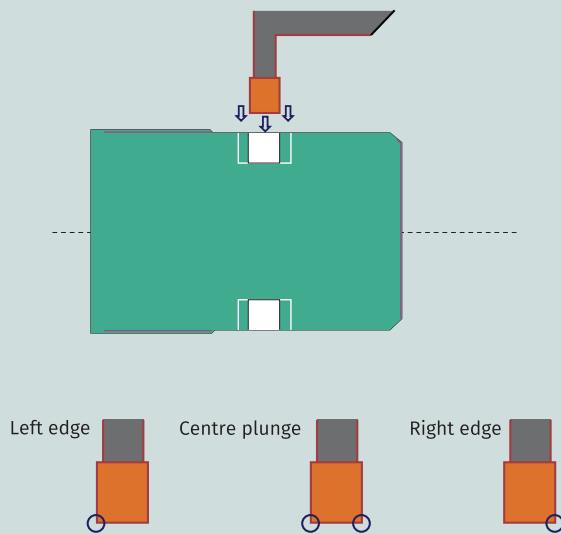
Solution:

Use subprogram and macro for machining alternate parts from left to right & from right to left



THREE PLUNGE CUTS:

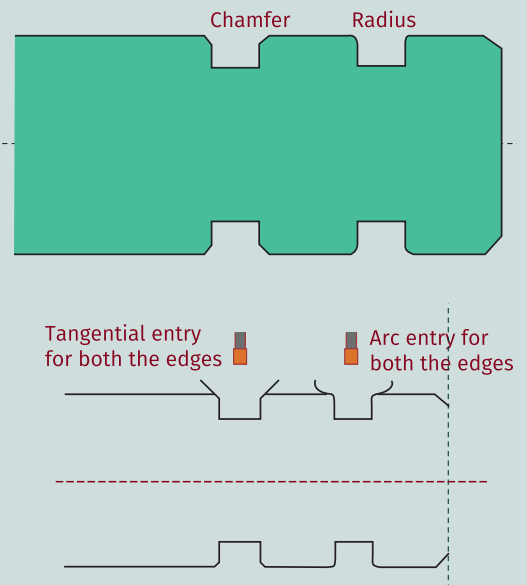
During center plunge both the edges of grooving insert are engaged and during left and right plunge respective edge will engage once.



- | | | |
|---|--|--|
| <ul style="list-style-type: none">• Engages 1 time per component.• For 100 parts engages 100 times | <ul style="list-style-type: none">• Engages both the edges | <ul style="list-style-type: none">• Engages 1 times per component.• For 100 parts engages 100 times |
|---|--|--|

Result: Balanced tool life

CASE 2: GROOVE TOP EDGE MANAGEMENT:



- Ensure X offset of grooving tool
- Use Tool Nose Radius Compensation(TNRC) for groove finish operation
- Maintain similar OD tolerance and groove bottom diameter tolerance to ensure smooth tangential contact of grooving tool with pre-turned OD

Contributed by our Technical Expert Kashinath M Patnasetty
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Safeguard YOUR TURNING CENTRE



Always use, confirm, monitor and maintain



LIST OF GUIDELINES	DISADVANTAGES OF NON-COMPLIANCE	REPERCUSSIONS ON THE MACHINE
Safety & electrical supply		
Four pole ELCB of rating 30mA tripping current	No leakage current control	Electrical shock and CNC Control failure
415V Phase to Phase voltage	Electrical and electronic parts failure	No control on machine reliability
Dedicated earthing with Neutral to earth leakage < 3V and Resistance of <100 Ohms	Transfers leakage	Leakage currents may cause electrical shocks to human, machine & CNC controls
Make sure the AC temperature is maintained as per the requirements	Failure of electrical and electronics component	Effect on machine reliability
Machine environment		
Dust, moisture, standing water, liquid and rain free environment	May effect the machine and machine elements	Reduction in reliability of machine and machine elements
Non exposure of machine and CNC to direct sunlight or other heat sources	Overheating of machine and machine elements	Overheating of machine and machine elements

Machine Foundation as per recommendation	Vibrations and dampening of machine	Accuracies Machined parts, Tool Life and reliability of machine
Pneumatic supply to machine		
Dry air and required air pressure as per recommendation	Moisture entry to Pneumatic elements and other machine elements	Interruption in machine operations, failure of elements and reduction in machine reliability
Compressor with recommended capacity of volume and pressure	Performance of the machine elements	Interruption in machine operations, failure of elements and reduction in machine reliability
Maintain the air pressure on different areas of machine	Required air pressures are not met	Interruption in machine operations, failure of elements and reduction in machine reliability
Spindle and axes lubrication		
Recommended gear box lubrication - Enclo 32	Lack of lubrication to key elements of machine	Premature failures of elements, Accuracies of machine, Reliability of parts and machine
Recommended axes lubrication oil/grease (Oil-Servo way 68, Grease - LHL X100)	Lack of lubrication to key elements of machine	Premature failure of elements, Accuracies of machine, Reliability of parts and machine
Coolant properties		
Non Synthetic coolant oil	Synthetic coolant takes away lubrication oil	Premature failures of elements, Accuracies of machine, Reliability of parts and machine
Concentration of coolant >5%	Cooling to the machining part, cutting tool and lubricity	Tool life and surface finish
Use DM water for mixing the coolant oil	Rusting of machine element, paint peel off, skin allergies	Sump life, Human, raw material, seal, paint and corrosion
Properties	DM Water	Coolant
Hardness	<200ppm	550 to 600ppm
Chloride	25ppm	50ppm
PH	6.7 to 7 Ph	8.5 to 9 Ph
Hydraulics		
68 Grade oil	Hydraulic power pack pressure drop Oil heating	Interruption in machine operations failure of elements and reduction in machine reliability
Cleaning and replace as per recommendation		
Machine external and internal	Entry and collection of swarf and sludge	Interruption in machine operations, failure of elements and reduction in machine reliability
Filter - Hydraulic, Pneumatic, Cabinet, AC, coolant	Clogging of filters	Interruption in machine operations, failure of elements and reduction in machine reliability

