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The official magazine of Indian Machine Tool Manufacturers' Association

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REPORT

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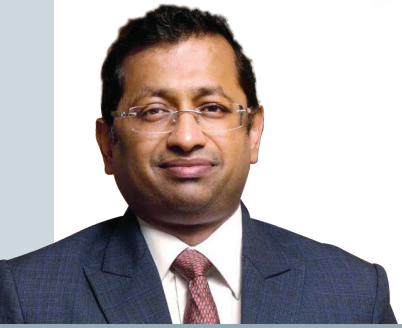
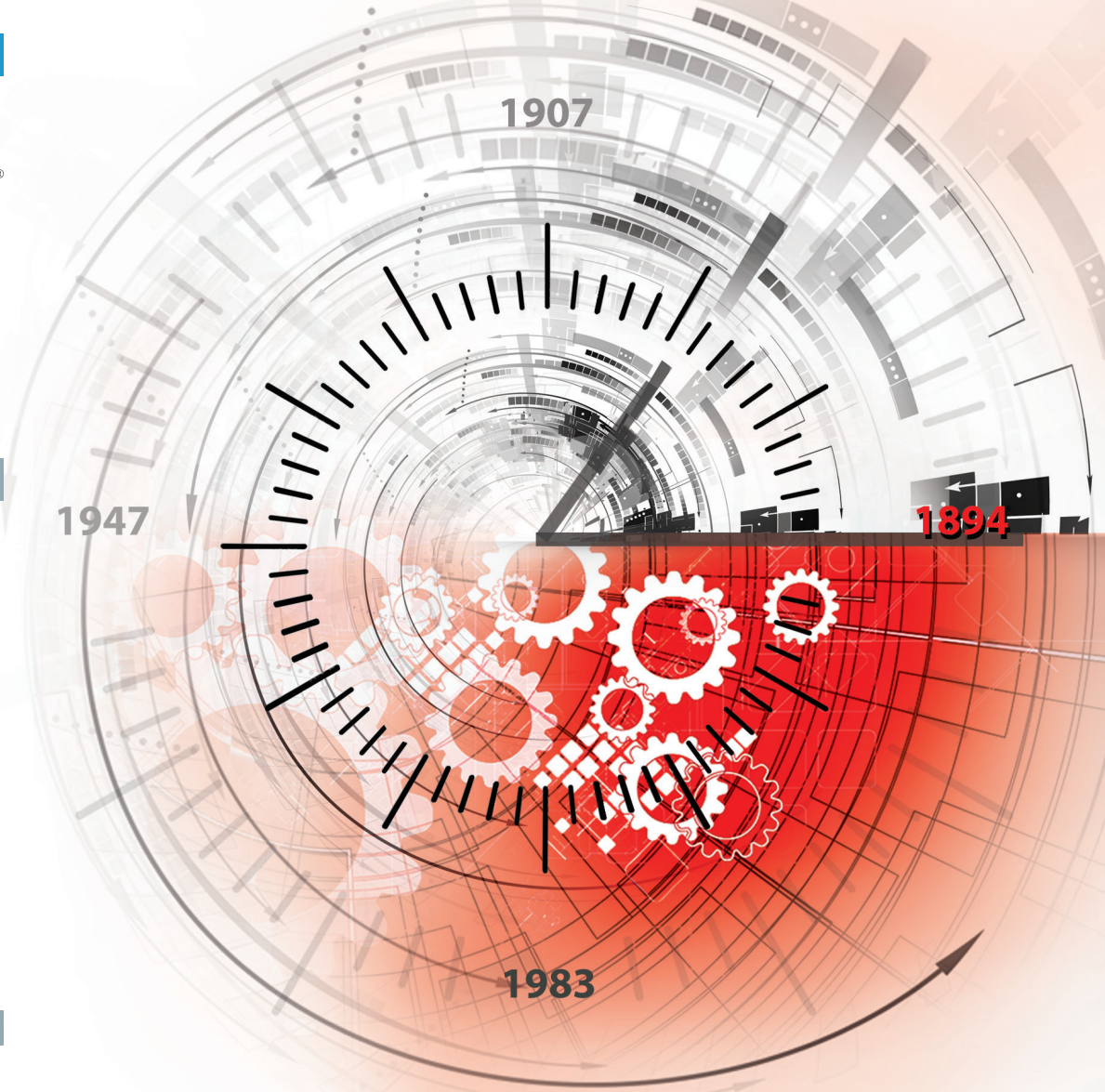


ANUPAM SHAH

Chairman, EEPC India

"'Make in India' is an answer to one of the biggest challenges that SMEs face i.e., is international branding and promotion."



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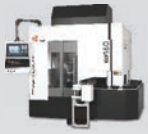

AT ATM Series
Vertical Line Machine
ATM 160, AT 160

TMC Series
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TMC 200, TMC 250 (700/1000),
TMC 350 (700/1000/1500),
TMC 500 (1000/2000), TMC 750 (3000)

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VMC Performance Series
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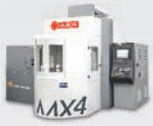
VMC 1260, VMC 640 APC, VMC 1050 APC

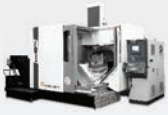
KX/K2X Series
VMC (3 Axis Bridge Type)
K2X 8i, KX 10i, K2X 8, K2X 10,
K2X 20, KX 10, KX 30

NX Series
VMC (3 Axis Double Column)
NX 1810, NX 2215, NX 3215,
NX 3222, NX 4222

EX Series
VMC (3-4-5 Axis Moving Column)
EX 1280, EX 1680, EX 2480



MX Series
VMC (5 Axis Linear)
MX 4

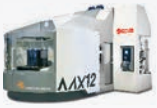


KX Five Series
VMC (5 Axis Bridge Type)
K3X 8 Five, K2X 10 Five

HMC Series
Horizontal Machining Center
HMC 450, HMC 560, HMC 860, HMC 1200,
HMC 1600, HMC 450 - MP PRO,
HMC 560 - MP PRO

