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Mandate for New Leadership

T

here was a time when Ford was struggling in India. And it was only a niche player then. Today, besides being one of the few players to clock positive sales numbers in a difficult market, Ford India is steadily transforming itself into a volume player. Of course, it has a long way to go but its new President Nigel Harris has a clear road map in place and seems like to the right man to build on the legacy of his predecessors who have played important roles in transforming the company. This issue's cover story tells you more on that.

At the global level too, Ford is all set for a leadership change. Alan Mulally – the man who transformed Ford from a struggling company to a global leader achieving 19 consecutive quarters of profitability – is serving his last two months at the helm. His tenure as the President and CEO of Ford Motor Company is more than a case study; it is a chapter in corporate leadership that will be written in golden words.

The situation at Ford when Mulally took charge in 2006 was quite similar to the situation in India currently. Great potential but challenging ground reality. Ford was in complete disarray and so is India now. Different region heads in Ford were competing with each other rather than taking the fight to the rivals. This caused greater damage to Ford the organisation. Today, many of Indian states are working in ways that is hurting not just the other states but seriously damaging India the nation. Mulally brought about a cultural change with his 'One Ford' concept. That's something we need in our country today – revival of the concept of 'One India'. We need the new government to simply destroy the banal barriers and get the nation working together towards a common goal of economic progress and social prosperity. And just like Alan Mulally, the new leader would require a convincing vision, a robust strategy and positive implementation to make it happen. I conclude this note with hope in my heart and Gurudev Tagore's immortal lines:

Where the world has not been broken up into fragments by narrow domestic walls...

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Where the mind is led forward by thee into ever-widening thought and action...

Into that heaven of freedom, my Father, let my country awake.

**“THE NEW LEADER
WOULD REQUIRE A
CONVINCING VISION,
A ROBUST STRATEGY
AND POSITIVE
IMPLEMENTATION TO
MAKE IT HAPPEN.”**



EDITORIAL

Niranjan M
Editor

THE MACHINIST

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CHIEF EXECUTIVE OFFICER
Tarun Rai

CHIEF FINANCIAL OFFICER
Subramaniam S

PUBLISHER, PRINT & PRODUCTION CONTROLLER
Joji Varghese

EDITOR | Niranjan Mudholkar
niranjan.mudholkar@wvm.co.in +91 9819531819

ASSISTANT ART DIRECTOR | Sanjay Dalvi
sanjay.dalvi@wvm.co.in

SUBSCRIPTIONS
subscriptions.rmd@timesgroup.com
022 22733274 / 66354083

BRAND PUBLISHER | Rishi Sutrave
rishi.sutrave@wvm.co.in +91 9820580009

ADVERTISING
SOUTH | Mahadev B
mahadev.b@wvm.co.in +91 9448483475

WEST | Ranjan Haldar
ranjan.haldar@wvm.co.in +91 9167267474

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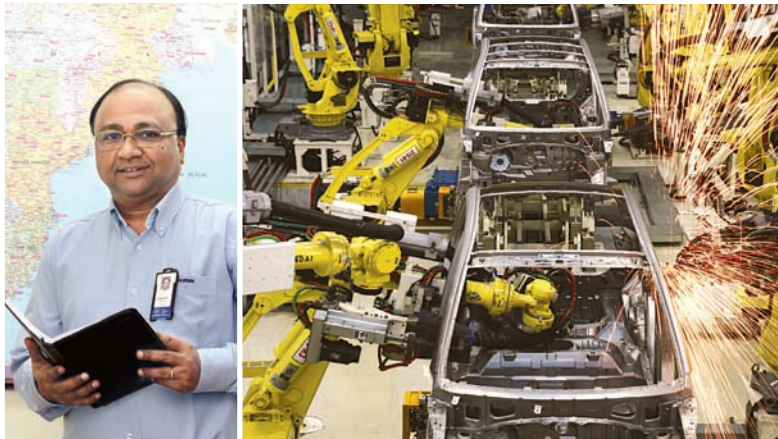
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Corrigendum: In the April 2014 issue, on page 32, 2nd line of the 2nd paragraph should read 'remarks Ghosh of ITC Infotech'. Inconvenience caused to concerned parties is sincerely regretted

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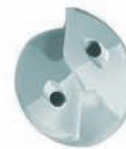


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NEWS

KBL's Coimbatore plant assembles pumps in record time

The all-women Coimbatore plant of Kirloskar Brothers Ltd (KBL) has achieved a milestone of assembling a pump in a rare feat time of 17.25 seconds, making it a National record. Registered in the Limca Book of Records, the feat was accomplished under KBL's

plant production to 34,000 pumps per line per month."

The record is an acknowledgement to the efforts made by KBL's all women Coimbatore plant that was established in 2011. The plant manufactures different models of domestic pumps



'Mahila Mission 20' project. Sanjay Kirloskar, Chairman and Managing Director of Kirloskar Brothers said: "We have successfully reduced the assembly time from 60 seconds to a record breaking 20 seconds; thereby increasing the

and has 65 women between the age group of 19 to 30 employed on the shop floor. KBL is the only engineering company in India which operates with 100 percent female associates at a manufacturing plant.

India Council on Competitiveness launched

The Institute for Competitiveness, India has signed a Memorandum of Understanding with the US Council on Competitiveness to officially launch the India Council on Competitiveness. The Council is an association of distinguished members from industry, academia, think tanks, media and researchers that aims to ensure the future prosperity of all Indians and enhanced Indian competitiveness in the global economy through the creation of high-value economic activity in India. The MoU recognises the importance of developing effective US-India and global competitiveness policies and strategies to promote sustainable economic growth



and establishes a strategic partnership to mobilise a critical mass of leaders and experts in order to promote sustainable economic growth. This cooperative effort will create a platform for mutual exchange and innovative activities that can fuel productivity, growth and economic prosperity for both countries.

India-LAC Investment Conclave from October 16

To promote economic engagement between India and Latin America & Caribbean (LAC), the first-ever 'India-LAC Investment Conclave' will be held in New Delhi on October 16-17, 2014. It will be organised by FICCI with support of the Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, Government of India. The conclave aims to enhance the business relations between India and LAC mainly by way of investments, as conventional trade in goods has its challenges on account of distance, time zone difference and business culture. While trade in commodities will continue due to their bulk nature and involvement of mega institutions, manufacturing and services can grow essentially by way of investments which will automatically lead to further trade growth too.

Business-friendly Georgia invites Indian investment

Georgia has been rated as one of the most attractive countries for doing business. It has corporate profit tax at 15 percent, has simple tax administration, simplified licensing and permitting requirements, competitive cost of labour and energy, pro-business and corruption-free government, stable banking sector and very low crime rate. This has been authenticated by The World Bank, whose report of 2013 ranks Georgia 9th out of 183 countries in ease of doing business index. Mikheil Janelidze, Deputy Minister of Economy and Sustainable Development of Georgia, shared this at the India-Georgia Business Forum organised by FICCI and the Georgian Chamber of Commerce and Industry (GCCCI) recently.



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Schwing Stetter sets up fabrication unit

Concrete construction equipment major Schwing Stetter has set up its highly customised F-75 Fabrication unit at its manufacturing unit at Sriperumbudur. This fabrication unit, exclusive for customising different variants of the boom pump, is spread across five acres of land with a facility area of 20,000 sq m which is operated by highly skilled workers and experts in production design. This plant will manufacture the S36 concrete boom pump model besides other models. The company has recently installed a 100 KWp solar plant to power these fabrication units. Speaking on this occasion, Anand Sundaresan, Vice Chairman and Managing Director, Schwing Stetter India said, "Schwing Stetter is researching with ma-



terials and new methods to increase energy efficiency be it our equipment for customers or for our captive operational needs." VG Sakthikumar, Managing Director, Schwing Stetter Sales and Services Pvt. Ltd said, "Installing a fabrication unit at our premises has always been a part of our larger plan ahead as we have always wanted to position Schwing as a cost-efficient equipment manufacturing company."

CG bags National Intellectual Property Award, 2014

Avantha Group Company CG was awarded the National Intellectual Property (IP) Award 2014, in the category of 'Top Organisation in Designs'. The award was presented on World IP Day, jointly organised by the Indian Intellectual Property Office and CII. CG was chosen among 27 other contenders filing design applications in India. CG was awarded for its overall Design Portfolio developed and commercialised over the past five years for products manufactured in India and other geographies. On an average, CG files and registers about 147 designs every year, of which around 100 are commercialised. This award is presented to innovators who play a role in harnessing India's intellectual capital and create an ecosystem of innovation and creativity. Selection is not only based on the number of IPRs registered or granted, but on the basis of the utilisation of the IPR as a strategic tool.

India spending billions of dollars on IPR imports: Assocham

India is estimated to have spent over US\$ five billion in the fiscal 2013-14 on imports of the intellectual property rights (IPRs). This clearly negates concerns over India's IPR track record by the countries like the US which have been threatening trade sanctions against New Delhi by putting it under the Priority Watch List under an American trade law, an Assocham paper on IPR Imports has pointed out.

India's imports of IPRs in the quarter ended December 2013 were over US\$ one billion while exports were negligible, as per the official data reviewed by the Assocham paper. The import bill may well be around US\$ five billion in FY 14. "Whether it is in regard to merchandise trade or IPRs, India has been in full conformity with the World Trade Organisation IPR regime. This is borne out by the data. Our trade deficit is close to US\$ 200 billion clearly reflecting an open economy willing to accept large imports. In regard to IPRs, we as a growing economy realises the importance of cutting-edge technology for improvement of our productivity and for which we have been paying. The figures speak for themselves," Assocham President Rana Kapoor said.

IIW lifetime award for Dr S Ramadorai of NSDC

The Indian Institute of Welding (IIW) has conferred Dr S Ramadorai, Chairman, National Skill Development Corporation (NSDC) and Vice Chairman, TCS with 'Life Time Excellence Award' for his dedication and contribution in Manpower & Skill development. The award was given on the occasion of 8th Weld India Expo 2014 in New Delhi.

PK Das, President, IIW urged Dr S Ramadorai, also the chief guest at

The International Congress of The Indian welding Association, to act in haste to ensure that the robust growth projected in Infrastructure is not stalled by shortage of skilled professionals. Dr Ramadorai assured all help from the Indian Government in ensuring that skill upgradation of ordinary welders will be prioritised and Skill Development Institutions in Welding will receive the necessary Government Support for the same. Das



added: "Job opportunities in manufacturing and welding must match career opportunities offered by software, internet and telecommunications sectors."

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Auto supplier Brose expands operations in India to meet growing demand

International automotive supplier Brose has expanded its India operations in Pune to meet the increasing demand in the domestic as well as the international markets. The company has now moved its production into a new facility spread over 46,000 sq ft, which will also have the latest testing and prototyping equipment. The facility already includes an advanced walk-in climate chamber that can test products for the harshest weather conditions.

“The bigger facility will help increase our range of locally manufactured products and further enhance the local value addition to product development,” said Ashwani Aggarwal, President, Brose India. Brose India which counts GM, Ford, Tata Motors, Mahindra and Nissan amongst its list of customers in India, is a wholly-owned subsidiary of the EUR 4.7 billion Germany headquartered Brose Group.

While Aggarwal did not share the exact amount of investment made in this expansion, he said that it is part of the EUR 312 million investments planned by the Group globally for 2014. Brose India’s engineering and IT centre also supports the Group’s global activities from Pune. “Our focus on R&D and innovation has enabled us to supply customer specific as well as vehicle specific products for a wide range of clients



around the world,” said Aggarwal. Brose India is targeting a EUR five million turnover in the next five years and has presence in three business areas including doors and door systems, structures and components for seats, and electrical motors and drives.

While the company exports a little over 30 percent of its production from Pune, it is keen to expand its business with the domestic OEMs. Globally, Europe accounts for 55 percent of Brose’s revenues while America and Asia account for 26 percent and 19 percent respectively. The Group is keen to grow its market in Asia and Brose India will play an important role in making this happen.

Continental acquires ZyteK Automotive; ZyteK to operate as part of CES

International automotive supplier Continental has taken over full ownership of its former joint venture, ZyteK Automotive, based in Fradley in the United Kingdom. This is with effect from February 3, 2014. Continental previously had a 50 percent shareholding in ZyteK Automotive. Both companies have agreed not to disclose the price for the acquisition. In future, ZyteK Automotive will operate as a part of the Con-

tinental Engineering Services (CES) organisation in the UK, embracing CES’s complete service and technology portfolio, and thus providing engineering services covering the chassis, the interior and the powertrain. “This acquisition allows us to meet the increasing need for engineering services. Whether it’s from vehicle manufacturers or suppliers – we are seeing an increase in requests for special customer-specific designs and for components for small-scale production runs or niche vehicles, in areas such as electronic brakes, the chassis and the powertrain,” said Bernd Neitzel, MD, CES.

The ZyteK Automotive engineering company employs a workforce of some 150 at its headquarters in Fradley near Birmingham and has particularly well-developed expertise in all areas of automotive technology and vehicle engineering. ZyteK’s customers include well-known vehicle manufacturers in Europe, the US and Japan. The company’s main focus of activity has so far been on conventional, electrical and hybrid drive systems for passenger cars and commercial vehicles.



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Volkswagen India's Chakan plant rolls out 50,000th export car successfully



Since the inception of its export business, Volkswagen India has been able to ramp up the export volumes and in just two and half years, 50,000 cars have been shipped to various countries. Starting with South Africa as the first, single export market, Volkswagen India now exports to 32 countries across three continents.

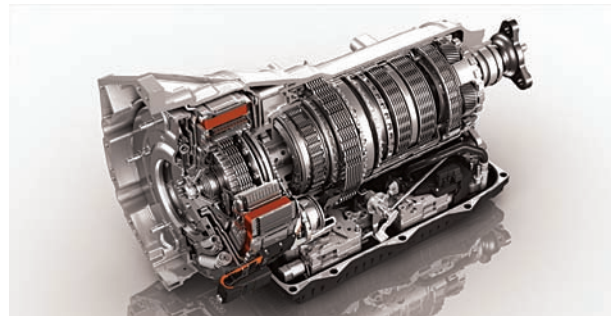
Volkswagen India started the export of cars in 2011. The big breakthrough for its export business came with the successful entry into the Mexican market with the Indian Vento in October 2013. And this year, almost every third car manufactured at the Pune Plant will be shipped to Mexico. "The rising demand from Mexico mirrors the positive customer feedback of the Vento. Not only does this success help us in tackling the volatilities in the domestic market, but it also strengthens our export leg of the business in a sustainable way. With the success of our highest quality cars in this key market, we can further increase our scope of export to more countries in the near future," said Mahesh Kodumudi, Chief Representative Volkswagen Group India and President & Managing Director, Volkswagen India Pvt. Ltd.

Vento was the first Volkswagen model that was completely custom-designed for the Indian consumer. Besides the Vento, even the Polo made in Chakan is being exported to various destinations. Additional to the completely built units, the parts and components of Vento and the Polo cars manufactured at the Pune Plant are also being shipped to Malaysia since April 2013. These parts and components are assembled in Malaysia for their local market.

ZF constructs new plant in Pune

ZF Friedrichshafen AG has constructed a new plant in Pune. The location which is already under construction will unite the car powertrain and commercial vehicle technology business units as well as ZF Services in India under a single roof. Additionally, it will be home to the headquarters of the engineering and administration of ZF India Pvt. Ltd. The new building will stand on a plot size of 85,000 sq m (21 acres) in the Chakan industrial park. After completion, scheduled for the turn of the year 2014/2015, approximately 350 employees will work at the location. ZF invests nearly EUR20 million in the new facility.

"For 30 years ZF has been present in the Indian market,"



Cross section of a product to be manufactured at the new plant

says Rudi von Meister, ZF's President of Asia-Pacific. "In the years to come, we still see considerable potential in the Indian automotive industry. India will contribute to the growth of the ZF Group which will be strongly driven by Asia-Pacific."

In accordance with the local-for-local concept, ZF wants to provide its customers with products from local production wherever possible. Equally, design-to-market considerations play an important role in this regard. Therefore, the ZF engineers from the R&D centre in Pune will also be located in the new building in order to develop products specifically for the requirements of the Indian market.

For Piyush Munot, MD, ZF India, the new internal business park represents "an excellent expansion of existing capacities". It is a good starting point for the further expansion of the business in India – "and it is a clear commitment of the ZF Group to the Indian market and its future prospects".

Daimler India CV lays foundation stone for new bus plant

Daimler India Commercial Vehicles Pvt. Ltd (DICV) has started construction work of its new bus plant. It is located at the DICV's manufacturing facility in Oragadam, near Chennai. The new bus manufacturing plant is spread across an area of 27.91 acres. It will manufacture and assemble buses under the Mercedes-Benz and BharatBenz brands and will be completed by the 2nd quarter 2015. The DICV plant will become the only Daimler truck plant glob-

ally to manufacture three brands of trucks and buses, as well as engines under one roof. Daimler India buses will be offered in 9t, 16t and above 16t categories in both front and rear engine configurations. An investment of Rs425 crore has been earmarked for the project for an installed capacity of 1,500 units in the initial phase. The capacity can be further expanded to 4,000 units subsequently. DICV has crossed the sale of its 10,000th truck in March 2014, since its market launch.



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Dr APJ Abdul Kalam's 5-point agenda for the industry



Based on his discussions with industry experts and practitioners, Dr Kalam came up with a five point vision for the tools, die and mould industry, which would be a critical milestone for the national economic growth:

- ✓ The industry should aspire to grow from the present Rs17,000 crore size to over Rs35,000 crore by 2020.
- ✓ Advanced product technologies such as Nano Technology and Robotics should be encouraged across the spectrum.
- ✓ Product quality should be enhanced to international standards with zero waste principles such as Just in Time with continuous improvements on shop floor based on the idea of 'Kaizen'.
- ✓ The sector should aim to emerge as a net exporting industry by 2020, by understanding and catering to international industrial needs.
- ✓ The industry should forge at least 20 unique partnerships with technological and management institutions across India to promote, design and run industry specific courses to generate the next generation techno-leadership in the sector.

Innovation led growth

The recently concluded Die and Mould India 2014 show witnessed more than 200 exhibitors showcasing cutting-edge technologies at Indian doorstep

By Niranjan Mudholkar

In 1973, Dr APJ Abdul Kalam – then a scientist and many years later India's 11th President – was given a project to build a rocket system for putting a satellite in the orbit by 1980. That was the first time when India was attempting to do so. His team started preparing a PERT (Program Evaluation and Review Technique) chart to identify the events, processes and parts to ensure the success of the project. "Of the 12,000 events identified in PERT, six were recognised as critical. And of these six, two were electronics items (guidance and control systems) and one was jigs and fixtures for the rocket system. Jigs and fixtures are production tools used to accurately manufacture duplicate and interchangeable parts. These jigs and fixtures played an important role in ensuring the success of our project," said Dr Kalam as he explained his first association with the tooling industry during his keynote address at the ninth edition of the Die & Mould India International Exhibition in Mumbai.

Dr Kalam's address was an

“Currently, TAGMA is engaged in setting up a new Centre for growth and excellence in Pune, which is being designed to deliver multi-dimensional technical support to its members.”