We trust that you have found the above details useful and wish to assure you that compliance will help your team to ensure better reliability and machine of time.

If you need any further assistance, please do not hesitate to contact our local service support.

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Snapshot Of EVENTS @ 2016



Display of new J 400 XL/LM machine



MMT team present at Expo

Pune Machine Tool Expo

Organisers: IMTMA

Venue: Pune

Dates: Sept 29 – Oct 2, 2016

The IMTMA organised expo saw participation from over 100 exhibitors, attracting over 7400 visitors and 62 trade delegations from various industries, including auto components, automobiles, capital goods, defence, aerospace and railways. Micromatic solutions for CNC Turning, Milling, Grinding and Productivity Monitoring Solutions received positive response from visitors.



Discussion with customer



Machining being explained to customers



Inauguration being done by chief guest



Die & Mould components being appreciated

Gurgaon House Show

Organisers: Micromatic Machine Tools Pvt Ltd

Venue: Gurgaon

Dates: Nov 14 – Nov 17, 2016

Chief Guest, Executive Director-Sona BLW Precision Forging, Vikram Verma graced the occasion. Stalwarts from the large automotive companies of the region were introduced to our new grinding machines - IG 150U and CLG 5020. Additionally, we also demonstrated the new CNC turning machine J 300 LM & solution for machining of Die & Mould. Customers also benefited from the rich experience of our experts who conducted seminars on latest developments in Precision Grinding, Die and Mould machining and IoT.

Ahmedabad House Show

Organisers: Micromatic Machine Tools Pvt Ltd

Venue: Ahmedabad

Dates: Nov 17 – Nov 19, 2016

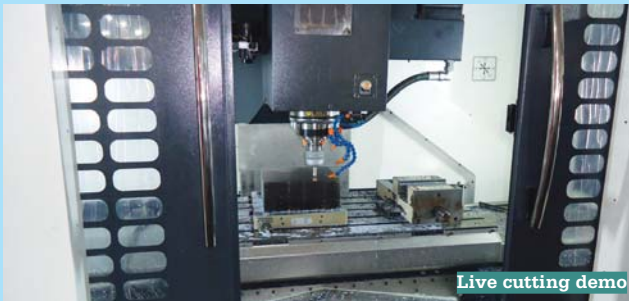
Chief Guest, Bharat Patel graced the show with his presence. Special display of the Simple Turn Flat Bed CNC Lathe at the premises of our dealer Macht Exim LLP, Ahmedabad. The Simple Turn 50125 and 50125 6T machines garnered a resounding positive response from many customers. The visitors appreciated the ease of use and enhanced productivity of the machines.



Machine being explained to customers



Discussion with customers



Live cutting demo



Machine being explained to Customers

Delhi House Show

Organisers: Micromatic Machine Tools

Venue: New Delhi

Dates: Nov 23 – Nov 26, 2016

Unveiling of the Die & Mould machining centre and the new J Series turning centre. Customers witnessed a live cutting demo and interacted with experts from our application team. IOT was one of the major attractions.

Metalex 2016

Organisers: Reed Tradex Co Ltd

Venue: Bangkok

Dates: Nov 23 – Nov 26, 2016

Our presence at this biennial expo provided an opportunity to get closer to Southeast Asian customers. A large number of prospective customers from across Agriculture, Automotive, Aerospace and Education sectors visited the stall. Our popular products like J 300 LM turning centre with Robo, Super Jobber Elite, Vertical machining center 1060V & Spark & Tutor garnered a lot of attention.



Ace Micromatic stall at Expo



850V being explained to the customer

Rajkot Machine Tool Expo

Organisers: KMG Business Technology & Machine Tools
MFRS Association

Venue: Rajkot

Dates: Nov 23 – 26, 2016

Prominent regional exhibition for machine tools, cutting tools and allied sectors, where Micromatic held one of the major exhibits. We received a great response from visitors. In particular the newly launched J 400 LM and SG 40 machines attracted a lot of interest. Micromatic was the proud recipient of the Platinum Award for the Best Innovative Product & Display.

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