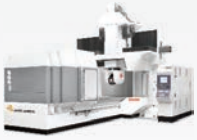
MU TECH Series
VMC (5 Axis Milling Machine)
MU TECH 6

TMX Series
Twin Turning & Milling Center
TMX 200



MX Series
VMC (5 Axis Universal Milling Machine)
MX 8, MX 10, MX 12

VMC Linear Series
VMC (3 & 5 Axis Gantry Type Linear)
VMC 70L, VMC 70L-5X



KX Large Series
VMC (5 Axis Double Column)
KX 50 M, KX 50 L, KX 100, KX 200

KXG Series
VMC (5 Axis Gantry Type Linear)
KXG 45 - 14, KXG 45 - 23,
KXG 60 - 23, KXG 90 - 23

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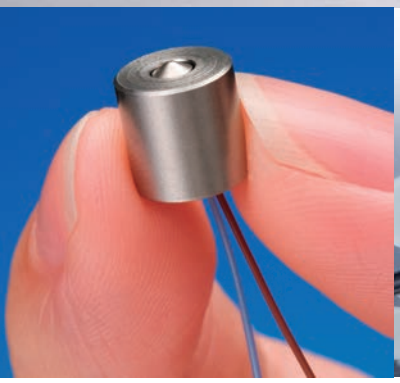
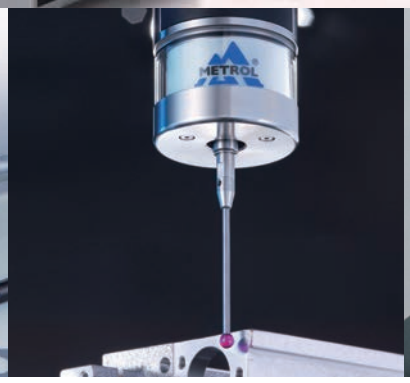


Position Switches

Air Micro Switches



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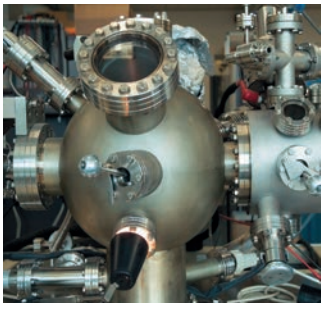

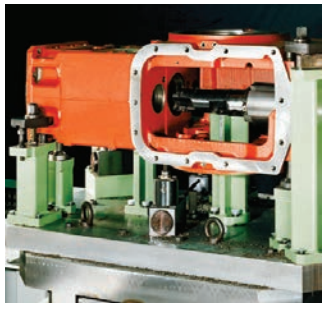

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L Krishnan
President, Indian Machine Tool Manufacturers' Association (IMTMA) and Managing Director, TaeguTec India Pvt Ltd

IMTEX 2015 to Mirror India's Growth

Greetings!

Manufacturing has shown positive growth in the first quarter of this fiscal year. Improvement in macro-economic conditions and the festive season led to an increase in the sentiments across industries.

Outside India, the US has shown increase in consumption. According to the report released by Gardner, the US consumption of metal cutting equipment could rise by 37 per cent and reach up to $8.8 billion in 2015. This year's metalworking trade fairs such as IMTS in Chicago, US and AMB in Stuttgart, Germany, have shown optimistic business generation, signaling economic recovery, in Europe and particularly in the US.

Additionally, recently, the Bank of Japan has expanded its stimulus program. India is also expected to be benefitted from this quantitative easing. These developments along with the fall in crude oil prices, stabilization of inflation and increase in economic growth will attract more foreign capital to India and the Indian manufacturing segment.

Moreover, credit rating agencies are looking forward for a rate cut from Reserve Bank of India (RBI) in the near future since local and global factors favor and demand it. Government spending will in turn increase the liquidity available in the system. One such example is clearing of defense projects valuing ₹80,000 crore. The hiking of foreign direct investment (FDI) ceiling in the sensitive defense sector is also aimed at boosting the domestic industry.

Moreover, the government's plan to clear bottled infrastructure projects will require capital goods. This move is further expected to push heavy machinery industry, which in turn will be a stimulus to the machine tool sector. The way forward is to adopt evolving technologies through joint ventures and have skilled manpower gear-up for meeting demand as consumption picks up.

To guide and facilitate this journey, IMTMA has organized its flagship event 'IMTEX 2015' and 'Tooltech 2015' from January 22–28, 2015. The best manufacturing solutions from across the globe along with potential future metal cutting technologies will be on display at the Bangalore International Exhibition Centre (BIEC).

As has been the case over the years, this edition of IMTEX will be a microcosm of the entire manufacturing industry, which will show its innovations through the 900 odd exhibitors spread in an area of about 48,000 sq mt. I am optimistic, that the amount of trade enquiries and business generation at IMTEX 2015 will mirror the buoyant mood of the industry and make it the biggest event in IMTMA's history.

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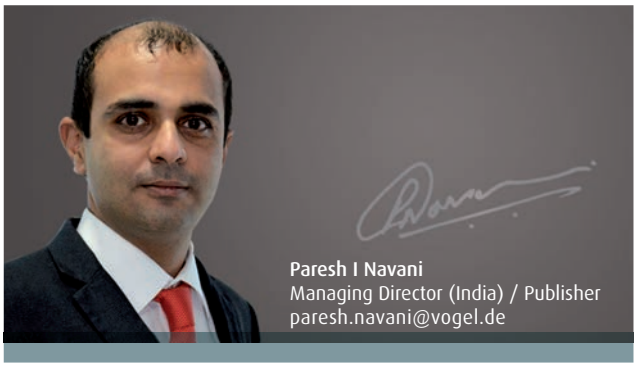

Paresh I Navani
Managing Director (India) / Publisher
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Miles to Go Before We Relax

It is rightly said that the journey of a thousand miles begins with a single step. We have hardly treaded much on the path of our journey to our goal but have so much to be thankful for so far.