N Reguraj, Founder President & Executive Council member, TAGMA



insightful analysis of not just the die and mould sector but also of the Indian manufacturing industry. “Recovery of Indian manufacturing requires innovation,” he said capturing the essence of the show. In fact, the theme of the inauguration was ‘inclusive as well as innovation led growth’. The inauguration itself was quite symbolic and innovative – Dr Kalam opened the show with the push of button which demonstrated the mindset of the industry for technology adoption and world class production. Dr Kalam further said that a vibrant die and mould industry is necessary for an economically developed nation. He greeted the national and international participants for sharing their experiences and innovations in design and development processes of the sector and also talked about the market size and the production ability of the Indian tool room industry.

Dr Kalam – the Chief Guest of the show – further mentioned that for success in all missions, it is essential to have creative leaders. Creative leadership means exercising the vision to change the traditional role from the commander to the coach, manager to mentor, from director to delegator and from one who demands respect to one who facilitates self-respect. For a vibrant nation, the important thrust will be on the generation of a number of creative leaders who will pioneer integrated national development, he said.

Talking about the die and mould industry, the former President said the industry must aspire to grow from the present Rs17,000 crore size to over Rs35,000 crore by 2020. “That means more than double in less than ten years. And I think this industry is capable of achieving it,” he said. In saying

so, Dr Kalam duly recognised that the die and mould industry is a key constituent of the vital capital goods trade that is considered as the mother of manufacturing and that the ninth edition of the exhibition at Mumbai was a step forward to achieve engineering excellence with an aim to establish India as a global manufacturing hub.

“The development of potential remains untapped because most of the MSMEs operate in isolation. Hence, there is a need to approach dynamic business partners that would bring in new expertise and technical know-how.”

Deepak Ballani, Officer-In-Charge & National Programme Officer, UNIDO – International Centre for Advancement of Manufacturing Technology

The inauguration also witnessed other luminaries in the form of RK Rai, Director (TR), Office of the Development Commissioner (MSME); Deepak Ballani, Officer-In-Charge & National Programme Officer, UNIDO – International Centre for Advancement of Manufacturing Technology as Guests-of-Honor. The TAGMA leadership was represented by N Reguraj, Founder President & Executive Council Member of TAGMA; SC Kalyanpur, President, TAGMA; and P N Surendranath, Executive Director, TAGMA.

The mega trade event witnessed around 210+ exhibitors showcasing cutting-edge technologies at Indian doorstep. Exhibitors from Austria, Czech Republic, France,

Germany, Hong Kong, India, Italy, Japan, Korea South, Singapore, demonstrated their latest technological trends in tooling industry along with cost-effective, energy efficient and environmental friendly solutions for the dies and mould makers. The event proved to be a large platform for dies and mould makers engaged in design, manufacturing and sales of dies for pressing, stamping, punching and forming; injection and compression moulds; die casting dies; patterns and pattern equipments; jigs and fixtures; standard tooling component; CAD/CAM; rapid prototyping; 3D printing/additive manufacturing; gauges; precision machining; special machineries and related products.

N Reguraj, Founder President & Executive Council member of TAGMA while delivering his welcome note said, “This is TAGMA’s silver jubilee year in the industry and this exhibition has grown from a humble beginning of 1,000 sq m since 1998 to over 20,000 sq m in 2014. The credit goes to Mr Kalyanpur and his team as they have done a tremendous job in bringing TAGMA forward.” He further added: “We have more than 500 members across the length and breadth of this country and today TAGMA plays a significant role in the growth of the tooling industry in India. Also, we are

20,000 sq m

**Exhibition space in 2014
from a humble beginning
of 1,000 sq m in 1998**





Inside view

The Machinist also spoke to some exhibitors not just to get an insider perspective but also to gauge a couple of industry trends.

“We have been participating at the Die and Mould exhibition for the last three editions or so and our experience has always been positive at this show. Traditionally we have been a leader in the vertical machining centre segment, quantity wise. Our majority of machines go for production; automobile sector has been a leading consumer of our machines. Strategically, we also wanted to be in the die and mould sector and we see this show as a good platform to showcase our machines. That’s why we have been coming here for the last three years. There has been a gradual increase in our die and mould market as well. Now onwards we are actually taking this sector as a focussed area. We are looking to de-risk our business from the auto sector. Going ahead we will also be looking at other industries like oil & gas, aerospace and government sectors.”

MU Bhat, AGM, Business Head, West, Micromatic Machine Tools Pvt Ltd

“Established in 2011 in India, we have been primarily catering to the automotive sector in Pune and Mumbai. We are also catering to clients in Chennai, Coimbatore, Bangalore and Hyderabad. We will now looking at New Delhi and may be Kolkata.

A key objective of participating in this exhibition is to spread awareness amongst Indian manufacturing companies about the benefits of using high-pressure and high-precision vices. In markets like India, I would say there is no high-pressure culture. The biggest advantage of using high-pressure vices against the standard vices available in India is that the high-pressure vices also offer you excellent control. When you are using standard vice, you have to rely on the operator. The power an operator has at the beginning of a shift is different than the power he is applying at the end of the shift. With the high-pressure vices, we can pre-set the pressure we want to work with a simple, easy to operate plastic handle. And we can repeat the process. This has a direct impact on precision irrespective of the number of parts you are working on. The high-pressure vices also have a positive impact on productivity as you can do more (and better) in lesser time.”

Ramon Cenarruzabeitia, MD, Fresmak Arnold, Spanish high pressure vice manufacturer


“I have been quite busy interacting with customers throughout. So the show has been good.”

Hiren Jadeja, Jyoti CNC Automation Ltd



well globally connected through the Federation of Asian Die and Mould Association called FADMA. TAGMA has also established an online library for the service of its members and it functions from Bangalore. Currently, TAGMA is engaged in setting up a new Centre for growth and excellence in Pune, which is being designed to deliver multi-dimensional technical support to its members.”

Deepak Ballani, while speaking on ‘Enabling and Empowering through focussed cluster approach’, remarked “UNIDO has been involved in cluster development and enhancing the competitiveness of MSMEs in India since almost two decades. For a developing country like India, micro small and medium enterprises generate a large share of employment and income opportunities. However, the development of potential remains untapped because most of the MSMEs operate in isolation. Hence, there is a need to approach dynamic business partners that would bring in new expertise and technical know-how.” He added: “UNIDO addresses these issues by boosting the development of a competitive private sector and contributing to poverty reduction through a focused cluster development approach. It is very important to focus on the inclusive sustainable industrial development by focusing on adoption of manufacturing excellence through product and process innovation.

RK Rai reflected his understanding about the Technology Centre System Programme (TCSP) i.e. a unique stake holder ecosystem and referred to it as the need of the hour. PN Surendranath, Executive Director of TAGMA commented that, the presence of Dr APJ Abdul Kalam and his keynote address tremendously boosted the importance and the awareness of this vital mother industry’s contribution to the manufacturing economy. “His thoughts, visions, and insights of our industry highlighted in his address through the five point agenda are thought provoking and timely for the growth prospects of the Indian Tooling Industry,” Surendranath said. 



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New beginning

At the Die & Mould India 2014, The Machinist caught up with **Ranjit Bhide**, the new MD of DMG MORI India. He shared how he plans to build on the company's legacy

By Niranjan Mudholkar

Q What are your plans for DMG MORI now?

A company of the size and stature of DMG MORI is not person dependent. It's not that I will completely change DMG MORI in India. I am here to build on its legacy. What a person can add is speed, his personal expertise and his personal experience to an already existing pool. Essentially, I am not a machine tool person, so I bring a completely different perspective and I think that will help. I will try to use my experience to bring the best practices from other industries. And it could be in any department but while staying within the existing framework of DMG MORI. The broad level policies and framework of DMG MORI will remain intact. We have a plan in place and we are taking steps for the growth of the company. Our objective is to improve market share, enhance the stability within the organisation and build better processes. That's what I am focusing on right now.

Q Will you be looking at new sectors?

Having a really wide range of products, DMG MORI already has presence in all industry sectors like automotive, oil & gas, ship-building, construction equipment, medical and so on. Even restricted sectors like aerospace are accessible to us. Last year, the company has started to look at various applications within different sectors. With my background, I may be able to add momentum to it. For example this show is about Die & Mould. So from within the auto sector there could be people coming for Die & Mould applications such as bumper moulds and so on. The sector is automotive but the application is Die & Mould. That's what we have been focusing on in the last year in a more aggressive manner; different applications in various sectors. I am looking to take it forward.

Q When are you bringing the globally launched advanced human machine interface CELOS to India?

CELOS will surely come to India but at a little later stage. We have already tested it extensively for Europe and some other parts of the world but we will do further testing with some Indian customers before introducing it officially in this region. CELOS is a very advanced and intelligent way of operating a machine. We do understand and appreciate that several customers in India too are looking at a very high level of sophistication.


Q How are you leveraging on your technology center?

Our Bangalore technology center has helped us a lot. It's been there for close to three years now. It gives a lot of flexibility in the sense that the customer can visit the center and experience the product personally. Customers can check out various machines and even buy on the spot. In our showroom we have a wide range of machines on display.

In August we will have our signature event, the Open House, where the customers can come to the Technology Center and could even use the opportunity to prepare for test cuts in various combinations. Of course, besides being a showroom and a test centre, it also acts as an application training center both for our own engineers and of course for our customers. For example, we have training rooms with 12 seats each with control identical software and key boards for controls. A customer can send twelve engineers at a time and they will get hands on training. So training is a critical aspect for the Technology Center.

Besides, we also store our original spare parts there. So it is a multi-purpose asset for us and is an important part of DMG MORI's strategy to reach out to its customers. That's why we have more than one hundred of such centres worldwide.

Q Will you have more tech centers within India?

Yes, we will replicate this model. In fact, we need to. 





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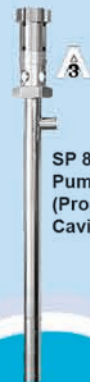
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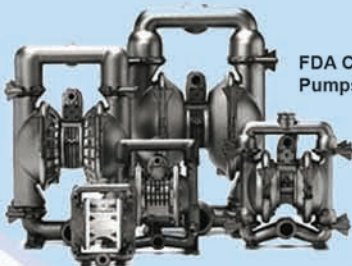



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In the FAST LANE

He has just taken charge but Nigel Harris, President, Ford India, is pursuing aggressive expansion and transformation plans with the aim of making India Ford's global hub for small cars and low displacement engines.

By Niranjan Mudholkar



While he has recently taken charge as Ford India President, Nigel Harris' association with India is not new. He has also worked in India about 15 years ago as the brand development manager for global B cars during Ford's entry into this market. And he is well aware that both India and Ford in India have come a long way over the last decade and a half. "Indian socio-economic terrain has undergone significant changes. The middle class has a higher purchasing power and the tier 2-4 cities have become a key focus for marketers. India is one of the fastest growing markets for automobiles with sales projected to grow to seven million units by 2020."

Harris also believes that India is poised to play a key role in driving growth in the Asia Pacific market, a region that is projected to contribute 48 percent to global auto sales by the end of the decade and he knows that this means the region will be a key player for Ford in its global scheme of things. "Globally, Ford is in the midst of its largest expansion phase in 50 years. More than 60 percent of our growth will come from the Asia Pacific region, with India playing a significant role. That's why we have invested close to US\$ two billion in our India operations."

"Globally, Ford is in the midst of its largest expansion phase in 50 years. More than 60 percent of our growth will come from the Asia Pacific region, with India playing a significant role."

Harris has taken charge at a time when Ford is expanding and transforming its operations as part of its aggressive expansion plan. In July 2011, the company announced an investment of about US\$ one billion to build an integrated manufacturing facility in Sanand, Gujarat. "When operational, the new manufacturing facilities at Sanand will double our overall installed production capacity in India to 440,000 vehicles and 610,000 engines a year. So it is a really exciting phase for Ford in India and we are looking forward to growing our presence in India."

While the recent times have been quite bad for the Indian automotive industry, Ford India has been doing a good job in 2013-14 when it has grown both in the domestic as well as exports markets. Even a look at its latest numbers con-



Ford India underpins the importance of bringing scale and flexibility to its manufacturing capabilities

firm that the company has been holding steady in a challenging market. It sold 11,805 vehicles in combined domestic wholesales and exports in March 2014, up 57 percent from 7,499 vehicles in the same period last year. “Despite a difficult economic and business environment, 2013 was a remarkable and rewarding year for Ford in India. With sustained sales performances and the launch of the Ford EcoSport, we saw our products finding greater acceptance from customers. Our product-led transformation came alive and the sales were supported by an expanding product line-up.”

The year 2014 too started on an optimistic note with the Ford EcoSport emerging as India’s most-awarded vehicle ever, garnering more than 30 coveted industry awards in less than a year since its launch. “The EcoSport is a perfect demonstration of the One Ford philosophy where we are harnessing our global resources to draw on our strengths to develop world-class products that customers want and value. We are thrilled with the response to our vehicles and are confident of Ford playing a significant part in the next phase of growth in India’s automotive industry.”

Of course, success notwithstanding, Harris is not allowing any kind of complacency. “We have a laser sharp focus to grow our business and bring significant scale within our manufacturing operations. We are on track to deliver on our committed US\$ two billion investment and expansion plans to elevate India as the centre of excellence for small cars and low displacement engines, both for domestic and export markets.”

Harris wishes to achieve this by offering ‘products that make value sense by taking a quantum leap towards low cost of ownership with reduced service intervals, enhanced durability and reliability, superior fuel efficiency and an ever increasing service’. Of course, despite the tough situation in the recent times, the long-term promise for Indian automotive

industry remains intact. “We have strong belief in the long term potential of the Indian automotive market and have a robust strategy in place to tap the domestic potential in this market as well as use the region as an sourcing hub. As India’s auto industry is expected to reach seven million by 2020, and as the hinterlands of India fuel its automotive growth, Ford is going for the heart of the Indian automobile market and plans to strengthen its presence in the B segment.”

In line with this strategy, at the Delhi Auto Expo, Ford presented two new B-segment products – the Ford Figo Concept and the 2014 Fiesta, a premium compact sedan for the

“Our state of the art powertrain manufacturing facility in Maraimalai, Chennai has been built to a ‘lean journey’ approach to material logistics, taking advantage of a significant upgrade in automation and computer power.”

car enthusiasts. “As India strengthens its position in the global auto market, Ford will continue to offer great quality products with superior safety features and smart in-car technology that promise to offer greater ownership experience with an overall lower cost of ownership,” Harris says.

The B-segment has of course been outpacing the industry for the past decade, accounting for almost a third of total sales in 2013. Ford India has witnessed unprecedented success with its game changer Ford Figo even in this most competitive segment in India. At the same time, the urban SUV Ford EcoSport continues to be a tremendous success. But while this car has been a big hit on its launch, it seems to be losing



Ford's global manufacturing standard and quality practices drive efficiencies, increases capabilities and lowers overall cost of production

the momentum due to the long waiting period. And Harris is working to address this on priority. "Ford EcoSport underpins our global One Ford strategy to deliver great products in growth markets. It became an instant success as it offered great power of choice to customers from several segments with its compelling value for money proposition. The unprecedented response it received was a sharp contrast to the overall industry scenario. There are more than 40,000 EcoSports on Indian roads today. With a major section of the EcoSports already delivered, we are working closely with our suppliers to enhance output of the EcoSport to reduce the waiting period and to meet the high demand."

One of Harris' key responsibilities includes product programs to serve both the domestic as well as the growing exports market. This obviously involves the successful implementation

Sanand project on track

The Sanand Vehicle Assembly and Engine plant in Gujarat is progressing well. It will be operational towards the end of this year, with vehicles and engines rolling out sometime in 2015. Ford has invested US\$ One billion to establish this new integrated manufacturing facility, which will enable us to more than double our annual capacity to 440,000 vehicles and 610,000 engines.

“We are on track to deliver on our committed US\$ two billion investment and expansion plans to elevate India as the centre of excellence for small cars and low displacement engines, both for domestic and export markets.”

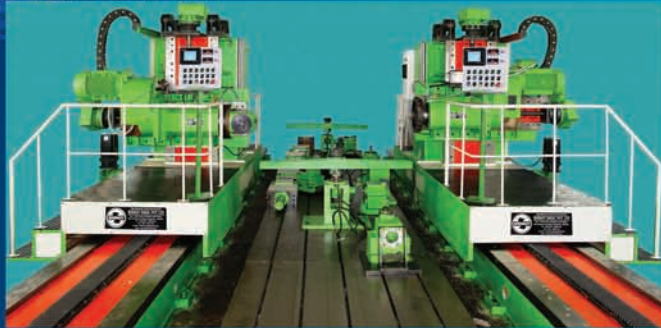
of Ford's expansion plans in India. "We are on track with our plans and committed to position India as a centre of excellence for small cars and low displacement engines for both domestic and export markets. We are utilising our India facilities to export to several global markets, thereby becoming advocates of India's manufacturing prowess."

Ford has a long-term strategic plan for India, anchored in viable product programs and engine manufacturing capability, both representing significant volume and profitable growth. Harris believes the Indian automotive sector urgently needs is the policy assistance for fuelling domestic demand as well as export opportunities. It needs the introduction of some immediate measures to stimulate the industry. "Significant measures for protecting the growth potential of the country are lower interest rates, control of the fiscal deficit, continuity of policy reforms and reduction in inflation. These policy meas-

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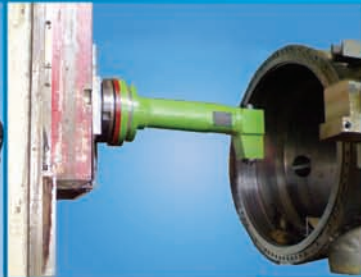
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ures will help to achieve improvement in consumer confidence and increase optimism in the manufacturing sector, ensuring accelerated growth,” he says.


Exports form a big piece of Ford’s India growth strategy as the company is looking to develop India as a key manufacturing base. “Currently, 25 per cent of vehicles and 40 per cent of the engine production output is being exported from the integrated manufacturing facility in Chennai. Ford India underpins the importance of bringing scale and flexibility to its manufacturing capabilities to deliver on the One Ford plan and produce world-class vehicles to meet growing international demand,” Harris explains.

Reducing cost at the manufacturing level will be the key to produce competitive vehicles, particularly for the Indian market. So what is Ford India doing on this front? “Best practices in manufacturing and sustained efforts towards reducing the cost of ownership are key to producing competitive vehicles. Ford’s global manufacturing standard and quality practices drive efficiencies, increases capabilities and lowers overall cost of production by using a standardised process in our factories of the future across the globe. Improved flexibility, process and quality improvement, investment efficiency, and efficient capacity utilisation are significant initiatives undertaken across all our plants in order to make Ford cars more competitive,” Harris believes.

Ford’s has state-of-the-art powertrain manufacturing facility in Maraimalai, Chennai, which your editor has had the opportu-

nity to visit. It has been built to a ‘lean journey’ approach to material logistics, taking advantage of a significant upgrade in automation and computer power. “A unique, ‘build-to-order’ approach ensures that each vehicle is specifically built to an individual customer or dealer order, therefore making vehicles more competitive and the overall process more economical. The plant has been designed for efficiency, managing smaller inventories of commodities and components. This more compact approach allows warehousing closer to the assembly line, for greater speed and better efficiencies. In addition to these, key suppliers are clustered in an adjacent supplier park, and several new and current suppliers have been brought into the supplier park,” Harris explains.