Our parent magazine MM MaschinenMarkt, which has long served as a pioneer for all industrial magazines, has recently completed 120 years. And all the support given to us by you—our readers, the machine tool industry, IMTMA and office bearers of IMTMA and our partners have made it the start of our journey a successful one.

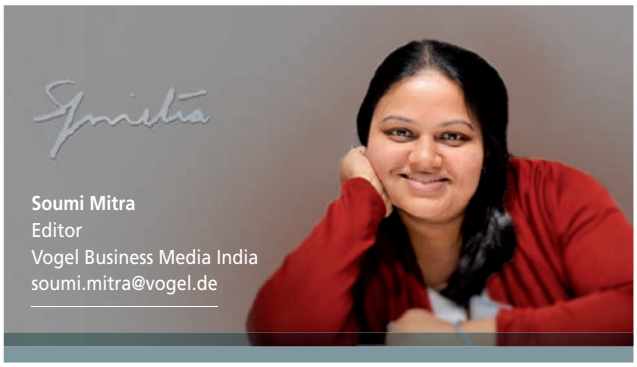
On the completion of 12 issues, I want to thank you and everyone involved in the production process of every issue of MMI. Without your valuable feedback and the encouragement of the industry, we would not be able to bring to you the latest developments in the global and domestic markets of the manufacturing industry.

With this year showing a positive economic turn for the industry, post the instating of the current government, the coming year too shows an inclination towards higher growth and profits for the industry. The government, having won in majority, is stable and has a mandate focused on the progress of the country through means of increasing the awareness of brand India. Global alliances are being formed by Prime Minister Narendra Modi with the intention of publicizing benefits of the 'Make in India' and 'Made in India' concepts.

The coming edition of IMTEX 2015 and Tooltech 2015 are also set to highlight this very campaign. The Indian market has a unique platform—allowing for immense opportunity to both source from as well as import to. The exhibitions will feature new launches and the best the world has to offer in the cutting tools sector.

We wish you a happy read and hope to see you at IMTEX 2015!

PN



Soumi Mitra
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Brand India: A Journey

Around seven months ago, India's voters elected the BJP-led National Democratic Alliance (NDA) helping them in getting a majority in the Lok Sabha (Lower House of Parliament). For the first time, since 1984, a single party won in majority. The mandate was largely perceived as an endorsement of Prime Minister Narendra Modi's message of rapid economic development, pro-reform and pro-growth agenda.

As promised, during his election campaign days to break India's past economic performance, Modi has been chalking out coherent economic models exhaustively that include export oriented manufacturing, heavy infrastructure building and urbanization.

With Chinese labor becoming increasingly expensive and India emerging as a reliable global supplier of engineering products, components & sub-assemblies, international companies are exploring sourcing opportunities in India. In this backdrop, the 4th edition of the India Engineering Sourcing Show (IESS IV) is being held at the most opportune time from December 16-18, 2014, at the Bombay Exhibition Centre to showcase the nation's engineering capabilities and strengthen the theme of the 'Made in India' brand.

"India is emerging as a reliable global supplier of engineering products, components & sub-assemblies as international companies are exploring sourcing opportunities in India."

To further emphasize the essence of the 'Make in India' concept in this issue, our Special Feature carries a bou-quet of end-user stories. While we take pride in witnessing how India is being acknowledged for its technological prowess on the global canvass, we rejoice similarly in recounting the journey of industrial innovations that our parent magazine MM MaschinenMarkt has witnessed closely for the last 120 years.

As you journey with this issue packed with technology articles, stories, and visit the trade fairs, we await your valuable feedback!

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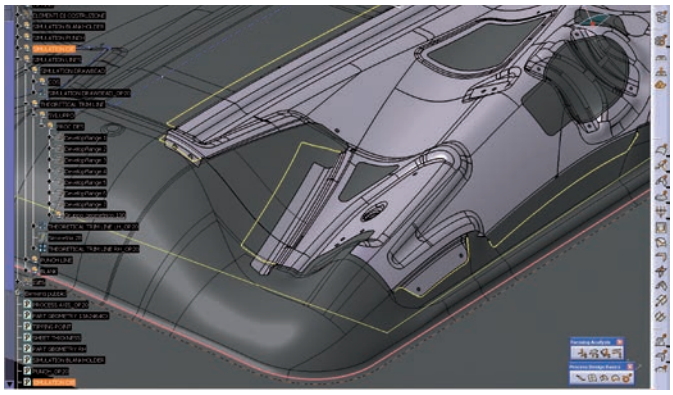

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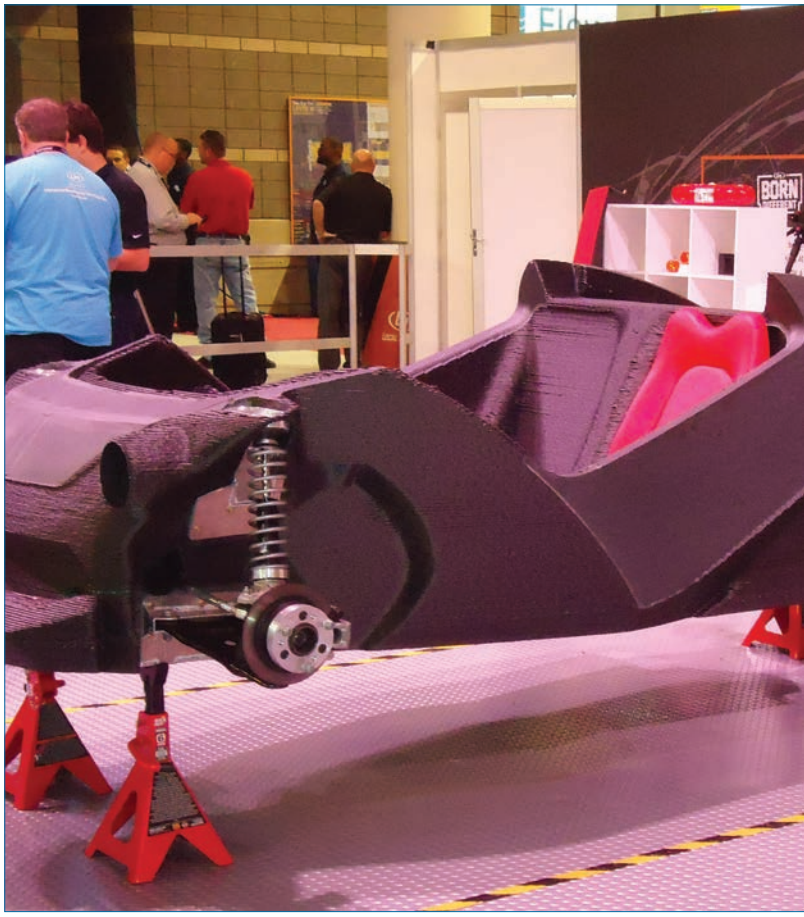

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Creating Successful Win–Win Service Business

"A successful win scenario is reminding each other that it is not about each one of us getting as much as we can. It is about making a mutually beneficial equation that can be amiable in the long-term."

CEO, Micromatic Machine Tools Pvt Ltd, TK Ramesh

Many of us who are in the machine tool business know that service after the expiry of a warranty period is a critical aspect that costs money but is an enormous value providing opportunity for the service provider and customer. The seemingly difficult part is arriving at a win–win outcome. This has to be achieved by getting the right balance where both stakeholders get the main things that they want. While this seems like a mirage, it is not really so if approached correctly with the necessary homework done.

Understand

All customers are not the same, discover what is important to the customer and what you can give, some customers emphasize on scope, some want timeliness (schedules), for others its comprehensive (parts and service), yet others security, each see value differently. It is not always about discounts. Collect all necessary historical information and happenings at customer end like MTBF, parts and labor usage, patterns of problems, human issues, etc., for example, understanding who at the customers' end benefits, who may have issues, who would back you and who may not because they do not believe that you would provide value.

Prepare

Preparation with data is the most important step that will help you understand the situation and have a direct impact on your success. The aim of preparation and understanding is to anticipate possible objections that the customer could put forth and have alternatives that could be offered ahead of time. The key to a successful win–win service business is to have alternatives that could be offered and still be able to meet the desired objective. Many times the alternatives that could be offered are outside of the service offerings, e.g., it could be financing or installment payments, complimentary one time lubricants from the machining ecosystem, etc.

Prioritize

Prioritize your time and offering based on the strategic intent. It could be size, segment, industry type, reach, etc. It is also important to identify and prioritize based on data for customers you will not have service business contracts with.

Engage with confidence

Your engagement with the customer in seeking his business will be a direct result of your preparation. It also makes you believe in the value of your services and ease the pressure during the negotiation process. You must set boundaries for negotiation at the beginning itself and reinforce them in writing. Aid the person sitting across the table by providing them with the right tools and materials needed to convince their management (who could be the decision maker). It is here that understanding who will back you and who will not is important.

Be prepared to concede to something. Preparation teaches us what could be conceded without losing sight of our objective. Many a times it is necessary to concede to keep up customer esteem, as people need to feel that they got something out of the process, such as a targeted price reduction or time extension. But be careful, give in only if you get something in return, e.g., a two-term renewal, reduction in scope, etc.

Close successfully

Do not give in prematurely, this happens if you have not done sufficient upfront preparation and if adequate boundaries are not set. It is very important that you know where the ultimate decision is made and who that person is. To avoid situations wherein the customer says that he requires a manager's approval, it is necessary to make sure the ultimate decision maker is in the final meeting. Despite all that we may do, the hardest part is knowing when and how to walk away. If you do not reach an agreement that meets your objectives, politely walk away hoping you will still do this deal another day.

Many times we are faced with extended interactions that are done over a period of time; it is very important to note down key points of the discussions in e-mails or minutes and share it with all the important participants. This is important so that you have a reference and do not find yourself renegotiating points that have already been settled.

Finally, it is most important to keep reminding yourself and your customer that it is not about each one of us getting as much as we can. It is about making a mutually beneficial equation that can be amiable in the long-term. MMI

The views expressed by the author are personal and he can be contacted at rameshtkr@gmail.com

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MAKING THE RIGHT MOVE?

Confused about which techniques and solutions can help you run a smoother operation? Read on for solution that can help you enhance your processes.

I work as a plant manager for a mining company in Tamil Nadu. I wanted to understand the right calibration method for my beltscale application. Could you please help?

Ramprakash, Chhattisgarh

A beltscale, also known as beltweigher, is a piece of industrial control equipment used to gauge the mass or flow rate of material travelling over a troughed (cupped) conveyor belt of any length.

It is normally mounted in a well-supported straight section of the belt, with no vertical or sideways curvature, and as close to level as is practicable. The weighed support must be aligned vertically and horizontally with the adjacent supports to avoid tensile forces in the belt, skewing the measurement. Due to the belt tension variation, frequent check calibration must be done.

Weights, chains or electronic/theoretical calibration techniques can be used. Generally, weights are acceptable and will achieve 0.5 per cent accuracy, provided that the guidelines for installation and commissioning are followed. Chains are also a good alternative if a material test cannot be performed to verify calibration. It also recommended for applications requiring accuracy greater than 0.5 per cent. These days, electronic calibration (or ecal) has become more popular as the performance of the load cells have improved. However, it is still typically only used in non-critical processes. Beltscale should be zeroed at least once a week and have the weights applied for a span calibration at least once a month.

Can you please elaborate on the relevance of high and ultra-high frequency radar?

Plant manager of a cement company, Tamil Nadu

Frequency radars are primarily used for measuring the level of solid/liquids materials in silos. In the cement industry specifically, radars help in measuring the levels of raw materials, such as fly ash, limestone, clinker, etc.