Of course, that is just one element of Ford India’s three pronged Cost of Ownership vision: Use of efficient technol-

ogy and parts design, service innovations and network expansion. With more service parts and components being produced locally in India by Ford as well as key suppliers, the need to import parts has decreased greatly while the availability of parts has increased. “We have worked closely with our growing supplier base to attain high levels of localisation on the products, thereby achieving competitive price points while maintaining high quality. Ford’s superior ownership experience comes from continuous product innovation. With its laser-sharp focus on world class quality, Ford is able to offer peace of mind to its consumers with lesser number of servicing on its cars.” 

Getting personal - Driving Ford

We asked Harris what car he drives and why? “I drive the Ford Endeavour, the only True Blue SUV! I like its car-like passenger comfort coupled with a robust SUV construction. The authentic 4x4 DNA of the Ford Endeavour gives it class leading Power along with a bold and rugged stance that appeals to me the most.”



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For over two decades, the Corporate Technical and Energy Services (CTES) has evolved as a preferred in-house technical and energy conservation solution provider for the Aditya Birla Group of companies. Equipped with state of the art measuring and analysing tools, it is a one-stop resource for various services*.



Adopting Energy Management system of ISO 50001:2011 is one way to inculcate energy efficient culture. It not only provides an improved bottom-line, but benefits are altruistic. Energy conservation is a part of our Sustainability vision— we work earnestly towards it.”

Jagrat Mankad
Head – Corporate Technical and Energy Services

According to Jagrat Mankad, Head – CTES, decision making strategy should incorporate energy efficiency as fundamental value. Mankad who is driven by the goal of institutionalising energy efficiency culture across Aditya Birla Group believes that this culture can be expanded by educating stakeholders on importance and significance of energy conservation.

*Services offered at CTES

- Energy conservation
- Debottlenecking and troubleshooting of Group Captive Power Plants
- Electrical Power System Analysis
- Industrial Engineering services (including Material Handling, Layout planning, Productivity and Manpower rationalization, etc.)
- Value Stream Mapping
- Water conservation through Pinch Analysis
- Support to Units on regulatory affairs like PAT, RPO, etc.



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- Involving the plant technical team in formulating the econ projects – team work.
- Handholding the Unit till successful implementation of the scheme.



Established in 1990, the Corporate Technical and Energy Services (CTES) is a sister concern of the Aditya Birla Science and Technology Company based out at Taloja, just outside Mumbai, India. It is a corporate function of Aditya Birla Group of companies Through its multidisciplinary team of experts, CTES provides various services across the Group for technical problem solving and cost reduction. In addition CTES is actively involved in sharing knowledge and experiences through Group-wide benchmarking studies, organising corporate technical seminars and publishing newsletters and white papers on various technical issues. It also extends project execution support to Group units.

- Use of simulation softwares to predict performance.
- Robustness of the scheme is scrutinised critically by seniors who are expert certified M&V Professionals.
- Hands-on training to plant technical team during the course of the visit.

Implementation and benefits

With the advent of internet era and Aditya Birla Group’s quest for knowledge learning, awareness of energy conservation has improved significantly at the plants. Moreover with rolling out of Energy Conservation Act 2011 and other regulations, Units have proactively beefed up energy conservation activities. Naturally, task of identifying energy conservation potential has become increasingly challenging. In spite of that CTES was able to identify energy saving potential duly accepted by its customers, to the tune of Rs75 crore/annum in the FY13-14.


Major credit goes to the CTES’ vibrant and finest talented personnel who are highly trained professionals and have over a period of time, developed innovative solutions and saved millions of rupees in operating costs for Aditya Birla units. The CTES team has BEE accredited energy auditors, value



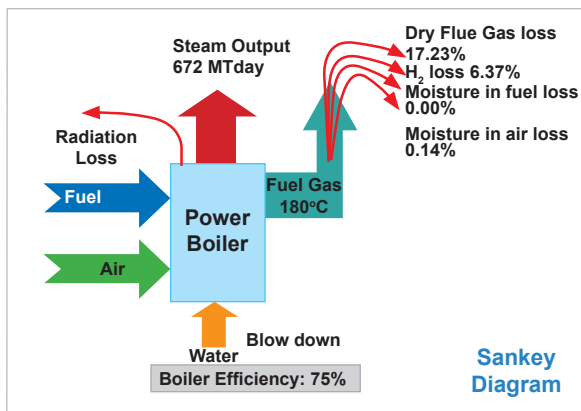
Roger D’Souza, CEO of Aditya Birla Science & Technology Company Ltd and CTO of Aditya Birla Group, addressing delegates during CTES Corporate Technical Seminar

specialists, certified M&V professionals, certified lead auditors of ISO 50001:2011 and business management graduates.

Way forward

In our quest to improve our effectiveness on a continuous basis, CTES will be adopting the Peter Drucker business modelling tool to carve out the roadmap for future. The blue print will assist Aditya Birla Group in achieving Group Vision through a three prong approach – Excellence in Energy Performance Management, Innovation in cost reduction and Value Optimisation. 

Case Study 1: Conditional optimisation



Objective: Reduction in Bunker Oil Consumption.
Challenges: 28TPH capacity Hog Fired boiler was operating with 15 percent Oxygen level in the flue gas (which is OK for the kind of the fuel used). The boiler grate needs to be cleaned every day which takes about four hours. During such time Bunker Oil is used as a fuel. A Sankey diagram of the Boiler losses was made.

Result achieved: Bunker Oil needs less air as compared to Hog/Bio mass. The CTES team suggested the Unit to optimise the Oxygen level and bring it down to five percent at the time when the Grate is cleaned. Reduced losses from the Dry Flue Gas have resulted into an annual saving of Rs150 lakh/annum without any investment.

Case Study 2: Intelligent operation

Objective: Improvement in Heat Rate of Turbine.
Challenges: 25 MW turbine installed with 8 air cooled condensing fans was operating at 23.57 MW capacity with five fans. Turbine exit pressure was 0.18 Bar (a). Increasing the number of fans in operation to improve exist pressure would increase the auxiliary power consumption.

Sr. No	Parameter	Unit	Turbine # 2 (Before)	Turbine # 2 (After)
1	Turbine Load	MW	17.8	17.3
2	Specific Steam Consumption	TPH / MW	4.16	4.10
3	Turbine exhaust Pressure	Bar (A)	0.18	0.14
4	Turbine Heat Rate	kCal/ kWh	2597	2561
5	Number of ACC Fans in operation	Nos	5	6
6	Speed of ACC Fans	RPM	1260	1153
7	Total ACC Fan power consumption	kW	405	403

Result Achieved: CTES team analysed actual cooling required and through in-depth analysis, recommended to operate six fans with reduced speed. As shown in the table below, it improved the turbine exit pressure and reduced the heat rate providing an instant saving of Rs50 lakh/annum with no investment.



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

The ALL ROUNDER

A keen sense of understanding of the market helped the company in near accurate demand forecasting which resulted in avoiding any production holidays, says **T Sarangarajan**, Vice President, Production, Hyundai Motor India

By Niranjan Mudholkar



When T Sarangarajan, Vice President, Production, Hyundai Motor India (HMI), started his career in the Indian passenger car industry, the sector was on the verge of transformation. Today, after 31 years, the industry is once again standing on the edge of a big change. Of course, Sarangarajan is going about his work with the same focus and dedication and of course, with much bigger experience.

He started his professional journey with Maruti when the company's plant was getting constructed. Sarangarajan played a role in not just getting the plant up and running but also in developing the auto ancillaries. Of course, he did it again on joining Hyundai when it entered India towards the latter half of the 90s.

Involved in building the company from inception - right from construction of the factory, the production lines, to testing of the products and rollout - Sarangarajan once again proved why he is considered as an all rounder in the industry. A part of his significant contribution at HMI also includes bringing in a culture of using latest technologies – be it fuel injection in small cars (Santro was the first one to use it) or the popular CRDI diesel engines in Accent.

“ We have inter-linked torque systems which ensure the needed torque is applied on the critical assembly of parts. If the torque is not achieved, the conveyor line will stop and everyone in the plant, including our MD will be alerted!”

T Sarangarajan,
Vice President, Production,
Hyundai Motor India

Plant Data

Hyundai Motor India

Location: **Sipcot Industrial Park, Irrungattukottai, Sriperumbedur Taluk, Kancheepuram District, Tamil Nadu**

Size: **535 acres**

Manufacturing started in: **September 1998**

Car models manufactured: **Eon, Santro, i10, Grand i10, Xcent, i20, Accent (Export), 2014 Fluidic Verna, Neo Fluidic Elantra, Santa Fe, Sonata**

Capacity: **6,40,000 cars in both Plant 1 and Plant 2**

Catering to which market: **Both domestic and exports**

Investments made so far: **US \$ 2.0 Billion**

Staff strength: **9,500 (as of September 2013)**

Safety standards: **We are OHSAS 18001:2007 certified facility**

Recent milestones: **Five million cars rolled out from the factory as of November 2013**



The HMI Plant deploys the latest equipments and technology

Today, this mechanical engineer from Malaviya National Institute of Technology (Jaipur) strives to offer best products to customers not only by deploying the latest equipments and technology, but also through a highly motivated and involved workforce.

The last one year has been the toughest for the Indian auto industry. And HMI was able to stay afloat due to its robust planning, strong back-end practices and sophisticated infrastructure, which allows the company ample flexibility in production of domestic and export models. “Our keen sense of understanding of the market helped us in near accurate demand forecasting which resulted in avoiding any production holidays,” Sarangarajan says.

In fact, Sarangarajan’s plant has been the only plant in the Indian automotive industry which did not declare a single production holiday or did not lay off any employees last year. “Moreover, we have also been able to interpret the customer requirements well and have been able to launch class leading products. Our Grand i10 launched in September last year, redefined the segment and became a best seller. All these factors contributed towards navigating our way successfully out of a tough year.”

Focus on quality

At Maruti, Sarangarajan brought in the concept of quality consciousness and helped in improving quality levels and

4,000+ projects
Number of projects
HMI carried out on the
shopfloor itself which
resulted in the savings of
about Rs400 million

bringing in the best practices to the shop floor of the ancillaries. In the next decade, he successfully implemented the concept of quality assurance of products and processes at Maruti and its vast network of 400 plus vendors. Leveraging on this huge experience, Sarangarajan has introduced a number of systems working in close co-ordination to ensure that HMI gets flawless quality.

“At Hyundai, we have invested heavily in technology to ensure that nothing is left to chance or luck. Nothing is kept open to interpretation. For example, we have inter-linked torque systems which ensure the needed torque is applied on the critical assembly of parts. If the torque is not achieved, the conveyor line will stop and everyone in the plant, including our MD will be alerted!”

Similarly, the plant has automated inspection system where the engine is inspected for some 60 critical parts and assemblies and if even one is missing, the engine will not move to next station.

“On the supply side, we choose vendors with technological excellence and who have proven capability in supplying top of the line products. This is especially pertinent since 85 percent of our components are supplier dependent. Once the products enter our system, we have 500 checkpoints manned by experienced and highly qualified professionals, who serve as our quality gatekeepers. These stringent measures help us maintain our quality,” Sarangarajan explains.



The HMI plant has invested heavily in technology to ensure that nothing is left to chance or luck.

Cost reduction

With increasingly intense competition, there is a lot of pressure on OEMs to keep their prices competitive. This involves reducing costs at the shopfloor level to start with. How is Sarangarajan doing it at HMI?

“We have been able to achieve cost competitiveness by keeping a strict control over our internal costs of production, controlling cost of utilities and through a high degree of indigenisation. We have a system called the ACT 302*, where every member on the shopfloor is encouraged to think of ideas to save costs. Last year, we carried out more than 4,000 projects on the shopfloor itself which resulted in the savings of about Rs400 million!

On the utility side too, HMI has a target of reducing the cost per car by 3-4 percent annually, year on year. “Our suppliers also work on similar lines and hence collectively we have been able to achieve a tight control on costs,” Sarangarajan states. (**ACT 302 is aimed at improving productivity by 30 percent in two years and hence the number*).

Role of supply chain partners

Developing and working with supply chain partners has been one of Sarangarajan’s career

highlights. He knows that supply chain partners are key to the OEM’s success. “We work very closely with them, right from the time a new prototype is developed. They not only provide us with inputs on the design feasibility of parts but also provide inputs in scheduling.

Most of HMI’s suppliers are global players but are dedicated suppliers. “The arrangement is in such a way that we work with them for supplies, but they can supply to multiple OEMs. We support them fully in arranging toolings, helping them in setting up and maintaining a stable process and even support in raw materials on request.”

What also works for the company is the fact that many of its suppliers have set up facilities wherever Hyundai opens a new plant. “It is a win-win situation for both parties as they get a captive client and we are assured of quality parts, without having to start a fresh process, all over again,” Sarangarajan says.

Safety, a priority

Safety ranks highest in HMI’s list of priorities. “I am proud to say to that we are one of the safest plants in the world amongst the Hyundai KIA group (35 plants). I would go so far as to say that safety is part of our DNA. We have a dedicated

“
We have developed several energy saving initiatives to reduce consumption, including a heat recovery system. We use solar heaters, T5 lamps and Led lights at appropriate locations to reduce power consumption.”



safety team which regularly trains, monitors and audits safety issues within the company. They hold regular programs to sensitise employees and inculcate a culture of safety. Mock drills, training of employees at various shopfloors, safety audits, safety campaigns, etc are de rigueur. While we have supervisors to monitor safety on the shopfloor, the onus rests with each and every employee,” Sarangarajan explains.

In fact, HMI’s campaigns extend beyond its shopfloor to areas such as safe driving, safe practices while walking and crossing roads and the company is currently running a campaign against use of mobile phones on the shopfloors and while walking or driving. “We are encouraging people to stop at a spot, attend the call and then move on. We want our employees to reflect the culture of safety beyond their work persona and spread the message of safety amongst their family and friends.” The HMI plant was recognised as the safest plant by the Tamil Nadu government for the year 2010.

‘Green’ plant

Hyundai Motor India is one of the greenest car manufacturing plants, which has also been recognised by the Government of Tamil Nadu. “We are a zero discharge plant as the used water is treated in our huge RO treatment facilities and the treated water is reused for production. Even the sewage water is treated separately and is used for gardening,” Sarangarajan says. With the help of treated sewage water, HMI has developed a Green

“
We have been able to achieve cost competitiveness by keeping a strict control over our internal costs of production, controlling cost of utilities and through a high degree of indigenisation.”


Belt inside the plant complex with lawn and flowering shrubs along with 22,000 trees and 40,000 saplings. Most of the trees are fruit bearing apart from Shelter and Ornamental trees. HMI has even developed a nursery within the premises to meet its entire requirement of tree saplings and shrubs.

“Besides, we have developed several energy saving initiatives to reduce consumption, including a heat recovery system. We use solar heaters, T5 lamps and Led lights at appropriate locations to reduce power consumption. The plant is designed such that it lets in a lot of natural light and air, which again reduces our dependence on electricity for utilities during the day. In terms of air quality, we have 24 hour online monitoring systems to continuously detect emissions which are also monitored by

the pollution control board live.” Hyundai plant has one of the biggest rain water harvesting facility within its premises. The rain water that is stored in four ponds in the factory can take care of HMI’s water requirements for more than a month! *(In fact, your Editor has personally visited the HMI plant and has first hand witnessed the safety and greenery initiatives).*

Approach to people management

Sarangarajan believes people management forms the core of HMI’s existence as a well managed team can exceed expectations. “We have a well rounded approach towards our employees on the shop floor. We have recognised an apolitical union who have a proven majority and we maintain an open channel of communication with them. All issues are discussed and deliberated in a transparent manner. We also have one of the best in class welfare measures. That apart, a full time social worker works with employees and their families to help them achieve a healthy work-life balance.”

For executives, HMI has well-defined roles and responsibilities which clearly define what each person is expected to do. “We have also started systems like internal job rotation, internal job postings, and opportunities for higher education etc, which help in keeping the employee engaged and motivated. Also, we have created various programs like Global Professional Program, Global Exchange Program, Global Technical Training and Future Leaders Program to groom high potential employees from various business divisions to enhance their knowledge and take on higher roles in the organisation.” 



The Plant has been able to achieve cost competitiveness by keeping a strict control over internal costs of production

Managing visitors and contract labour

Newton Software Pvt Ltd has developed an ATM type visitor entry management system and a contract labour management system. **Sunil Nevagi**, Director, explains the features

Q Why is the Visitor Management System required?

Most companies face security threats from various sources and it is critical to monitor and maintain visitor data. The E-gatepass System comes as a comprehensive solution that captures and saves the visitor's photograph. It also scans the visitor's business card. Importantly, it also creates and prints the visitor pass with photo.

Q What are the security features?

It has exclusive alerts for number of visitors in the premises in case of any accident and for validity of time frame of visitors' presence in the premises, there by restricting unwanted visitors.

Q Is there any solution for creating prescheduled appointments through the E-gatepass?

Yes, a prior appointment scheduling system can be run on 100+ terminals across the company; whereby a prior appointment can be notified to the machine at the gate to save time and increase security. This system makes sure that all unwanted visitors are avoided in one GO. Time management of the staff increases by 100 percent as the appointments can be spaced based on priorities.

Q What is the Contract Labour System?

Most of the corporates and SMEs have contract labour operating on their premises. And it is a major challenge to manage the entry and exit of the labourers and to calculate their wages with overtime. The Contract Labour System efficiently handles this function and also manages the respective contractor payment.

Q Please elaborate.

The system is so extensive that with one click it calculates the wages, the overtime, work contract tax, ESI and PF. A batch of 1,000 workers is handled easily in 15-20



E gatepass system has a direct impact in improving the productivity of the organisation."

minutes by using the Contract Labour System. It avoids queues at the factory gate and ensures that there are no proxies.

Q What are the benefits to the management?

It stops all fraudulent practices associated with entry and exit into any facility. It stops proxy attendances as well as pilferage in overtime calculations and saves lakhs of rupees.

Q How long does it take to implement the system?

It takes approximately less than a week to fully implement the system. We study the working process of each factory and based on the need of the process we modify the system. We are specialists in effectively implementing the system.

Q What is the latest feature that you are adding to this system?

We have developed an exclusive face recognition system to beat all the problems related to contract labour management. We have also added sms / mail alerts for daily manpower reports.

Q How does it compare to other systems like biometric thumb technology?

The thumb technology has a lot of problems ranging from not been able to capture correct thumb impressions to data getting corrupted. With face recognition, this system is virtually touchless and makes a fraudulent entry impossible.

Q What are the legal aspects to it?

It helps the companies to automatically complete the legal compliances like police verification. All Govt levies and taxes are fully computerised and are Online. Virtually in just two hours you can complete all the formalities of labour payments.

Q What is your specialisation?

We are very strong technologically. Every factory or corporate requires a specific customisation and based on the clients' need we provide the correct level of customisation in a short time.

Q Who are your clients?

For both these systems we have clients like ITC, Emerson, Varroc, Skoda, Dhoot, Bridgestone, LG, Haier, Tetrapak, kaihenfie, Reserve Bank of India, ARAI, Bajaj Electricals, Serum instituteand many more.



The E-gatepass system is an ATM type machine with a touchscreen, a camera and a printer.