As frequency increases, the radar beam angle gets narrower. Because silos are tall and narrow, the narrow signal ensures only minimal signal interference by hitting the side of the silo. This prevents multi-path problems leading to inaccurate and false level indication.

Transmitters with a narrow beam can be mounted inside standoff nozzles without worrying about interference from the installation nozzle. Lower frequency radar devices have a significant noise problem because the signal spreads as it leaves the antenna and intersects with the end of the standoff nozzle. Also, in some cases the narrow beam is more accurately aimed towards the center of the cone at the bottom of the silo, ensuring the material is measured well in the lowest level.

Being the shop floor manager of a local cookie manufacturing unit, I have been entrusted to automate my factory. I am looking for a low-cost automation. Is it advisable and what all activities can I optimize?

S Pandey, Mangalore

Low-cost automation is advisable given the scale of your operations. The concept of low-cost automation is quite refined now and the users of automation are too well versed with the functions and features offered by world class automation products. While the products are functionally comparable to global ones, the only difference is low-cost automation does not have global certifications like CE and/or UL, ATEX, etc.

However, besides improvement in productivity, KPIs like flexibility, future proof investments, etc., are also offered in these solutions.

Various activities can be optimized using low-cost automation. Some of the key ones being material handling on shop floor, unmanned distribution points for commodity, accurate form fill and sealing in packaging, automatic weighing and batching and many more.

SIEMENS

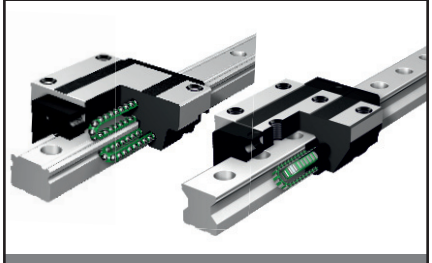
All responses mentioned above are provided by Siemens Ltd and are based on the information/data shared by the addressee; no liability whatsoever will be accepted for any consequences thereof.

You need any information or face any challenges, feel free to write to the below address:
paresh.navani@vogel.de

Vogel Business Media India

Linear Motion Technologies

THK The Mark of Linear Motion



Linear Motion Guides

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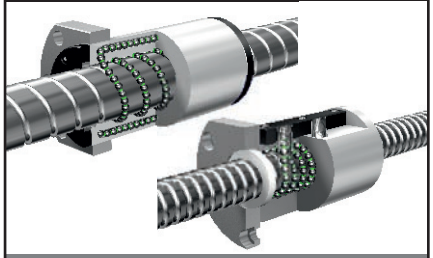

Precision Ball Screws

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Precision Cross Roller Ring

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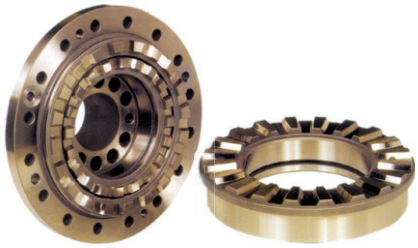

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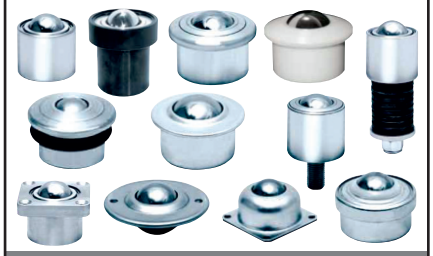

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POWERED BY
Indian Machine Tool Manufacturers' Association

A Curtain Raiser on IMTEX 2015

IMTEX is one of the biggest trade fairs in South East Asia for the manufacturing fraternity. As BIEC, the venue for IMTEX 2015 and Tooltech 2015, is getting ready to kick off the event on January 22, 2015, exhibitors as well are gearing up for the same. As a result, we can expect display of novel and innovative technologies at the show.

Indian Machine Tool Manufacturers' Association (IMTMA) is all set to organize the 46th edition of its industrial exhibition — IMTEX 2015 from January 22–28, 2015. This exhibition will be organized at the Bangalore International Exhibition Centre's (BIEC) 34 acres sprawling grounds. The show offers a platform to the industry to showcase its latest innovations and solutions. The exhibition will be spread across an area of around 48,000 sq mt in five state-of-the-art air conditioned halls.

Simultaneously, IMTMA is also organizing Tooltech 2015, a concurrent exhibition for cutting tools, tooling systems, machine tool accessories, metrology and CAD/CAM. This show will feature the latest trends in cutting tools and tooling systems from across the globe. Manufacturers, suppliers, vendors, visitors, researchers and delegations from as many as 25 countries have already confirmed their participation in IMTEX 2015 and Tooltech 2015.

Source: IMTMA

A milieu of overseas and indigenous technology

Visitors at IMTEX can see live demonstrations of the latest products and solutions and at the same time can interact with nearly 1,000 exhibitors from India and abroad. This list of exhibitors also include group participants from various countries like China, Czech Republic, Germany, Italy, Japan, Spain, Taiwan and the US. What makes the event all the more important is that IMTEX 2015 will showcase technologies and innovations catering to the Indian market, some of them being introduced for the first time. Additionally, with the impetus on 'Make in India' and recent developments indicating manufacturing to be in focus this year, the event is expected to witness a magnitude of visitors from across the manufacturing sector. This in turn will lead to a higher business momentum.

DIGITAL VERSION

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A Curtain Raiser...

Source: IMTMA

Overview of the previous edition of IMTEX and Tooltech.

Expectation from IMTEX 2015

Speaking about the upcoming show, President, IMTMA and Managing Director TaeguTec India Pvt Ltd, L Krishnan said, "This edition of IMTEX and Tooltech is expected to reflect the optimistic mood of the industry. With this, we hope that the amount of enquiries and business generation at the show would break all its previous records."

The previous edition had reported nearly ₹800 crore booked orders and enquiries worth ₹14,150 crore from more than 80,000 visitors. This version of the event expects footfalls over 100,000 visitors.

IMTEX has also acquired a new dimension of technology exchange and transfer through collaborations and joint ventures. Many Indian companies have benefitted by such transfer of technologies. Consultancy tie-ups and distributorship seeking activi-

ties in addition to collaborations and partnerships are also common at IMTEX.

In terms of technological trends, IMTEX as a brand has always been a pioneer to showcase latest technologies and solutions from the global manufacturing industry. In 2015 as well, visitors will be enthralled by some of the emerging trends in additive, micromachining, multi-axis, and duplex machines. All in all, in this edition, the focus is expected to remain on productivity, precision and automation.

Big focus on indian manufacturing

Despite the increasing focus on innovation, technology and performance by domestic players, the machine tool industry still remains dominated by imports. IMTMA sees a positive trend for indigenous machines in domestic consumption as the component of imports has come down in the recent years. During the financial year 2014, the share of domestic production had reached 40 per cent of the machine tool consumption in India. The industry needs to grow strong from this position.

This will be the first edition of IMTEX after the 'Make in India' movement has been put into motion and the way is cleared for an ease in increase in FDI in the defense sector. With growing overseas interest, from countries including China and Japan, this will lead to setting up of more manufacturing units in India by overseas corporations. IMTEX 2015 may play a catalyst and a trendsetter in this direction.

International seminar on machining technologies

Advancements in the metalworking technology have virtually transformed the concepts of manufacturing in many industries. Enhanced productivity, quality and superior finish are achieved through improved machining processes, alternative processes, state-of-the-art automation, tooling systems, control equipment and so on. To compete and sustain consistent growth levels in this ever changing and demanding market scenario, there is a need to keep abreast of the latest developments in the field of manufacturing.

To highlight the evolving trends in the metal cutting industry, globally, in conjunction with IMTEX, IMTMA has scheduled an 'International Seminar on Machining Technologies'. The sixth edition of the seminar will take place on January 21, 2015. The objective of this seminar is to present latest technological developments in machining, which users can adopt in their production process successfully. Through this seminar, IMTMA intends to cover the more pertinent aspects of metal-cutting processes, its requirement in the manufacturing industry and the technology gaps that can be bridged.

International experts will share their experiences and latest developments. Spread over two keynote and five concurrent sessions, this one day seminar will cover key technology areas related to machine tools & machining, workholding, tools & tooling, metrology & controls, CAD/CAM and grinding & finishing processes.

Academia Pavilion I-2

Apart from regular exhibitors, IMTMA will also offer space to various educational institutes at IMTEX 2015 to create 'Academia – Industry Pavilion'. By this way, institutes can present their research in this field of work. The Academia Pavilion is an opportunity for the invited educational institutions to interact with renowned Indian experts and foreign professionals and network with leading players from the industry. MMI

EuroBLECH 2014 Concludes on a High Note

Hanover, Germany – EuroBLECH 2014, the 23rd International Sheet Metal Working Technology Exhibition recently concluded on a positive note. The five-day exhibition saw a total of 59,600 trade visitors for the latest technology trends in sheet metal processing. A record number of 1,573 exhibitors from 38 countries put a wide range of innovative solutions, cutting edge technology and an enormous amount of live machine demonstration on display, on a total net floor space of 86,500 sq mt. The results of the preliminary visitor survey showed a further shift towards highly qualified trade visitors.

"The prevailing mood at the show was positive throughout. There was lively trading activity in the eight exhibition halls and many exhibiting companies reported large numbers of international business contacts and buoyant sales figures. A first analysis of the exhibitor survey shows that participating companies were highly satisfied with the outcome of EuroBLECH 2014," explained organizer of the show, Managing Director, Mack Brooks Exhibitions, Nicola Hamann.

Source: EuroBLECH

Glimpses of this year's edition.

Metal + Metallurgy China 2015 All Set to Impress

Shanghai, China – Metal + Metallurgy China 2015 (a collective name for the 13th China International Foundry Expo, the 15th China International Metallurgical Industry Expo, the 13th China International Industrial Furnaces Exhibition and the 11th China International Refractories and Industrial Ceramics Exhibition) will be staged from March 31–April 3, 2015, at the newly built China Expo Complex in the Shanghai Hongqiao CBD. The exhibition has already registered a large number of well-known names in the related industries including Kao, ABP, Inductotherm, DISA, Fanuc, Allied Mineral Products, Shanghai Xinyan, I.M.F, Nederman, MAGMA, Grenzebach, Calderys, Koins, Ebner, Siemens, Savelli, MAUS and Capital.

The show is jointly organized by China Iron and Steel Association, China Foundry Association, Chinese Mechanical Engineering Society (CMES), the Metallurgical Council of CCPIT, the Industrial Furnace Institution of CMES and Hannover Milano Fairs Shanghai Ltd. With an extensive range exhibits, innovative products and unique features, the forthcoming edition of Metal + Metallurgy China 2015 is expected to have an exhibition area of 80,000 sq mt.

Source: Hannover Milano Fairs China Ltd

View of the last edition of Metal + Metallurgy.

Three Trade Fairs for Automation Solutions to be Organized Concurrently

Mumbai – The three events being organized simultaneously – Control India, Motek India and SPS Automation India are expected to showcase best-in-class automation solutions. Additionally, the event, which will be organized during Feb 5-7, 2015 by Messe Frankfurt Trade Fairs India Pvt Ltd, will house technologies from material handling in production, assembly line, quality control and optoelectronics technology together on one platform.

These fairs are aimed at bringing companies from sectors such as industrial, production and assembly automation, quality assurance and inspection technology under the single roof thus, pave the path to providing Indian manufacturers access to more competitive and cutting-edge solutions. Prompted by the Indian government's 'Make in India' initiative, Indian companies and industrial houses are seeking to invest in quality automation processes to maximize operational efficiency.

A technical conference has also been planned alongside the three fairs to provide sector professionals an understanding of new processes and technology trends making headway in the manufacturing sector.

The three events will concurrently be held at Mahatma Mandir, Convention and Exhibition Centre, Gandhinagar.