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Name : Joshi Ph. Mob. : 957654334 From Company : NEWTON Departments : BTG Contact Person : Geeta Vehicles No. : MH-12-5855 Reason : Official Meet	
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Contract Labour Management System

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Ground for industrialisation



Automation 2014
9th International Exhibition
and Conference
October 15-18, 2014, Mumbai, India

Automation 2014 promises to be a place, which will bring the right people together for the economic growth. It will be a platform to examine new foundations for progress, to improve existing products as well as processes.

industries like automobile, oil & gas, power & energy management, chemicals/petrochemicals/fertiliser, OEMs, waste and waste water, metal, pharmaceuticals, white goods, plastics and food & beverages. The Automation exhibition has been exceeding its own standards year after year. The 2013 edition saw more than

775 national and international exhibitors from 20 countries. More than 45,000 business visitors interacted with exhibitors, resulting in 46 contracts being signed at the venue itself. This is testimony to what the event has managed to achieve despite the economic slowdown.

Systematic and sustainable industrialisation is a key to any country's progress in the twenty first century. And successful industrialisation is possible through the latest innovations, solutions and processes in automation. The ninth edition of 'Automation 2014' will not just be the platform for Asian industries to showcase their manufacturing strength and quality products to the world but it will also be a big ground for India's progress in industrialisation.

Research and development are the basic requirement for rapid development and outstanding performance of any industry in any country. And automation fuelled by R&D is the best way to win in competition and sustainable growth.

Automation 2014 is a place, which will bring the right people together for the economic growth. It is a platform to examine new foundations for progress, to improve existing products as well as processes. For knowing the wide range in innovations in science and technology that will shape the bright future of India, the organisers of Automation 2014 are inviting the manufacturing industry to this show in Mumbai.


"To keep up with the competition, manufacturers require resource-efficient production methods plus an ability to react swiftly to market fluctuations to meet the growing demands for customised products. This is where automation helps," says M Arokiaswamy, Managing Director, IED Communications Ltd, the organiser of Automation 2014.

Automation 2014 will showcase the production engineering and associated software solutions for industrial, process, factory, building & electric automation, instrumentation & control, robotics, hydraulics, pneumatics, wireless & bus technology under one roof. The show will also display solutions and systems for a wide range of



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M Arokiaswamy, Managing Director, IED Communications Ltd, the organiser of Automation 2014

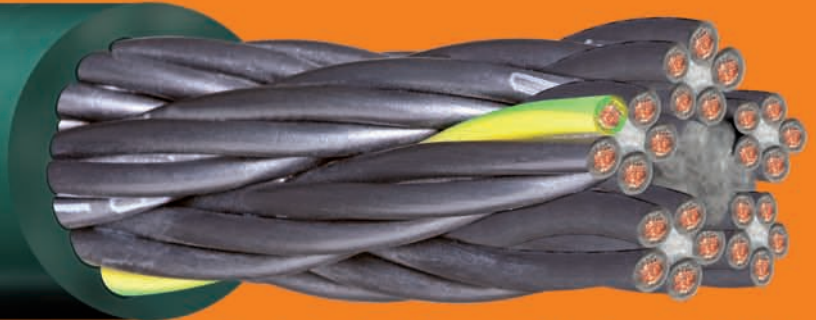
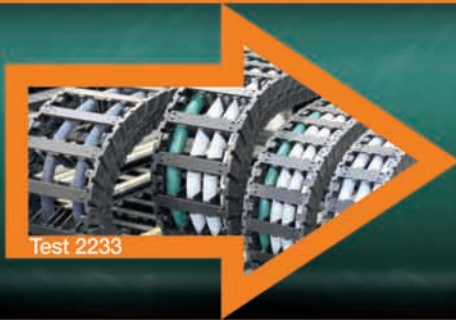
Automation 2014 will also organise knowledge based technical conferences. An in-depth discussion with experts on various subjects like innovations in technology, foundation field-bus technology, safety and security, tank automation and metering will be organised during the exhibition. The show is a platform where the visitors will find sustainable solutions for business profitability, optimisation of plans, cleaner and greener operations, safer and energy efficient. A flagship event of IED Communications, 'Automation' is the biggest show in South East Asia and the second biggest show in Asia after the 'IAS Shanghai'. The ninth edition of Automation 2014 will be held from October 15-18, 2014 at the Bombay Exhibition Centre, Mumbai. 

Tested: 27 million times twisted ... from stock



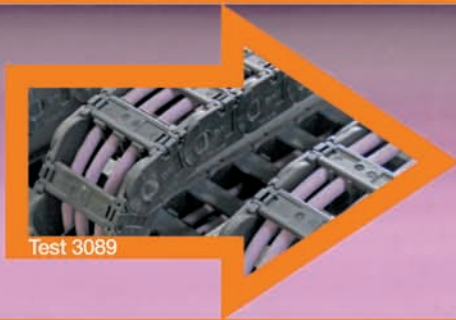
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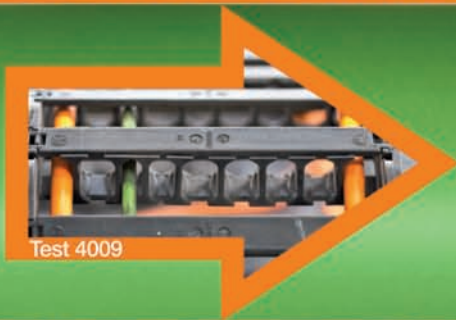
chainflex® control cable CF5.10.25 +++ Has withstood more than 41 million strokes at a 25% smaller test radius +++ chainflex® lasts +++ Proved in test no. 2233 +++ online calculable +++ Test information and details: igus.in/chainflexTest2233

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Tested: 97 million strokes ... from stock



chainflex® thermal compensation cable CFTHERMO.K.001 +++ Lasts more than 97 million strokes at a 48 mm radius +++ chainflex® lasts +++ Proved in test no. 4009 +++ online calculable +++ Test information and details: igus.in/chainflexTest4009



Transforming Manufacturing

Manufacturing excellence is a quest for productivity, quality, innovation, speed and cost competitiveness. And industrial automation is a formidable tool in this quest.

By Niranjan Mudholkar

Manufacturing excellence is a quest. A quest for productivity, quality, innovation, speed and cost competitiveness. And industrial automation has emerged as a formidable tool in this quest. Of course, like any other tool, its effectiveness depends on the way it is employed. So The Machinist interacted with a wide range of companies to understand how they are leveraging on industrial automation.

Consistency & productivity

It is usually believed that automation results in consistent quality and increased productivity. Sudhanshu Kantoor, Product Manager, Factory Automation P+F India, says that industrial automation products allow companies to achieve faster cycle times, increase efficiency, and improve repeatability. "Industrial automation not only simplifies the physical or manual efforts put in by worker, but it also reduces the creation of waste materials and products. It also eliminates human error and as a result the quality of the end product is vastly improved."



Mukesh Chawla, COO, Legrand Group in India, agrees as he says that any automation reduces the manual errors, improves quality and maintains the consistency. "Thus it increases productivity. However, this is possible only when the input component functional tolerance is within limits and sensors are installed to sort the bad parts. Otherwise, it results in bad quality, lower productivity and also results in poor utilisation of automation. This is where we need human



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Automation helps Legrand's Jalgaon plant to bring manufacturing flexibility



Automation acts as a contributing factor in maintaining precision and accuracy of critical components resulting in improved and consistent quality of finished product and added value to customers."

Dinesh Patidar, CMD, Shakti Pumps (India) Ltd

talent to utilise the automation in an optimal way," Chawla says. Approximately 30 percent of Legrand India's production processes are automated for critical operations.

Dinesh Patidar, CMD, Shakti Pumps (India) Ltd, says that being an engineering product manufacturer, process automation plays an important role in his firm's manufacturing set up. "It offers both economic and technical advantages. We use robotic aided manufacturing and automated assembly lines to enhance throughput in assembly and overall productivity. Almost about 30 percent of our manufacturing set up is automated." Patidar also believes that automation acts as a contributing factor in maintaining precision and accuracy of critical components resulting in improved and consistent quality of finished product and added value to customers.

The automotive industry has been at the forefront at the adoption of automation and the German OEMs have been the pioneers in this field. Andreas Lauenroth, Executive Director – Technical, Volkswagen India says that automation in manufacturing of cars helps in various areas. "It provides access to areas of work which are ergonomically not easy to reach for humans and precision in various tasks.

Automation also helps us in doing jobs such as Laser Roof Welding – Volkswagen is the only Indian manufacturer using this technology. Nevertheless with our constant training, the employees in the shopfloors are able to produce highest quality consistently. Currently, we have approximately 35 percent automation in our Chakan plant."

Another pump manufacturer Grundfos too makes extensive use of automation. While most of its global plants are fully automated its Indian manufacturing unit has 30 percent of the assembly lines and 100 percent of the testing lines automated. George Rajkumar, Director - Strategy & Operations, Grundfos Pumps India Pvt Ltd, says that as the Indian unit does not make continuous manufacturing in batches, the automated conveyor assembly lines improves the productivity and reliability of the products. "As all our pumps are 100 percent tested, only because of the automation of our testing lines today we are able to meet our delivery schedules. These testing lines are stored with the sample performance results of all our products and this is compared to the actual test data and provides the results online. This has multiple benefits as it allows the operational team take the decisions online."

Marrying with manufacturing principles

Most shopfloors work on certain manufacturing principles like lean, JIT, WCM and so on. How do automated systems marry with these manufacturing principles? Patidar of Shakti Pumps believes that a well integrated automated system developed to suit to specific needs and requirements works well with manufacturing concepts. The nature of integration depends on the nature of the industry and type of automation one adopts. "We have quality specific requirements in our manufacturing processes. There are strict takt times that need to be followed. Automation helps us in maintaining these takt times and thus the throughput time for the vehicle," says Lauenroth of VW India.

Kantoor of P+F India rightly says that the goal of today's manufacturing processes is to reduce waste in human effort,



The 'Konzern Framer' enables us to build up to four different types of bodies on the same line through automation. Here also, the automation provides enough flexibility to change from one body style to other without hassle."

Andreas Lauenroth, Executive Director – Technical, Volkswagen India

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For Shakti Pumps, automation helps in maintaining consistency of quality

important to have automated systems to improve machine performance and quality.”

According to Milind Kulkarni, Head Business Development, Factory Automation, Siemens India, industrial automation provides the required degree of accuracy and repeatability of performance for machines. “Additionally, it increases throughput of the machines without compromising on safety of overall operations. This safeguards not only machines but the machine operators as well. Safety norms need to be analysed critically to determine the type and level of Automation (SIL level) that needs to be employed in the machine.”

When it comes to machine safety and performance, automated manufacturing process has its own competitive edge and advantages, according to the Shakti Pumps CMD. “Since automated system performs the actions in a specific and cyclic pattern, it is easy to forecast the maintenance and safety requirements. As far as the safety of workers is concerned, automated system needs special safety set up to ensure that unwanted human interference, presence is avoided,” he says.

Rajkumar of Grundfos gives an example: “The PLC programming in the machineries helps us find out the malfunction of the system and this is communicated online. This results in a quick reset to its original program and the equipment start operating correctly, thereby reducing the down time and manual intervention. The fail and safe mode programs helps stop the line if anything goes wrong and allows us to analyse the errors and rectify it quickly. This avoids the accidents in the line and damage of the equipment.”

Sydney Quadros, AGM - Offer Marketing (Industry OEM Business), Schneider Electric India, says that in recent years, the concept of functional safety has emerged: it refers to the overall safety of the Equipment Under Control (EUC) and the EUC control system. “Functional safety depends on the correct functioning or operation of the electrical/electronic/programmable electronic systems and other technology safety-related systems, as well as on external risk reduction facilities. The term correct functioning means that operation is correct,



“The automation process helps us capture the impact of the green initiatives, monitor these green practices and bring down the operating expenses. It also helps in increasing the overall efficiency and productivity.”

George Rajkumar,
Director - Strategy & Operations,
Grundfos Pumps India Pvt Ltd

inventory and time to become highly responsive to customers’ demands while producing world class quality in most efficient and economical manner. “Introduction of automation reduces over-production, waiting time, transportation, inventory, inappropriate processing, excess motion and product defects.”

Chawla of Legrand India says that automated systems are always aligned to manufacturing principles to make them viable and efficient. “Bottlenecks in operations are identified and automated to ensure single piece flow which is a prerequisite for lean manufacturing. This helps in bringing flexibility of manufacturing operations provided the set up time or change over time can be minimised.”

Impact on safety and machine performance

Legrand India’s Chawla believes that industrial automation improves machine safety as it reduces manual interventions to a great extent. “Sensors are installed in order to stop the machine abruptly to avoid any accidents. Also sometimes human speed can’t match machine speed (For example, robotic arm on Injection machine). Hence in these operations, it is



“Industrial automation not only simplifies the physical or manual efforts put in by worker, but it also reduces the creation of waste materials and products. It also eliminates human error and as a result the quality of the end product is vastly improved.”

Sudhanshu Kantoor, Product Manager, Factory Automation P+F

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At the Grundfos plant, automation process also brings down operating expenses

not merely what is expected. Therefore appropriate selection of the functions is essential.”

P+F India’s Kantoor strongly believes that industrial automation improves workplace safety and protects workers from injury. Automated systems can work in environments which are considered hazardous for human beings. Also in areas where the human intervention is must automation can be used to provide safety to workers by the use of safety certified equipments related to plant and machine safety like safety sensors, safety light curtains, perimeter guards, interlock switches, process sensors, PLCs etc.

Agility and flexibility

Manufacturing companies need to have shopfloor agility and flexibility both in terms of products and processes. This involves implementing changes and improvements quickly, efficiently and cost-effectively. How does industrial automation help organisations on this front?

Lauenroth of VW India shares that Pune Plant was established with a long term perspective. “Hence the automation, wherever done, was set up in a way that it could be adapted to the changes and improvements done in manufacturing over a period of time. Also, it should be noted that we are using the same robots for manufacturing different products. For example the ‘Konzern Framer’ enables us to build up to four different types of bodies on the same line through automation. Here also, the automation provides enough flexibility to change from one body style to other without hassle,” he says.

Kulkarni of Siemens says that new age automation solutions are much more than doing just basic automation tasks. “With the advent of technology and latest techniques such as Totally Integrated Automation, Profinet etc. automation solutions today are not only state-of-the-art but also extremely flexible. Due to continuous changing demands from consumer market, manufacturers require automation

solutions that are easily adaptable and enable them to take new finished goods (with changed specifications) to the market in the least possible time. Automation based on this key factor makes the investment of the manufacturer ‘Future proof’.”

At Legrand’s shopfloor flexibility is ensured by classification of products in to fast movers and strangers (slow movers). A separate cell is created for strangers in order to avoid conflict with fast movers. A single piece flow results in improved takt time with the reduction of overall Throughput time. SMED is being used wherever the changeover times eat the value of the machine thereby reducing loss to a major extent.

Patidar of Shakti Pumps says that while automation has its merits and demerits in terms of flexibility and agility at workplace, it has to be implemented considering all aspects of work including the work force. He does believe that automation has a great impact on work environment as well. Loss of versatility affects the work environment. “With



“Due to continuous changing demands from consumer market, manufacturers require automation solutions that are easily adaptable and enable them to take new finished goods (with changed specifications) to the market in the least possible time.”

Milind Kulkarni, Head Business Development, Factory Automation, Siemens India

repeated and cyclical activities there is pressure on other work and processes to catch up with automated processes implemented. Automation is a great success where large volumes of homogenous products are manufactured compared to industries where less volume homogenous products are manufactured. It has competitive advantage on certain aspects when handling hazardous jobs where robots or automated system operate perfectly,” Patidar says.

With today’s process plants requiring more rapid changeover capabilities as the lifecycles of the products produced continues to shrink and consumer demand constantly shifts, it is critical to be able to change automation configurations and architectures on the fly, without stopping the process, says Quadros of Schneider Electric India.

P+F India’s Kantoor says that the current automation solutions impart flexibility of production lines, better energy efficiency, quick scaling resulting in better throughput of the plant and utilization of equipment. “Current manufacturing equipments like PLCs and intelligent sensors provide adaptive

SENSING SOLUTIONS FOR THE MACHINE TOOL INDUSTRY



Rotary Encoders



Position Measuring Systems



Inductive Sensors



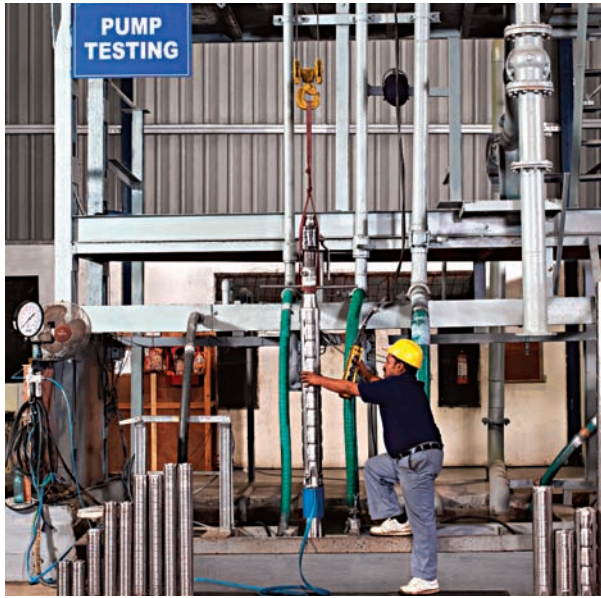
Photoelectric Sensors



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At the Shakti Pumps' plant, automation contributes in maintaining accuracy

solutions by creating a relation between electro-mechanism to software controls of the machine. Virtual commissioning environment can help in redesigning complex intelligent manufacturing systems. Machines can be made future ready with the automation while sticking to traditional manual operations may hamper production rate and quality.”

Green with automation

With sustainability becoming both a social as well as business requirement, manufacturers today need to incorporate ‘green’ elements into their business from design to disposal. What role does industrial automation playing in the green cause? According to Chawla of Legrand India, automation also plays its own role here when it comes to promoting green elements, by avoiding products/ components/processes which are not environment friendly. “Automation makes process energy efficient helping us conserve energy, aiding in efficient waste reduction and disposal, enabling paperless work,” he says.

“The automation process helps us capture the impact of the green initiatives, monitor these green practices and bring down the operating expenses. It also helps in increasing the overall efficiency and productivity,” says Grundfos’ Rajkumar. Quadros of Schneider Electric India draws attention to another important factor. He says that with all automation products being ROHS and energy efficient they consume less energy and are environment friendly.

Kulkarni of Siemens believes that energy efficiency is something which can be best achieved by using right automation platform. Metering, collating the energy consumers and making timely and correct reports of the same are impossible without appropriate automation. Also the power consumption by the automation solutions goes unnoticed and it is quite sizable as well. “PROFIenergy is an

excellent contrivance that helps to save significant energy just by way of sending un-used automation node/ component in ‘sleep mode’ when not in use.”

Lauenroth of Volkswagen India agrees that automation definitely helps in eco-friendly and efficient manufacturing. “For example, in our paint shop, we have robots painting the car bodies. Here, due to automation, there is higher transfer efficiency of paints as compared to manual work – thus reducing the amount of paint used. Ultimately, this reduces the VOC emissions. Another example is of sealers where automation reduces material handling and thus saves energy. We have also installed a new system of cleaning skids in our paint shop. With this new automated system, we are saving water and energy for cleaning the skids to a great extent as compared to the traditional method of manual cleaning.”

Kantoor of P+F India emphasises on the importance



“With today’s process plants requiring more rapid changeover capabilities as the lifecycles of the products produced continues to shrink and consumer demand constantly shifts, it is critical to be able to change automation configurations and architectures on the fly, without stopping the process.”

Sydney Quadros, AGM - Offer Marketing (Industry OEM Business), Schneider Electric India

of energy efficiency as the key reasons for companies to go green. “New technology in automated systems can control everything from the lighting to AC to make smarter use of energy. Automated dimmer systems can turn on or dim lights depending upon human presence with the help of sensors, helping in increasing life expectancy of bulbs and reduce electricity consumption. Using sensors and other automated solutions instead of manual intervention reduce waste on HVAC expenses. Using smart drives and energy efficient motors reduce idle use of power consumed by them sometimes caused by human error or negligence.”

According to Shakti Pumps’ Patidar, automation or industrial processes help to attain optimum utilisation of resources and as result waste/scrap generation is reduced. “This has environmental relevance in industrial processes. Reduced water/scrap mitigates efforts of disposal. Hence automation processes in manufacturing industry gains significance with reduced impact on environment.”



SENSORS for Positioning

Determination of positions with increasingly high degree of accuracy is one of the essential processes in industrial and manufacturing environments.

By Sudhanshu Kantoor

Determination of positions with increasingly high degree of accuracy is one of the essential processes in industrial and manufacturing environments. Depending on the application in question, the process may involve variety of applications in determination of position. Examples include the position fixation of linear shifting units such as work piece or tool carriers, detecting angles for valve actuators, or even monitoring the position of a vehicle on an automated conveyor in storage, in warehousing, and in material handling operations.

Let us consider an example of a simple positioning application of a work component travelling on a conveyor. This component needs to stop at a position where certain operations like drilling or tapping has to occur. Imagine a

situation where this component's position is shifted by few millimeters. The result is a shift in drilling and tapping position. This error in positioning will impact the whole working process and throughput or quality of the product. This is effectively taken care by using appropriate sensing system for a position feedback set up. Such positioning sensors thereby play a very significant role in industrial processes.

Modern positioning sensors are designed to work effectively and reliably for a host of working environments including the ones having dust, grime, oil and rough surfaces. Different measurement sensors are available to determine precise linear and rotational movements. Measurement lengths may range from just a few millimeters to several meters or kilometers, or an angular range of 360° and its multiples or fractions.

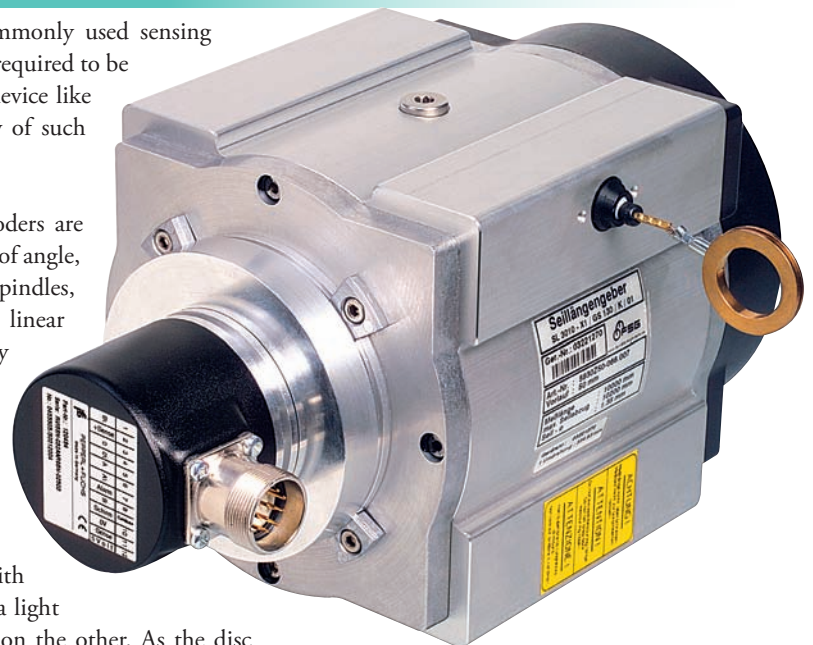
Mechanical principle based position sensors

These are one of the oldest and the most commonly used sensing techniques used for positioning. The sensors are required to be mechanically coupled to a rotating or moving device like motors or linear actuators for positioning. Few of such sensors are mentioned below.

a. Rotary Encoders with Cable Pull assembly

In applications for automation, rotary encoders are very commonly used as sensors for measurement of angle, position, speed and acceleration. By using spindles, gear racks, measuring wheels and cable pulls, linear movements are converted to equivalent rotary movement and thus can be easily quantified through an absolute or an incremental encoder. Rotary encoders convert a mechanical rotation value into an electrical signal that can be processed by counters, tachometers, logic controllers and industrial PCs.

Rotary encoders use a glass or plastic disc with alternating transparent and opaque fields, with a light source on one side and a light-sensitive sensor on the other. As the disc





Different technologies

Sensors use different principles or technologies to provide industrial positioning systems to meet virtually any kind of positioning challenge. Some of these technologies are:

- ➔ Electro-mechanical type positioning sensors
- ➔ Inductive principle based positioning sensors
- ➔ Optical measurement based positioning sensors
- ➔ Vision system type positioning sensors.

rotates, the light source is alternately blocked and revealed to the sensor. Whenever the light source hits the sensor, the encoder transmits an electric pulse that can be interpreted by a controller. The pulse ends when an opaque field on the disc blocks the light source. Rotation of the disc results in a square-wave pulse output. Most rotary encoders use an infrared light-emitting diode as a light source, and photodiodes or phototransistors as receivers.

Certain application demands less or no dependency on mechanical systems for linear positioning. In such type of application the high accuracy of the encoder is used for linear positioning. A small device called as 'cable pull' is mechanically

coupled to the encoder shaft. Cable pull enables a rotary encoder to measure linear motion by providing a cable that is pulled in a straight line by the application. Internally, the cable is wrapped around a spring-loaded drum that also turns the encoder's shaft when the cable is pulled or extended. So a measure of rotational or angular movements corresponds directly to the liner movement to be measured. Cable systems from lengths of few tens of millimeters up to 35 meters to 50 meters are generally available to suit for a wide variety of applications.

b. Rail based position encoding sensor

The position encoding sensor or absolute linear encoding system are capable of providing fraction-of-a-millimeter position feedback that are needed in wide ranging industrial and commercial applications. In simpler terms this system can be also be defined as an absolute encoder with a linear slotted rail instead of circular disc.

With this linear rail, long distance positioning up to few hundred meters can be easily achieved. Performance of overhead monorails, galvanising plants, cranes, automated storage and retrieval systems can be enhanced to new levels with this type of positioning sensor. Very importantly - this sensor is the best solution for dusty and rugged environments. This system consists of two basic components:

Read head

U-shaped read head optically scans a uniquely coded rail to determine the position of the carrier mechanism. An internal microprocessor translates a multiple sender/receiver LED array status into a bit code, providing very high (fractional millimeter) positional resolution over travel distances to a few hundred meters. Read heads require no calibration or "home" reference points. The read head's sophisticated intelligence provides rock solid data in some of the toughest conditions. Usage of high end processors enables continuous availability of system diagnostics which are very essential for monitoring and maintenance of such systems in critical, heavy duty yet precise set ups.

Code rail for such systems generally use either fibre-laminate or a better class stainless steel all of which are so designed to generate a unique positional code with very high resolution as the read head as above travels over them and scans these codes within the window of its travel. Fibre-laminate material are good for use in general-purpose, while applications or areas requiring increased mechanical rigidity or corrosion immunity are best served using the SS version.



Code Rail

In addition to providing positional feedback, short code-rail lengths can also be used for carrier/pallet identification. A single reader can both identify and position a carrier, saving the expense of an extra ID system. All rail types can be horizontally curved with no affect on the read head's accuracy. Fibre-laminate rails can also be flexed for vertical bends. The appeal of such a system rises further given the fact that the code strips are easily replaceable and electronic data/mechanical recovery of immediate position is inherent to its design.

Inductive principle based positioning sensors

Inductive sensors are an important and indispensable part of automation systems. Today there exist many derivatives of the platform of basic inductive technology that exploit the same for higher end applications. One such potent and

well placed idea is to use special inductive sensors for measuring short distances with analogue voltage or current outputs and hence become powerful sensors for feedback on position.



a. Linear inductive positioning sensor

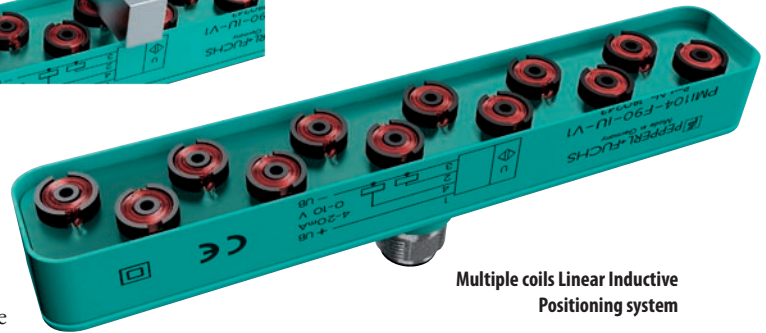
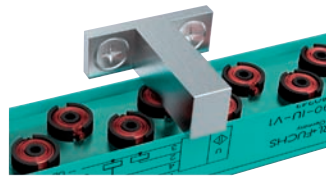
The technology of using inductive sensors for analogue fine positioning rests on using multiple inductive coils in conjunction though microprocessors and making them work as a single unit. Such inductive sensors combine a number of inductive coil systems with an intelligent microprocessor control unit that provides for right compensation and extraction of results to provide a highly accurate, continuous analogue signal. These sensors also operate on a non-contact basis like the conventional inductive sensors and therefore do not suffer from the wear and tear. Such sensors on one hand represent an interesting and robust alternative to the significantly more expensive conventional sensors for analogue measurement and on the other hand avoid the shortcomings of low-cost alternatives which are subject to drift and wear tear.

As opposed to the inductive proximity switch with a digital output signal, these devices provide an analogue current or voltage value, which is proportional to the position of the target or actuator. Since such a system uses microprocessors the products come with enhanced features like configurable switch point outputs in addition to the standard analog outputs corresponding to the position of the target.

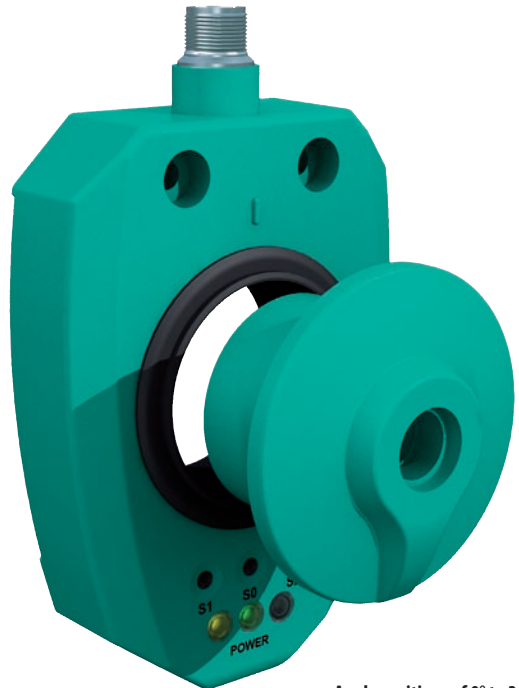
b. Rotary or Angular inductive positioning sensor

All the above linear solutions are further supplemented by the types that can even provide measurement of angle. The angle sensor has a detection range of 360° and can give the standard 4...20 mA output current with programmable switch outputs. These rotary measurement sensors are closely engineered with an actuator and an integrated metal vane which is fixed on the drive shaft in such a way that it is free to rotate within the cylindrical opening. Such angle sensors provide reliable angle measurements within rotational speeds of upto 100 rpm and copes with out-of-balance conditions on the drive shaft of 1...2 mm.

The combination of flexibility and robustness with a highly accurate absolute measuring system means that the sensors can be universally applied in coarse industrial environments. In contrast to many other solutions the non-contact/wear-free



Multiple coils Linear Inductive Positioning system



Angle positions of 0° to 360°

operating principle enables these sensors to provide service for many years in both room and external exposed environment.

The appeal of such sensors also stems from the fact that multiple rotations and ability to use several such sensors in conjunction can land up a very flexible and programmable cam switch.

Optical positioning system

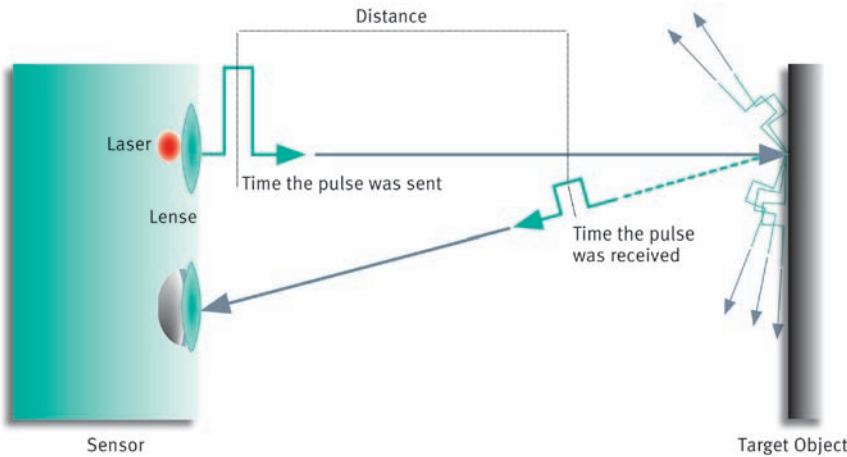
Distance sensors (using pulse ranging technology)

Recent developments have enabled measurement of distances with pinpoint accuracy over a distance of few hundred meters by exploiting the optical sensing technology. Multiples of different principles for measuring distances have today landed a host of sensors with each professing to outdo the other. Many measuring methods are often unsuitable because of the ambient conditions, surface and type of measured objects being unconventional. Use of indirect measuring procedures frequently results in incorrect or inaccurate measurements.

Pulse Ranging Technology (PRT) is a direct method for measuring distances and is among the most accurate distance measuring methodologies. In this approach, a laser diode

transmits short pulses of light that are reflected back by the target object and then recaptured by a light sensitive receiving element. The power of a single pulse is up to one thousand times more intense than the power of pulses generated by sensors that emit permanent light beams. With high end electronics and very good microprocessors, the time interval between when the pulse was sent and received is measured extremely accurately. The exact distance (s) from the object is calculated using the measured values (tL) and the speed of light (c). The wonder is that in modern sensors, this procedure is repeated up to 250,000 times per second.

The advantage of such a system lies in the fact of it being



PRT principle of operation



Distance Measurement Sensor

a direct method of measurement, which achieves accurate, repeatable, reliable measurement with very short response times. Sensors using such a platform of measurement achieve accurate, reliable and reproducible results regardless of ambient and object conditions such as surface condition, dark colour or extraneous light.

Apart from this, another principle that is used for distance measurement is “Phase correlation” method. This is an

indirect measuring topology and hence carries its own pros and cons. This platform of measurement has relatively higher dependency on measuring environments (extraneous light, reflective or dark objects temperature etc) so requires a careful evaluation prior to use depending on the application. In this method a single continuous wave is transmitted instead of short pulses and the reflected waves are checked for the shift of phase.

Vision principle based positioning sensor

Camera based positioning system combines the strengths of the Data Matrix code and modern camera technology to land very good and potent position feedback system. The system combines speed and accuracy with a high degree of reliability and robustness. It is optimised for material handling applications and combines maximum flexibility with a long service life. With a maximum code length of 10,000 meters (10Km), these characteristics make the system, the perfect solution for all kinds of material handling application such as monorail conveyors, skid conveyors in the automotive industry, crane and elevator technology, and other conceivable applications outside the sector.

Having evolved further from using only single dimension bar code system, the modern Data Matrix positioning system uses a code strip on which the “individual square” Data Matrix

codes are printed beside and above one another.

A state-of-the-art camera technology reads the codes. A 2D camera, LED lighting unit, efficient and intelligent signals processing unit are all integrated in a single reading head. The read head reads the codes, upper and lower rows, decodes them and transmits the X and Y positions to the PC/PLC.

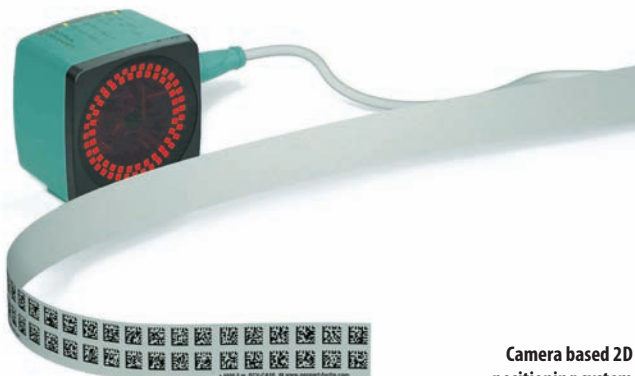
The code strip and reading head combination forms a high-resolution 2 axes optical positioning system which is suitable for a very wide spectrum of applications where precision positioning along the path of travel path is needed. The travel appeal of such a system lies in the fact that it can be effectively applied and used along a measured path which may contain any number of curves and inclinations.

Conclusion

There are multiple sensors and technologies for sensing for developing a positioning system yet the user has to carefully evaluate the to be measured values, precision, repeatability and environmental conditions to select and implement the best solution in any particular application.

The constant demand of better speed and accuracy on the shop floors is always stepping up the expectations from automation components yet it is very satisfying to see how a host of sensing technologies are increasingly able to stand up to this challenge.

The author is Product Manager, Factory Automation, Pepperl+Fuchs (I) Pvt Ltd



Camera based 2D positioning system



Highlights of the centre

Wide spectrum of industrial automation solutions as well as the technical and application support capabilities through actual demonstrations on machines and laboratories.

The field of expertise includes SYSMAC Platform, Vision Inspection Solution, Robotics Solution and Machine Safety Solutions.

The SYSMAC platform depicts a high speed and high accuracy fully integrated platform by three 'Ones' – One Machine Controller, One Machine Network, One Machine Software.

Delta Robot and the SCARA Robot together with Bottle Filling and VFFS (Vertical Form Fill Seal) machines are displayed in the machine demo area to explain the usage of SYSMAC to enhance a machine's performance by improving speed, accuracy, flexibility, reliability, speed and efficiency in all kind of industrial applications - primarily packaging and material handling.

The centre also has a vision lab to allow testing of vision inspection functions by customers with all possible variations of lighting, lens and controllers.

Another notable area in the centre is the 'Tsunagi Lab' which provides the complete integration experience of Omron to Omron and Omron to third party components so that the patrons are able to learn and handle the technologies which are in the scope of the total solution.

Spread over 3,750 sq ft, the facility hosts more than 10 experts as software, hardware and application specialists dedicated to the ATC.



(LtoR) Takehito Maeda, MD, Omron Asia Pacific, Industrial Automation; Yutaka Miyanaga Company President, Industrial Automation Company, Omron Japan; Sameer Gandhi, MD, Omron Automation India at ATC India launch

Enabling concept-to creation

Automation major Omron opens its fifth ATC in India to showcase expertise in the 'sensing and control' technology

Omron Automation, part of Omron Corporation Japan, has opened an Automation Centre (ATC) in India at Mumbai. The company already has four such ATCs across the world. Based on the philosophy of 'you create the concept, we will help you to make it work', the centre aims to showcase expertise in the 'sensing and control' technology so that manufacturing firms are able to test their new ideas, and understand how they can become more competitive.