Source: Messe Frankfurt Trade Fairs India

Glimpse of previous edition of Motek.

Schuler Wins an Order from Volkswagen China

Göppingen, Germany – Schuler AG has secured one of the largest orders in company's history. FAW Volkswagen Automotive Co Ltd has ordered three presslines with ServoDirect Technology and three try out presses for testing and setting up dies for its facilities in China. The servo presslines will be used mainly to produce car body parts, such as hoods and doors. The order is worth over €150 million. It is the first time that FAW Volkswagen has invested in equipment with ServoDirect Technology.

Compared to conventional mechanical presslines, productivity is around 20 per cent higher while energy consumption is significantly lower. Talking about the new technology, CEO, Schuler Group, Stefan Klebert said, "We are registering a growing interest in servo technology, also on the Chinese market. The order underlines our leading role in forming technology."

Source: Schuler AG

Schuler AG wins a major order from China.

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Rapid developments in metalworking technologies have virtually transformed the manufacturing concepts in the new world order. Enhanced productivity, world-class quality and superior finish is achieved through improved machining, alternative processes, state-of-the-art automation, tooling equipment, systems & controls and so on.

With a view to highlight these evolving trends in the metal-cutting machine tool industry from all over the globe, Indian Machine Tool Manufacturers' Association (IMTMA) is organising the **6th International Seminar on Machining Technologies' on 21 January 2015 in Bangalore, coinciding with IMTEX 2015 Exhibition.**

Over 500 delegates from wide cross section of the metal working industry - Automotive & Autocomponent, Aerospace, Defence & Railways, Machine tools, Tool Rooms, Consumer durables and Gen. Engg. are expected to participate in this seminar . Participants will comprise decision makers including CEOs,R&D Specialists, Industry experts and Practicing engineers

Focus Areas :

- Machine tools & machining
- Work Holding, Tools & Tooling
- Metrology, Control Systems, CAD/CAM & Automation
- Grinding & Finishing Process
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For more details, contact: Mr. Abhishek ; abhishek@imtma.in; tel : 080 - 6624 6829

Indian Machine Tool Manufacturers' Association

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Tel : +91 80 6624 6600 / 6665 Fax : +91 80 6624 6658 Website : www.imtma.in

BIEC Bangalore International Exhibition Centre

First International Aviation Conclave to be held in New Delhi

New Delhi – International Aviation Conclave (IAC), a three day conference cum exhibition, supported by the Ministry of Civil Aviation (Government of India), Directorate General of Civil Aviation (Government of India), US-India Importers Council, ADS-UK, is being organized at the India Trade Promotion Organization, Pragati Maidan, New Delhi, from December, 11–13, 2014. The theme for the inaugural year is 'Empowering Aviation – Encouraging Stability towards Sustainability'.

The prime focus taken into accordance for the event is promotion of aviation domain taking into account the foreign direct investment, global cooperation, and liberalized policies by the government to showcase growth potential in the Indian economy. The industry leaders will exhibit their products and services before the global aviation leaders and aviation industry catalysts. Promotion of latest aircrafts with an intention to enhance regional air connectivity, strong focus on general aviation and allied activities, focus on domestic manufacturing of aircrafts and parts with international collaborations, maintenance repairs and overhauls, aviation safety and security, ground handling operations, airport infrastructure & development, medical and general tourism, aviation/aerospace medicine, research and surveillance products, trainings and higher education, and new trends in information technology will be key attraction at IAC 2014.

CEO, IAC, Capt GS Rathee said, "IAC 2014 will prove to be a key catalyst for economic growth and socio-political development providing excellent platform for business associations and an unrivalled access to the untapped yet highly resourceful Indian aviation market. This 1st edition of the conclave will prove to be a milestone in achieving stability and sustainability for the Global Aviation industry, thus empowering aviation worldwide."

In order to give due appreciation and encourage-ment to industry players who have given outstanding services in their respective areas, 'The International Aviation Awards' will take place on the concluding day of the event, where organizations and individuals from more than 25 categories under aviation and allied domains will be awarded.

Source: IAC

CEO, IAC, Capt GS Rathee speaking on IAC 2014 being a key catalyst for economic growth and socio-political development.

TECHNOLOGY @ work

IMTEX 2015

17th Indian Metal-Cutting Machine Tool Exhibition with International participation

Tooltech 2015

17th International Exhibition of Cutting Tools, Tooling Systems, Machine Tool Accessories, Metrology & CAD / CAM

22 - 28 January 2015, Bangalore

Venue

BIEC Bangalore International Exhibition Centre

Organiser

Indian Machine Tool Manufacturers' Association
T: +91-80-66246600. F: +91-80-66246661. E: info@imtex.in

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Renishaw Invests in Additive Manufacturing Technical Centre

Pune – The UK Deputy Prime Minister, Nick Clegg has announced a new investment in 3D printing by Renishaw, the global engineering company. The decision by the company to create its first Indian additive manufacturing (metal 3D printing) technical centre in Pune was revealed by Clegg on the final day of a trade delegation he led to India.

Forming part of Renishaw's continuing investment in the development, manufacture and application of additive manufacturing technologies, the new Pune additive manufacturing (AM) technical centre also maintains the company's long term commitment to the Indian market. It will sit alongside its existing key strategic AM technical centre locations in the UK, USA, Canada, Germany and China, with additional centres are also planned for other key markets.

To mark the announcement of the new technical center Rhydian Pountney, the Renishaw Director responsible for Indian Sales and Marketing operations, presented Clegg with a 3D printed titanium scale replica of the company's 19th century headquarters building in Gloucestershire.

Source: Renishaw

Renishaw's Rhydian Pountney (center) explains the additive manufacturing (metal 3D printing) process to Nick Clegg.

Source: PE Schall GmbH & Co KG

Glimpse at the duo trade fairs.

Motek and Bondexpo 2014 – Trade Fair Duo a Success!