"It is vital to provide a hands-on exposure to the associates so that they are able to believe and then achieve what they have not been able to do so far through their manufacturing establishments," said Sameer Gandhi, MD, Omron Automation, India. "Demand for both quality and quantity in products is increasing and this in turn demands complex manufacturing processes. In this regard, the ATC will be beneficial for manufacturers as it will facilitate better product design, allow them to have the proof of concept and support them through technical expertise. ATC will cut down on the development time and time to market for new products," he added.

Acknowledging that India continues to be an important destination for Omron Automation Takehito Maeda, MD, Omron Asia Pacific Pte Ltd, Industrial Automation Business, said that Indian manufacturing is today driven by efficiency, productivity and quality on one hand as it tackles the scarcity of skilled workers on the other. "In this light, the ATC will highlight our solution centric approach and shall play a very important role in strengthening our contribution towards India's manufacturing prowess and the society."

Yutaka Miyanaga, Senior Managing Officer, Company President of Industrial Automation Company, Omron Corporation, Japan, described this initiative as a part of Omron's 'Asia Hotspots' strategy. "One of its important tasks is to consolidate our foothold in India."

“ Demand for both quality and quantity in products is increasing and this in turn demands complex manufacturing processes. In this regard, the ATC will be quite beneficial for manufacturers as it will facilitate better product design, allow them to have the proof of concept and support them through technical expertise.”

Sameer Gandhi,
MD, Omron Automation,
India



Consistent efficiency

Automation helps manufacturing companies become consistently productive and efficient, says **Manish K Sahay**, Country Manager – India, Leuze Electronic Pvt. Ltd

By **Niranjan Mudholkar**

Q It is usually believed that automation results in consistent quality and increased productivity. What has been your experience?

The synonym for consistency is 'Automation'! That's why the growth rate in automation field is 15 percent to 20 percent while the growth rate is at single digit for other sectors. The sensors (called eyes of automation) and the PLCs and all other controllers (called brain of automation) together take care of quality, pace and consistency.

Take a simple example from the beverage industry: Normally, a person checks a missing bottle cap, a missing bottle itself, liquid volume, printed label, foreign body inside bottle and so on. He can be efficient but he is a human being and can miss it once in a while. If this faulty bottle reaches market then usually a case is put up by the rivals. Such problems can be avoided by sensors as well as vision systems, with no failure rate at all. This also enhances production with minimum downtime, and also enhances the ability to work at very high speed. Slowly, the industry is understanding the need of automation.



Q Do automated systems help in tracking of goods flow?

Automated systems can help in keeping inventory at an automatic retrieval of material from a warehouse. Barcoding and RFID are other options for identification and keeping track of flow of goods. Most of the new generation sensors and vision systems are web-based and can be operated directly by typing IP address in the laptop and one doesn't need a CD or program separately.

Q How does industrial automation impact safety?

There is a separate branch in automation dealing with safety. Unfortunately in India the concept of safety is still new; many companies implement safety only after some untoward incident happens. But the awareness of safety is gradually coming, thanks to the MNC companies who are bringing their safety culture. Products like safety laser scanner, area

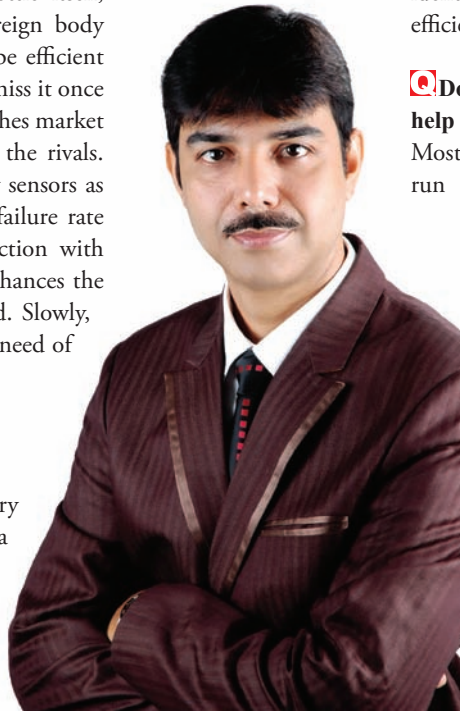
guarding, safety light curtain, locking devices, Safety mats can be used to avoid accidents in moving AGVs, hydraulic presses, robot working area and wherever dangerous machines are running.

Q What about shopfloor agility and flexibility?


Automation helps increase productivity as it is fast, simple and easy to install. Most of the sensors are not so costly and have a long life as these are contactless. With sensors and processor, you can get most of the information in terms of object movement, detection of object, positioning, counting, Ok/Not ok, inspection, measurement, temperature, pressure, identification, and so on, ensuring efficiency and safety.

Q Does industrial automation help on the 'green' front?

Most of the automation products run on 24VDC, with very less



Most of the new generation sensors and vision systems are web-based and can be operated directly by typing IP address in the laptop and one doesn't need a CD or program separately."

power consumption. Moreover, electronics and metals used in automation products can be recycled later. The electronics production itself does not need much industrial effort or power. Even with big automation firms, the factory size is much smaller than their sales office size! Sensors can be used in optimisation of consumption like avoiding dry run of machine, switching on lights only when needed, even opening / closing of roof based on light requirements etc. 



Mark your diary

A list of key events happening between April 2014 to February 2015, both nationally and internationally

Automotive Engineering Show

May 29-31, Pune
www.aes-show.com/

India Manufacturing Show

September 11-13, Bangalore
www.indiamanufacturingshow.com/

INTEC

June 6-10, Coimbatore
www.intec.codissia.com/

Laser World of Photonics India

September 23-25, Bangalore
<http://www.world-of-photonics.net/en/laser-india/start>

ACMEE

June 19-23, Chennai
www.acmee.in/

Automation 2014

October 15-18, Mumbai
<http://www.iedcommunications.com/index.php>

Amtex

July 25-28, New Delhi
www.amtex2014.com

International Mining and Machinery Exhibition (IMME)

December 3-6, Kolkata
<http://www.immeindia.in/index.aspx>

Himtex 2014

September 4-6, Hyderabad
www.himtex.in/

Imtex 2015

January 22-28, 2015, Bangalore
<http://www.imtex.in/>

International Manufacturing Technology Show

September 8-13, Chicago
www.imts.com/

India Automation Technology Fair

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





Casting a new chapter

A leading machine tool group ventured into the foundry industry to complement its core business and to have better control over processes with improved reliability

The simple laws of demand and supply were triggers for the management at the Ace Micromatic Group to start thinking seriously about establishing a foundry. On one hand was the massive requirement for castings and on the other, mounting concerns about overall quality, improved finishing and timely delivery. Since cost was a major factor too, the management decided that it was time to swing into action.

Accordingly, last year, the machine tool major forayed into foundry industry. Covering an area of 13 acres, the foundry is part of the Group's campus spread over 80 acres and is located in Minnapura, a village in the Nelamangla Taluk of rural Bangalore. The vision has been simple: world class castings at competitive prices. "When we first started out,



The foundry helped the Group improve reliability

we were strictly a machine tools group. In time, we realised how important it is to have backward integration in place. Prior to the foundry being in place, we had all our castings outsourced – from as many as 19 different foundries, which included some in China as well. Now that the foundry is set to meet our major requirements for castings, we'll have better control over processes and improved reliability as well. Almost 50 percent of the foundry's capacity will go into feeding Ace's in-house requirements. The rest will be accessible to external customers," says Shrinivas G Shirgurkar, Managing Director, Ace Designers Ltd.

However, Ace Designers (the brain behind the initiative) did not want the foundry to be limited to the manufacturing of raw castings only. The idea was to offer a complete range

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The thermally reclaimed sand will essentially be as good as new sand

“Eventually, it will also be possible to produce up to 6,000 kilos of on-floor mould. Use of advanced simulation software will ensure reduced machining costs. Value will also be provided through improved surface finish, reduced rejections and improved delivery as a result of the fast loop line.”

B Raghavendra, Director and VP, Finance, Ace Designers Ltd

of services. This had to include: planning and execution of models, choice of metals based on customer needs and usage, development of pattern equipment and methods, machining in group companies, thermal treatment execution as well as execution of priming and tests.

According to B Raghavendra, Director and VP, Finance, Ace Designers Ltd, “The foundry is capable of manufacturing good quality castings from anywhere between 100 kilos and 2,000 kilos on a fast loop line. They will be available both in gray casting iron as well as SG iron. Eventually, it will also be possible to produce up to 6,000 kilos of on-floor mould. Use of advanced simulation software will ensure reduced machining costs. Value will also be provided through improved surface finish, reduced rejections and improved delivery as a

“Mechanical reclamation and thermal reclamation systems are in place. Once the sand goes through mechanical reclamation, it will be reclaimed once more through the thermal reclaimer at the rate of five tonnes per hour.”

result of the fast loop line.” To achieve this vision in the long run as well as the near future, the foundry is being readied to be made into a world-class facility. Mechanical reclamation and thermal reclamation systems are in place. Once the sand goes through mechanical reclamation, it will be reclaimed once more through the thermal reclaimer at the rate of five tonnes per hour.

“The thermally reclaimed sand will essentially be as good as new sand. In fact, the reclamation systems will make sure new sand requirement will be less than 10 percent as against the usual 30 percent,” points out Raghavendra. The sand plant at the new foundry comes with silos – so that sand can

be separated based on whether it is reclaimed or not. The reclamation process will enable the re-use of almost 95 percent of the sand used originally. From the safety standpoint too, the sand reclamation plant is world-class. The silos come fitted with anti-explosion and anti-implosion valves.

The moulding area is equipped with a continuous sand mixer of 60 MT capacity, compaction table, fast loop, rollover machine, infrared oven, painting station, gas drying oven, closing station, pouring and cooling line, mould pusher and shake-out.

One of the specialties of this foundry can be observed in the moulding area – it uses cake moulding so that the need for moulding boxes is eliminated. This creates a direct positive impact on cost, time and space.



From the moulding area, the sand is sent back for reclamation. This process will be carried out with the help of pneumatic transport – ensuring the atmosphere within the foundry stays sand-free. The core shop, melting and fettling areas and last but not the least, the laboratory, comprise the rest of the foundry. The core shop comes with a continuous sand mixer of 10 MT capacity, carousel, core handlers, painting station, drying ovens and storage area. A dual track induction furnace with 4 MT capacity along with a melt manager will comprise the melting area. A hybrid shot blasting machine will be used for fettling. Reducing stress on castings is a major objective – and to achieve



The foundry uses cake moulding so that the need for moulding boxes is eliminated



All sources of pollution are equipped with suitable pollution control equipment

this gas fired furnace equipped with computer control will be used. Priming of castings will be done within a painting booth so that safety concerns are taken care of.

Quality issues are a reality and so are rejections. Keeping these aspects in mind, Ace Designers has set up a state-of-the-art laboratory to accompany the foundry. The lab is equipped with a spectrometer, carbon silicon apparatus, universal testing machine, microscope, impact tester, hardness tester and a variety of sand testing equipment.


At the foundry, safety, health and environmental aspects have been given utmost importance. The management has made sure safety measures are followed during the use of potentially dangerous equipment. There's laser tracking system to ensure safety during the movement of transfer cars.

Cranes have enough bandwidth to

accommodate overload tripping. The fast loop line comes with a physical barrier to ensure additional safety for the people involved in handling it. That apart, flame detectors have been installed in equipment that operates on LPG. The Personal Protective Equipment (PPE) matrix has been planned to provide suitable PPEs to all employees with respect to hazardous areas and operations.

A well-equipped Occupational Health Centre and an ambulance have been put in place to combat emergencies. All sources of pollution are equipped with suitable pollution control equipment like stacks, chimneys and dust and fume extraction systems such as cyclone dust collectors and cassette filters.

“We have provided necessary infrastructure to treat wastewater that gets generated. So, waste management is a top priority for us – why we have also gone a step ahead to create hazardous and non-hazardous categories. So that waste can be segregated at source, collected, stored and disposed through authorized recyclers or reprocessors for further treatment and disposal as per the rules. Safety, health and environmental standards have been on the top of our minds. Most of the equipment that are part of the foundry have been imported from IMF Italy and DISA India and the suppliers are ISO and CE certified,” adds Raghavendra.

The initial tests have been done and they have all been successful and the foundry is now functional. 

“
The moulding area is equipped with a continuous sand mixer of 60 MT capacity, compaction table, fast loop, rollover machine, infrared oven, painting station, gas drying oven, closing station, pouring and cooling line, mould pusher and shake-out.”

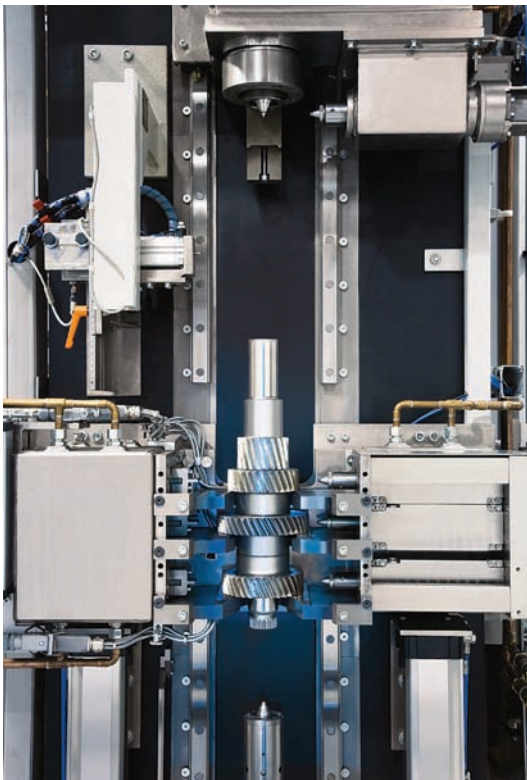
Powertrain components perfectly joined

With ever more complex constituent components and ever smaller batch sizes, powertrain production is facing many challenges. For a large number of applications in this sector the heat-shrink assembly process is almost predestined.

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VA 700 T – Heat-shrinking assembly system for the manufacture of composite camshafts. Whilst one cam is heat-shrunk, the next one is already being preheated. Equipping the machine with a number of preheating units allows for optimal scaling of the application.



Finish-assembly of a gear shaft. A combination of robots and special-design gripper technology makes it possible to heat-shrink with a joining clearance of <math>< 15 \mu\text{m}</math>.

“Where control cams and/or gears have to be mounted on shafts, heat shrink assembly brings about a considerable reduction in component weight whilst guaranteeing a high degree of functional density of the shaft.”

Where control cams and/or gears have to be mounted on shafts, heat shrink assembly brings about a considerable reduction in component weight whilst guaranteeing a high degree of functional density of the shaft. The process is also suitable for workpieces that are subject to high torque rates and great dynamic loads. The heat-shrinking specialists from Emag Automation have developed individual, flexible manufacturing solutions.

Powertrain production calls for flexibility and effectiveness. Often a diversity of camshafts or gear shafts of complex geometry must be produced at the same location and in different batch sizes. On the other hand,

demands on the actual component are also increasing. High-tensile materials are being used, geometries are getting more complex and components are expected to become smaller and weigh less. Against this background, composite camshafts are



gaining in importance, for example in the automotive industry, where individual components are made in larger quantities and then joined according to engine type requirements. This leads to a noticeable reduction in production costs whilst maintaining the necessary high degree of precision.

Enormous economic potential

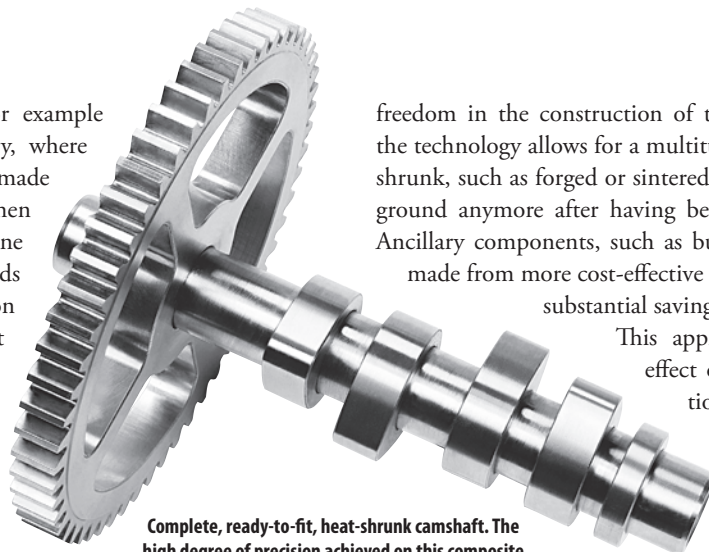
The heat-shrink technology needed to achieve it is developed by the machine builders at Emag Automation, with headquarters at Heubach, near Aalen, Germany. The Emag-patented heat-shrink assembly process is used to manufacture precision components – in particular composite camshafts – and is characterised by its reaction force-free processing sequence.

In the centre of the system the component is brought up to the necessary temperature with great precision, using an inductive or contact heating process. The relevant preheating unit geometrically fits the workpiece and features an internal temperature control component.

After that, the warmed up workpiece is joined with the shaft without any application of force. As the workpiece cools, it clamps down firmly on the shaft. A combination of robots, NC axes and gripper technology guarantees a process with a joining clearance of less than 15 micron.

For instance, the whole process for camshafts – from pick-up of the relevant components to completion of the force fit action – takes just about seven seconds. A complete camshaft for a 4-cylinder engine is thus assembled in approximately 40 seconds. The processing speed is further increased by the fact that while one component is heat-shrunk, the next one is already being preheated – all inside the Emag system.

It is not only the short cycle times from which the user benefits. The process also provides a large degree of



Complete, ready-to-fit, heat-shrunk camshaft. The high degree of precision achieved on this composite shaft drastically reduces the need for a cam profile grinding operation or – if precision cams are used – avoids it altogether.

freedom in the construction of the machine. For instance, the technology allows for a multitude of materials to be heat-shrunk, such as forged or sintered cams that don't have to be ground anymore after having been shrunk onto the shaft. Ancillary components, such as bungs or end pieces, can be made from more cost-effective materials, giving access to a substantial savings potential.

This approach also has a positive effect on development and functionality, as every component can be made to suit individual demands, whilst its functional density is increased. Where required, gears can, for instance, be fitted snugly against shoulders, thus ensuring that many new design variants can be implemented on the smallest possible space.

“A complete camshaft for a 4-cylinder engine is thus assembled in approximately 40 seconds. The processing speed is further increased by the fact that while one component is heat-shrunk, the next one is already being preheated.”


Tailor-made system design

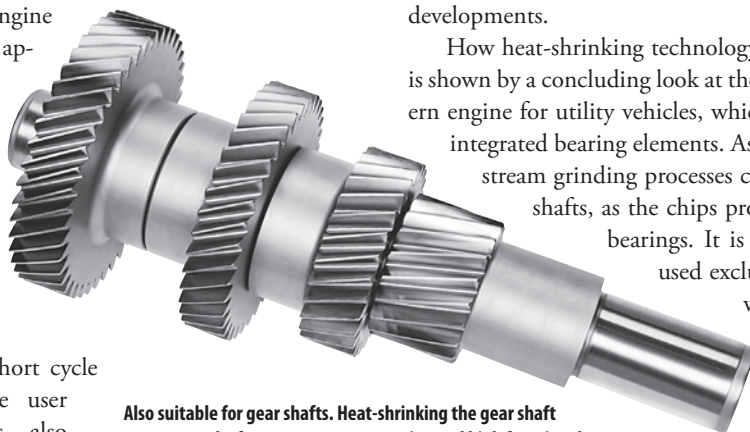
What kind of specific machine building know-how is required to design heat-shrinking machines? The crucial point in all of it must be the delicate production sequence of preheating, heat-shrinking and cooling. The Emag specialists have developed systems that offer total process integrity. In every case the system is tailored to suit the relevant production requirement.

Against this background, the machine manufacturers from Southern Germany rate the economic potential of their technology very highly and are doing so with great optimism.

For instance, on the emerging Asian markets, which are flexing their muscles with a rapidly accelerating automobile production, many suppliers will have to increase their production capacity considerably over the next few years. Emag offers a solution that also provides the answer to future technological developments.

How heat-shrinking technology suits these developments is shown by a concluding look at the construction of the modern engine for utility vehicles, which features camshafts with integrated bearing elements. As a consequence, no downstream grinding processes can be carried out on these shafts, as the chips produced would damage the bearings. It is why composite shafts are used exclusively – an approach that

will only gain in importance when it comes to future utility vehicle designs. 



Also suitable for gear shafts. Heat-shrinking the gear shaft components make for a compact construction and high functional density, as the gears can be brought right up to the shoulders.

Source: Emag India

Smooth *OPERATOR*

A tribo-polymer specialist from Germany has recently introduced its new dry-tech campaign for moving applications opening up a wide range of design possibilities

Iigus presented 144 brand new products in Hall 17 at this year's Hanover Show; these products are all the result of intensive research and development. The plastic experts showcased a wide range of products and materials, including the world's first 3D printing tribo-filament.

Abrasion-resistant 3D printing material and tape

igus presented its first 3D printer filament, designed using

the same features of its iglidur self-lubricating bearings. The filament, specially developed for moving applications, is up to 50 times more abrasion resistant than conventional 3D printed materials. Now, quality prototypes or special parts can be printed and still have the excellent wear and friction properties of iglidur plain bearings. The filament is offered in a standard 1.75 mm thickness, and other sizes will become available over time.

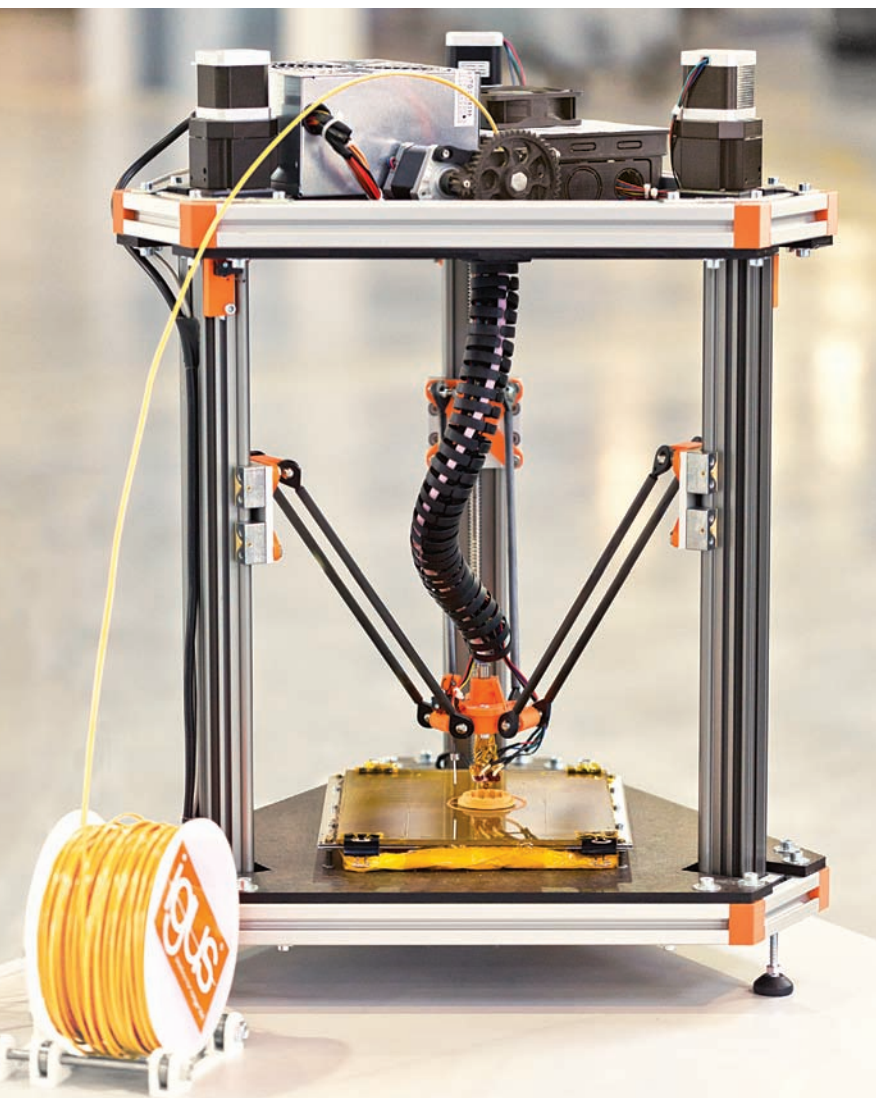
Also on display was the new, 0.5 mm thick tribo-tape, made from iglidur A160. The tape can be bonded in many ways, providing freedom of design in the construction of tribologically stressed sliding surfaces. The tribo-tape is characterised by its high wear properties and low wear rates, and is also FDA-compliant. Additionally, igus' popular bar-stock is now available in round rods, virtually doubling the variety of materials available for various custom machined applications. These round rods allow design freedom for engineers to choose the right materials for almost any application, from food-compliance to underwater use.

"The new 3D printer filament - designed using the same features of iglidur self-lubricating bearings - is specially developed for moving applications and is up to 50 times more abrasion resistant than conventional 3D printed materials."

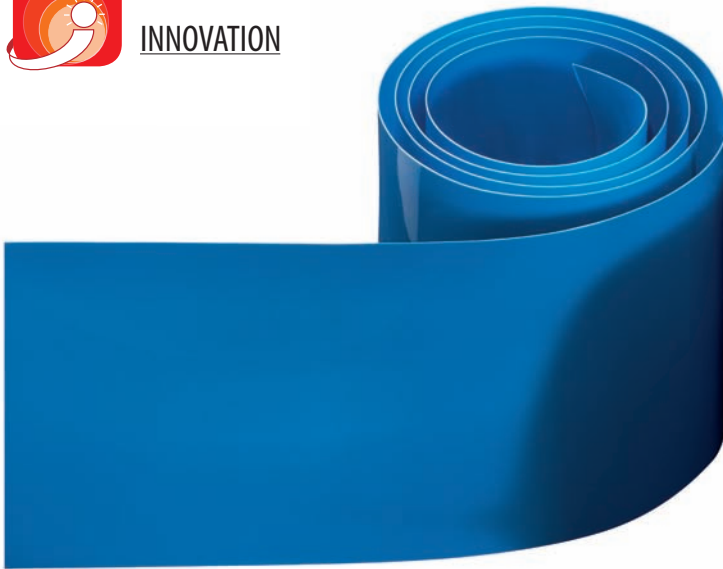
And there is a new material available to help improve applications – the iglidur W360, specifically developed for exceptionally high service life in continuous-running applications. High wear durability and temperature resistance, plus an outstanding price-performance ratio make this material a truly all-around, long-lasting product.

An entire range of self-lubricating products

The rugged drylin SLW protect drive system is suitable for harsher environments. The linear



igus presents the world's first 3D printer tribo filament, specially developed for moving applications. This 3D printer filament is up to 50 times more abrasion-resistant than conventional materials. (Source: igus GmbH)



igus' tribo tape can be bonded in many ways, providing freedom of design in the construction of tribological stressed sliding surfaces. (Source: igus GmbH)

table's lead screw is protected by the resistant drylin W frame. Both the lead screw nut and lead screw, as well as the drylin W linear guide can be safely and easily moved. For less harsh environments and for more ease of use, the AWMR hollow aluminium shaft works together with the drylin polymer linear bearings in 12 and 16 mm diameters. With a wall thickness of 2 mm, it is an extremely lightweight system, which is suitable for applications where weight and/or speed are important.

The aluminium surface is hard anodised to offer excellent corrosion resistance and low coefficients of friction. The new drylin E radial kit is useful wherever limited space is an issue. The electric motor can be deflected over a pulley and a toothed belt and mounted next to the actuator, by which the module can be individually fitted. The screws are available with a DST-JCRM flange bearing, which is noted for its slim design and ease of use in confined spaces. The key flange areas, available in size 10, also provide additional torque resistance. They are available for all dryspin high-helix threads, as are other dryspin lead screws, and can be combined with drylin E lead screw motors.

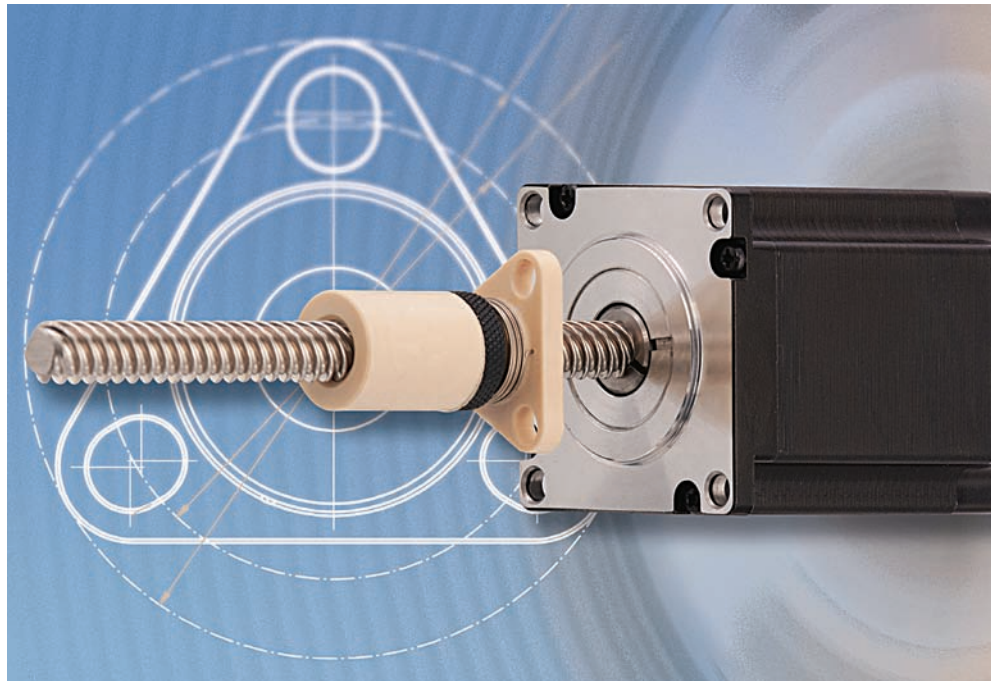
Plastic ball bearings

All xiros plastic ball bearings, as well as the many new line extensions share a few common traits: they are all self-lubricating, maintenance-free, and corrosion-resistant. These characteristics make xiros polymer ball bearings excellent for


use in the food industry. The xirodur M180 is a new, detectable material that is lightweight and media resistant. The easy-running xiros F180 ball bearing is also ESD compliant, preventing static discharge of components due to its electrical conductivity.

igus has introduced anodised aluminium balls in the product range for maintenance-free guide rollers. These are available in clear or black, and anodised versions up to 3,000 mm maximum length. The extremely versatile xirodur B180 is used as the flange ball bearing material. These, like all igus products, have been extensively tested in

“The new, 0.5 mm thick tribo-tape, made from iglidur A160, can be bonded in many ways, providing freedom of design in the construction of tribologically stressed sliding surfaces.”



The dryspin DST-JCRM is a flange bearing suitable for use in confined spaces. The key surfaces of the flange nut, available in size 10, also provides for additional rotational protection (Source: igus GmbH)

the company's 1,750 square meter test lab in order to provide reliable lifetime and performance data. 

Source: igus GmbH. The terms “igus, chainflex, readycable, easychain, e-chain, e-chainsystems, energy chain, energy chain system, flizz, readychain, triflex, twisterchain, invis, drylin, iglidur, igubal, xiros, xirodur, plastics for longer life, manus, vector” are legally protected trademarks in the Federal Republic of Germany and, where applicable, in some foreign countries.



Optimising machining with new inserts, holders

TaeguTec has expanded the Rhino Rush line with new insert designs and holders which cover a wider range of applications for various sectors. To significantly reduce cutting forces that occur during the machining of steel and stainless steel in medium light to medium applications, TaeguTec has released the DNUX insert type for the RhinoRush family. Suitable for machining slender bar, thin-wall components, the DNUX's high positive, high rake and inclination angle at the cutting edge works with much less cutting forces and vibrations than the existing ISO-DNMG inserts. As added benefit, the DNUX line's four cutting edges offer better economy and guarantee the same performance as the KNUX's two cutting edges.



Furthermore, the new addition can be mounted on DNMG insert type RhinoRush tool holders, eliminating the need for separate tool holders.

Another highly productive and economical insert and holder set for the RhinoRush family, the WNMX series is designed for stability. The WNMX's widened contact area is double that of the existing ISO-WNMG 06 millimeter series.

The WNMX 06mm series demonstrates enhanced reliability over the ISO version as well as increased tool life under interrupted machining conditions.

The T-Holder clamping system is another new addition to the RhinoRush family, a tool that is widely known for its simplified mounting design, smaller size inserts and rigid clamping system. Maximum stability through its strong clamping is made possible by two different types of holders: a hook lever type and a T-Holder Type clamping mechanism, both of which offer optimized tool life. The T-Holder adds to the



RhinoRush even greater stability for turning applications especially during high feed interrupted cutting rates. Its optimized clamping remarkably prolongs the tool's life by creating double clamping forces for rigid clamping.

The RhinoRush T-Holder line includes external holders, boring bars as well as through coolant type boring bars.

Contact: TaeguTec India P Ltd
 Tel: +91-(0)80-27839111
 Fax: +91-(0)80-27839123
 E-mail: sales@taegutec-india.com

Unique machine concept for higher performance and flexibility

At Die & Mould India, DMG Mori showcased an Indian premiere, the new DMC 650 V, the third generation of the DMC V machine type. The new series comes with a new machine concept and significantly improved technical data in all areas at a low entry-level price.

Powerful features: The concept of the new series is based on a machine bed made of mineral casting, on which the rigid table with a clamping surface of 900x570 mm rests. The machine column made of cast iron forms the basis of the X/ Y slide. Thus only the tool is moving, which in combination with the fixed table enables workpiece weights of up to 800kg. The rapid traverses in all axes are 36 m/min. Instead of a 10,000rpm spindle, now a spindle with 14,000 rpm and 121 Nm is used in the standard version. Traverse paths were also improved to 650x520x475 mm. The ball screw nuts and the linear guides are cooled via contact pressure

rails and frictional heat is effectively dissipated.

Features for highest productivity: In addition to the standard spindle further spindle versions of up to 24,000 rpm are optionally available. An SK 50 spindle with 10,000 rpm and 303 Nm provides sufficient reserves for heavy machining. The tool magazine with 20 pockets can optionally be extended to 30, 60 or 120 pockets. Enhanced performance data provide the user with a large number of new possible applications.



From sophisticated single item production to heavy machining with high metal removing volumes up to serial production combined with the different automation solutions.

Controls of the latest generation: The DMC 650 V is available with the 19" ERGOline with Siemens 840D solutionline and Operate 4.5 as well as with the Heidenhain TNC640. From Q2 of 2014 DMG Mori's Celos with 21.5" ERGOline and Siemens can be chosen.



High-speed contact scanning system

The Sprint system from Renishaw is a high-speed contact scanning system for CNC machine tools. It 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.

Drawing on Renishaw's partnerships with major businesses in key industrial sectors, the Sprint machine tool scanning system has been designed to provide a game-changing capability for high value CNC manufacturing processes.

For blade manufacture, the Sprint system provides unprecedented capability for blade tip refurbishment and root blending applications. The high-speed measurement of blade sections coupled with high data integrity (even on leading and trailing edges) ensures the indication of true part condition leading to an adaptive machining capability. Automated routines, such as set-up, blade alignment, blade scanning and data collection result in significant accuracy and cycle time improvements over touch-trigger systems.

OSP60 Sprint probe

For multi-task machining applications, the Sprint machine tool scanning system offers users completely new process control capabilities, including exceptionally repeatable diameter measurement cycles. By employing master part comparison, the

Sprint system becomes an "active" control enabling measure-cut processes to be automated for accurate diameters on large parts. This capability can result in the size of diameters being automatically controlled to within a few microns of tolerance. Measurement functionality such as part run out, machine centreline and circularity, also serves to significantly enhance the manufacturing capability of multi-tasking machine tools.

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.

Each SPRINT application is enabled and supported by a software toolkit package which is dedicated to a specific industrial task, for example, the Sprint blade toolkit. The toolkits include on-machine data analysis tools which run automatically in-cycle and provide measurement feedback to a CNC machining process.

At the core of the Sprint system is the revolutionary OSP60 scanning probe. The OSP60 probe has an analogue sensor with 0.1 µm resolution in three dimensions, providing exceptional accuracy and the greatest understanding of workpiece form. The analogue sensor technology in the probe provides a continuous deflection output that is combined with machine position to derive the true location of the part surface. Measuring 1000 true 3D data points per second, the system's superior analytical capabilities provide unparalleled opportunities for workpiece measurement, inspection, adaptive machining and on-machine process control, whilst optimising machine utilisation and cycle time. This new scanning technology opens up new process control methods not previously possible with other measurement methods.

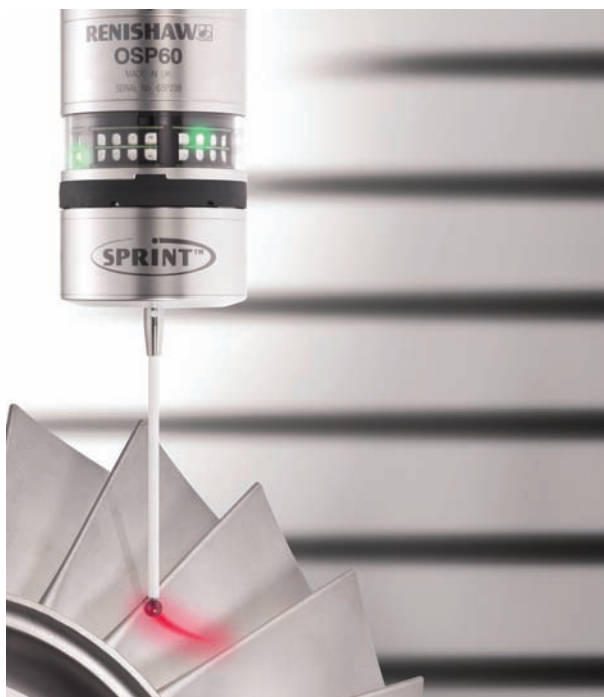
In parallel to extremely fast and accurate 3D measurement the Sprint scanning system has also been designed to facilitate automated process control with no requirement for operator intervention.

Incorporating multiple patented technologies, the Sprint system enables unrivalled high-speed, high-accuracy 3D surface data collection through powerful compensation of the static and dynamic volumetric errors which are often associated with high-speed machine movement.

The Sprint system is a ground-breaking high-speed, high-accuracy tool with an exceptional range of potential applications, enabling a wide range of measurement and process control methods, reducing scrap and rework, while increasing machine capacity by reducing measurement cycle times.



OSP60 SPRINT probe

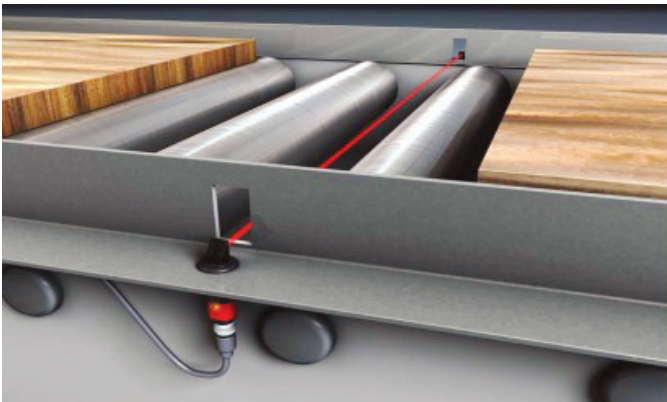


SPRINT blade application

More information can be found at www.renishaw.com/SPRINT



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For more information

Phone No - +91-80-41219334; info@leuze.in; www.leuze.com

New sensor series

With the 18B sensor series, Leuze electronic expands its extensive line of sensors in the area of high-performance sensors for transparent media.

Compared to its predecessor – the 18 series – the new sensor scores with a more robust housing, smaller dimensions, shorter response time, higher switching frequency, improved adjustability of the switching point and a tracking function for extending the cleaning interval (50x). Due to the new features, it is possible to reliably detect fast, small, thin and transparent objects, such as foils, even under extreme environmental conditions – a true plus, for example, in the beverage industry. The visibility of the light spot and the LED display have also been improved, thereby simplifying start-up and operation. The optics minimize light beam tolerances to the extent that mounting can be quickly performed without alignment. The electrical connection is established either via the M12 plug or the integrated cable.

For more information, Phone No - +91-80-41219334; info@leuze.in; www.leuze.com





Heavy duty big-bore turning centers

For companies that want to turn bigger diameter bar but do not have the space for a larger-footprint lathe, Haas Automation now offers a complete line of heavy-duty Big-Bore turning centers. Each of these versatile turning centers offers more power, a larger chuck, and greater bar capacity – without having to step up to the next larger machine.

Six Big-Bore models are available, with maximum capacities from 305mm x 533mm for the compact ST-25 to 648mm x 2032mm for the large-frame ST-45L, and two models with Y-axis capabilities.

Critically, for machines designed to accommodate large diameter parts, Haas ST lathes are based on extremely rigid, heavy-duty, cast iron bases, designed using finite element analysis (FEA) and endowed with reinforcement ribs, to give reliable accuracy and repeatability when taking heavy cut after heavy cut. Each Big-Bore spindle head features a compact, symmetrical design for thermal stability and rigidity, and a 45-degree wedge design greatly increases the tool-mounting envelope and improves chip flow.

The Haas ST-25 has a maximum capacity of 381mm x 533mm, with a 806mm swing over the front apron. The machine's A2-6 spindle has a 76mm bar capacity, and is equipped with a 254mm hydraulic chuck. The spindle is powered by a 22.4kW vector drive system, and turns to 3400 rpm. A 12-station bolt-on style turret is standard.

The ST-25Y has the same footprint and spindle specifications as the ST-25, with a maximum capacity of 305mm x 533mm. The machine is equipped with a Y-axis that provides ± 50.8 mm of travel, and includes high-torque live tooling and a servo-driven C axis. A 12-station hybrid VDI/BOT turret is standard.

The Haas ST-35 has a maximum capacity of 533mm x 660mm, with a 806mm swing over the front apron. The machine's A2-8 spindle has a 102mm bar capacity, and is equipped with a 305mm hydraulic chuck. The spindle is powered by a 29.8kW vector drive system through a 2-speed gearbox, and turns to 2400 rpm. A 12-station bolt-on style turret is standard.

The ST-35Y has the same footprint and spindle specifications as the ST-35, with a maximum capacity of

457mm x 584mm. The machine is equipped with a Y-axis that provides ± 50.8 mm of travel, and includes high-torque live tooling and a servo-driven C axis. A 12-station hybrid VDI/BOT turret is standard.

The ST-45 has a maximum capacity of 648mm x 1118mm, with a 876mm maximum swing over the front apron. The machine's A2-11 spindle has a 178mm bore, and accepts an optional 457mm hydraulic chuck (chuck and hydraulic union not included).



The spindle is powered by a 29.8kW vector drive system through a 2-speed gearbox, and turns to 1400 rpm. A 12-station bolt-on style turret is standard. The ST-45L is a long-bed version of the ST-45, with a maximum capacity of 648mm x 2032mm for nearly double the turning length. The ST-45L comes standard with a servo-driven tailstock.

Standard equipment on all Haas Big-Bore turning centers includes rigid tapping, a 15" colour LCD monitor, and USB connectivity. Available options include a belt-type chip conveyor, hydraulic tailstock, automatic tool probe, an automatic parts catcher, high-pressure coolant systems, and much more.

Haas Automation's ST Big Bore CNC lathes are serious machines for serious cutting. As with the Haas Automation DS dual spindle CNC

lathes, the new ST machines benefit from many, productivity enhancing feature upgrades, including greater tool clamping force, quicker indexing, and increased C-axis torque (for machines equipped with optional live tooling), compared to previous models.

Each Big-Bore spindle head features a compact, symmetrical design for thermal stability and rigidity, and a 45-degree wedge design greatly increases the tool-mounting envelope and improves chip flow.

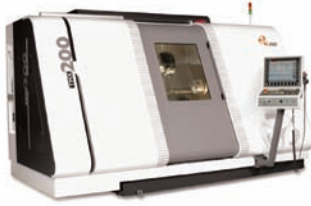
For more information, visit www.HaasCNC.com



For performance, accuracy and reliability

3TMX-200

Whether in the automotive, instruments, hydraulic or electronics industry – the TMX series, offers ideal performance options for sophisticated machining for bar, shaft and chucking components. The frame sizes with different options are unique and contribute to the success of this series; they have been designed for flexible tailor-made solution to meet varying demands. Multi-tasking with combination of two electro spindles and two live tool turrets with one component clamping with C & Y Axis. Design shows excellent vibration damping to deliver high level of machined surface quality and accuracy even for hard part machining with a rapid of 30 m/min.



VMC-850

To match demand of greater accuracy and total reliability at higher speeds Jyoti CNC has developed Performance Series Vertical Machining Centers. The high dynamic structure supports rapid axis take-off with high accelerations. Broad rigid base with heavy cross ribbings with twin layer heavy column structure dampens effect of vibrations and balances whole machine while taking heavy cutting load with higher machining parameters. The machine has 2-LM guide ways to support broad table movement with high load carrying capacity.



For more information, visit www.jyoti.co.in/

Compact short-stroke axis for dynamic assembly applications

For its ELB linear motor axis, which is specially designed for precise and dynamic strokes, Schunk, the competence leader for clamping technology and gripping systems, has combined a powerful linear motor drive with an ultra-smooth, pre-loaded junction roller guide. The result is an extremely compact, rigid and dynamic module which is able to position comparatively high loads with a long-term excellent repeat accuracy of 0.01 mm. The maximum acceleration is 100 ms⁻² and the maximum speed is 4 ms⁻¹. Since the driving force (maximum: 150 N) is transmitted directly and without gears to the slide by the play-free junction roller guide, the operators benefit from the outstanding precision, extremely short cycle times as well as high productivity and process stability especially in the case of demanding joining and placement processes. In addition, the modules have mostly wear-free parts, so that maintenance costs and unplanned downtimes are almost nonexistent and you can count on particularly long service lives.

The innovative family-owned company offers its precision module in three stroke variants: 50 mm, 75 mm and 125 mm. It can be optionally equipped with an incremental stroke measuring system (sine/cosine interface) or with an absolute displacement encoder (Hiperface or SSI interface). An absolute-value transducer eliminates the need for complex reference runs when starting up the plant and after emergency stops. Moreover, the module doesn't need end or reference sensors, which reduce investment costs, programming work and the number of cables in the cable set. The unit is controlled



The gear-free Schunk ELB linear motor axis enables precise strokes in the smallest space.

either by the Bosch Rexroth IndraDrive controller or by the Siemens Sinamics inverter. By using standard controller interfaces (such as Sercos III, Profinet IO, EtherNet/IP, EtherCat, Profibus, Sercos 2, CANopen or DeviceNet), the module can be quickly and easily integrated into higher-level control systems. Optionally, the short-stroke axis can be equipped with a pneumatic load-balancing system or with a holding brake for use as a Z axis. Thanks to a standardized drilling pattern, it can be combined directly with numerous modules from the world's largest system program for modular high-performance assembly by Schunk. The pneumatic LM 100 linear module by Schunk can be replaced 1:1 by the Schunk linear motor axis ELB, which allows significantly higher flexibility in use.

Contact: Satish Sadasivan

Ph.: 080-40538999; Fax: 080-40538998,

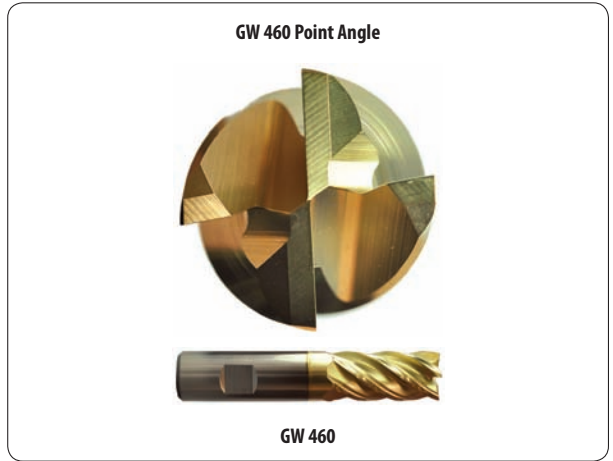
Email: info@in.schunk.com, Web: www.in.schunk.com



Aerospace specific products - End mills

Aerospace tools are specially designed for machining Aluminium and special materials like Titanium, Inconel etc. New generation geometry prevents oscillation of the tool against the component enabling optimum surface quality with maximum feed rates, specifically to minimise stress on materials and allow very thin wall machining even at maximum material removal rates.

Following are two of GW India's wide range of technologically advanced products designed for high performance aerospace applications:



Highlights

- Specifically designed for nonferrous material machining like aluminium, copper etc.
- Advanced geometry enables higher material removal with chatter and distortion free cutting.
- Well suited for aerospace component machining as stress on component is minimised.
- Increased productivity by removing 80 percent material

leaving thin wall sections.

- Advanced cutting geometry complements with a newly developed coating ZOX.
- Reduces built up edge and increases tool life.
- Can also be custom designed to the required corner radius/form.

Contact: Phone: +91-80-40431252; Fax: +91-80-40431254; Email: info@gwindia.in

New multifunctional and user-friendly design

At the open house event at Deckel Maho in Pfronten, DMG Mori presented a total of 18 high-tech machines from different technology sectors in the new common design with Celos. The new design impresses with more functionality, extra user-friendliness and high value retention. The new design is optionally available in either 'Black' or 'White' at no extra cost.

Look, feel, ergonomics and materials play just an important role as ease of use and service friendliness. Large viewing windows ensure the best possible view of the work area for better monitoring of the production process. Access facilities and the interior working area are designed so that it is easy for operators to reach inside and to ensure optimum chip disposal during



the machining process. In addition, the safety glass windows can only be removed from the outside, which benefits service friendliness. Another highlight is the machine housing which is provided with a special finely textured coating in the premium area.

All machines in the new design are presented with Celos. Celos simplifies and accelerates the process from the idea to the finished product. Overall optimisation of the human-machine interface is achieved by the new Ergoline Control with its 21.5" multi-touch screen and continuously adjustable display and control desk for a comfortable working position. Common to all new control systems as a special extra is the 'intelligent' Smartkey with memory function and chip for customised authorisation.



Addressing a variety of machining needs

Leveraging the rich experience of more than 30 years in machine design, manufacturing of two Axis CNC lathes and turning centers with auto load/unload system, Ace started manufacturing turn mill centers a decade ago. LT-2XL Mc is one among the four models in this series from Micromatic.

These machines are manufactured keeping in mind the requirements of modern machine shops, with full-fledged C-axis capability. This particular machine - LT-2XL Mc - can cater to a wide variety of machining needs like turning, milling, drilling and tapping in single setup which improves part accuracy, increases throughput and reduces component handling. The spindle is designed for heavy duty cutting and features P series spindle motor for increased torque at lower spindle rpms.

Max Turning Dia	250mm
Max Turning Length	425mm

This machine offers a wide range of variants like Big Bore, Sub Spindle, Higher spindle power etc., which increase power and capacity while retaining the original footprint. Tooltouch



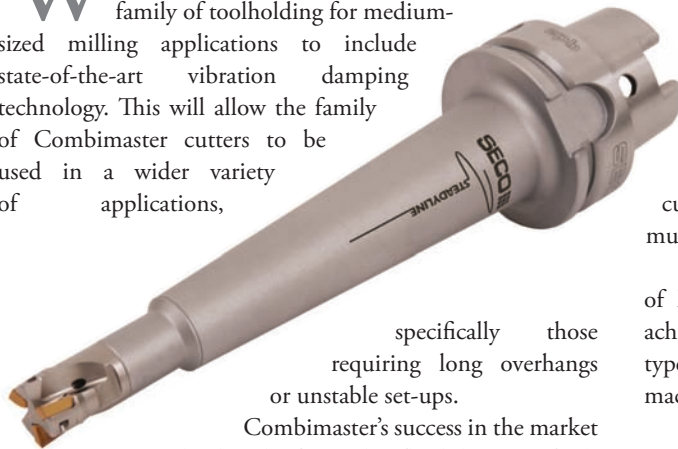
probe, Automatic door, Tool life management, Chip conveyor are also being offered as optional features.

Contact: Micromatic Machine tools Pvt. Ltd;

Email: connect@acemicromatic.com; website: www.acemicromatic.net

Toolholding family gets vibration damping technology

With the release of the Steadyline Combimaster, Seco has expanded its successful Combimaster family of toolholding for medium-sized milling applications to include state-of-the-art vibration damping technology. This will allow the family of Combimaster cutters to be used in a wider variety of applications,



specifically those requiring long overhangs or unstable set-ups.

Combimaster's success in the market results largely from the flexibility it affords manufacturers. The system makes it easy to change

between cutters, and accommodates square shoulder mills, end mills, face mills, copy mills, plunge mills and disc mills.

Steadyline incorporates a dynamic damping system that automatically counteracts and eliminates tool vibration. This proves especially valuable for applications that feature long overhangs, where the system can greatly increase tool life and process security. Eliminating vibration also allow more aggressive cutting data to be applied, reducing machining times by as much as 50 percent.

Steadyline Combimaster holders are available in a variety of lengths and diameters. Type EPB K820 is tapered to achieve a balance of rigidity and workpiece accessibility, while type EPB K821 incorporates a cylindrical design ideal for machining more difficult-to-access features.

For more information, visit www.secotools.com/steadyline or email seco.india@secotools.com

Next generation ERP

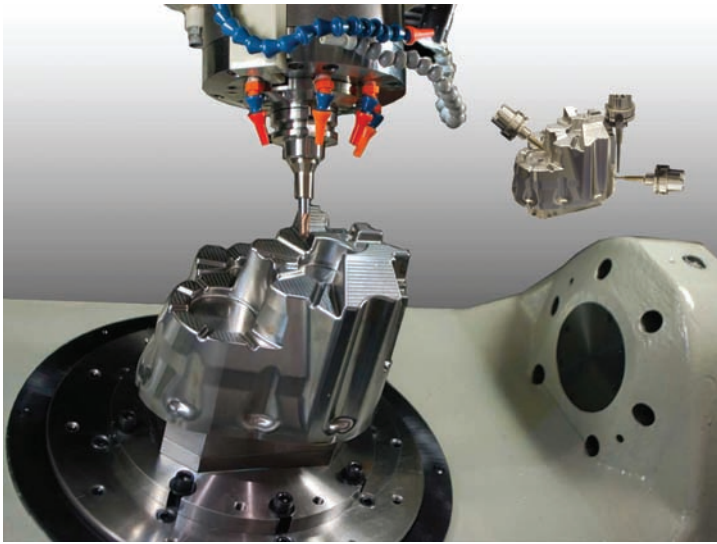
Epicor Software Corporation has unveiled Epicor ERP version 10, the next-generation of enterprise resource planning (ERP). The new offering is a visionary blend of rich global functionality built on agile technology that eliminates complexity to make ERP easier to use, more collaborative and more responsive than ever before, while supporting today's business imperatives: social collaboration,

deployment flexibility, accelerated performance and broad device accessibility. It is designed to help organizations work better, both internally and externally, leveraging the knowledge and experience of the people and systems connected together throughout the supply chain.

For more information, visit www.epicor.com.



Multiple benefits with 5-axis machining



coupled with optimal tangential tool positioning on mould and die surfaces have replaced EDM (electrical discharge machining). This new process has dramatically reduced processing times on all components, providing shorter delivery times and increased profit margins for Mitsui Seiki 5-axis machine users.

Mitsui Seiki is a leader in developing 5-axis machining centers for complex machined components for global original equipment manufacturers, top tier suppliers and contract shops. The company's production history began with the manufacturing of high precision Jig Borers. Machine tools manufactured at Mitsui Seiki's world class precision facility today are recognised worldwide as 'Mother Machines' for the most stringent accuracy requirements in manufactured parts. In the 1970s, Mitsui Seiki developed one

Die and Mould manufacturing requires high quality surface finishes, superior form accuracy, and reduced cycle times. All best achieved when parts are processed on Mitsui Seiki 5-axis machines, according to the company.

In fact, for hardened materials, ultra high speed spindles

of the first 'table on table' (C-axis table mounted on the B-axis rotary table) machines, offering full 5-axis contouring capabilities for various complex applications.

*For more information: SAP Technical & Marketing Consultants,
Email: saptech@eth.net; url: www.saptechnical.co.in*

HSM Jet spindle

Suitable for a variety of machining operations in finishing and semi-finishing of a wide range of materials, the Spinjet is ideal for high efficiency machining. Its high rotation speed enables high feed, reducing machining time. With up to 65 percent efficiency improvement compared to machining with the machine spindle, it also saves energy. Driven by the coolant flow, it is a unique spindle that is suitable for a range of standard and special machines. The Spinjet comes with wireless speed monitoring and can also be used on a wide range of tool magazines.

Features

- Recommended for finish and semi-finish machining in a range of applications and materials
- Effective machining and shorter manufacturing times
- High precision machining with excellent surface quality
- Upgrades and expands the machining speed limits
- Simple and easy to use.
- Reduces the use of machine spindle
- Saves energy

TSD - Wireless receiver with RPM monitoring



RPM wireless transmitter

- Efficient chip removal
- Prolongs tool life
- Automatic tool changer compliance

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