Frickenhausen, Germany – The 33rd Motek and 8th Bondexpo ended on a high note. With exactly 941 exhibitors (manufacturers and distributors) for Motek and 116 for Bondexpo, both internationally recognised technical trade fairs once again set global standards in the areas of production and assembly automation, as well as bonding, joining and fastening technology.

With manufacturers and distributors from 25 nations, industry-specific worldwide offerings were presented in a magnitude of inclusiveness. Additionally, there was an increasing number of foreign exhibitors, who made up roughly 20 per cent of the total exhibitors for this edition.

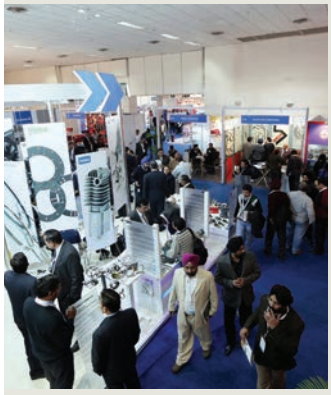
From a total of 1057 exhibitors, 79 were assembly system fabricators, 13 were manufacturers of basic assembly machines, 98 were robot system integrators and 27 were robot manufacturers, this gives an idea of the diverse range of products the expo had to offer. This also made it a one-stop-shop for everyone in the industry to come, network and find immense opportunities.

Automechanika Already Booked Over 65 Per Cent

New Delhi – The second edition of ACMA Automechanika New Delhi has been given a very positive welcome. With over 65 per cent of booking already been done, the organizers Automotive Component Manufacturers Association of India (ACMA) and Messe Frankfurt are very optimistic for the show.

Held from February 26 to March 1, 2015, at Pragati Maidan, New Delhi, the show will also include ACMA's ASLI-NAQLI' and 'Messe Frankfurt against Copying' campaigns. These will be combatively held during the sure to educate exhibitors and visitors about the registration and assertion of intellectual property rights. This is owing to a recently conducted study by ACMA. According to it, around 20 per cent of all road accidents in India are directly or indirectly attributed to the use of counterfeit automotive parts.

The show will be an important destination for the automotive aftermarket and component professionals to make new connections, understand market developments and move forward with better business prospects.



Source: Messe Frankfurt

Glimpses of this year's edition.

Northrop Grumman to Supply Digital Avionics

Pittsburgh, US – Northrop Grumman Corporation is developing the next generation of Black Hawk helicopter cockpit display systems that must meet strict avionics standards within programmatic development timelines. For this, the company is using ANSYS SCADE Suite and SCADE Display to provide scalable, fully integrated avionics software for the upgrade of the UH-60L Black Hawk cockpit to the digitized UH-60V and to meet safety-critical avionics standards such as DO-178C.

"ANSYS' commitment and involvement in Future Airborne Capability Environment (FACE) includes support for ARINC-653, ARINC-661 and DO-178C," said Vice President - Systems, ANSYS, Eric Bantegnie. Up to 750 UH-60L aircraft are expected to be modified to the UH-60V configuration, which represents the first fully integrated avionics system for the US army utility aircraft.

"SCADE allows us to take full advantage of model-based engineering, resulting in improved development and testing efficiencies and delivering an affordable software sustainment approach across the program life cycle," affirmed Director - Army Avionics Programs, Northrop Grumman, Simona Kelley.

Source: ANSYS, Inc

Northrop Grumman's digital cockpit solution for US army utility aircraft.

Bosch Continues to be Innovative in India

Bangalore – The Bosch Group is forecasting further strong growth for India over the next few years, and expects to see positive economic development in the country over the medium and long term. Accordingly, the company sees India as a key pillar of its growth strategy in Asia Pacific. "Over the past ten years, Bosch has doubled its sales in Asia Pacific. By 2020, we are aiming to double our sales in the region again," averred Chairman, Bosch Board of Management, Dr Volkmar Denner.

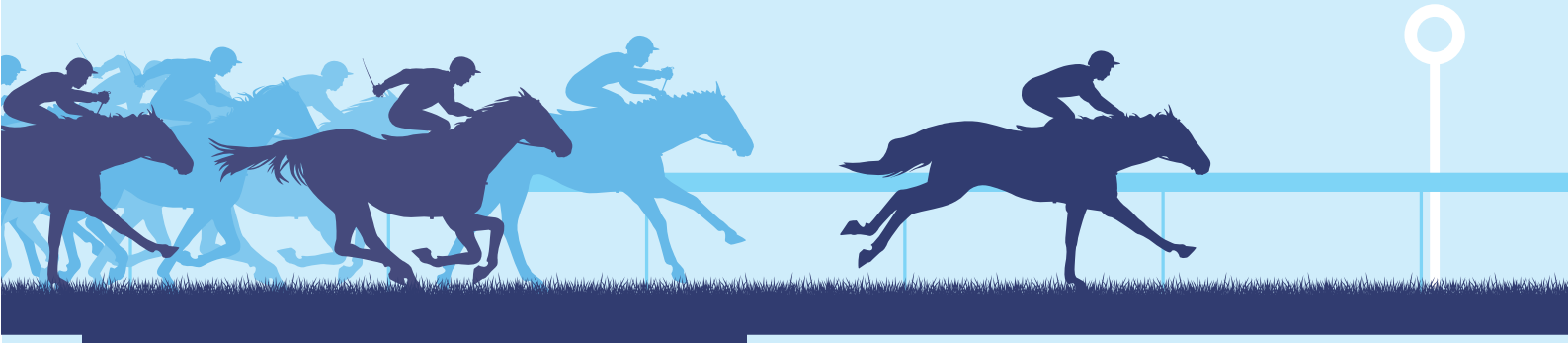
India is home to the company's largest development technology and services center outside Germany, employing 10,500 engineers. "We develop innovative solutions here that are used in products around the world," said President, the Bosch Group – India, Steffen Berns. The rising number of patents filed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

Source: The Bosch Group

Bosch has developed components for both mass commuter two-wheelers in Asia and high-performance bikes in Europe and North America.

Stay Ahead

Get your competitive advantage



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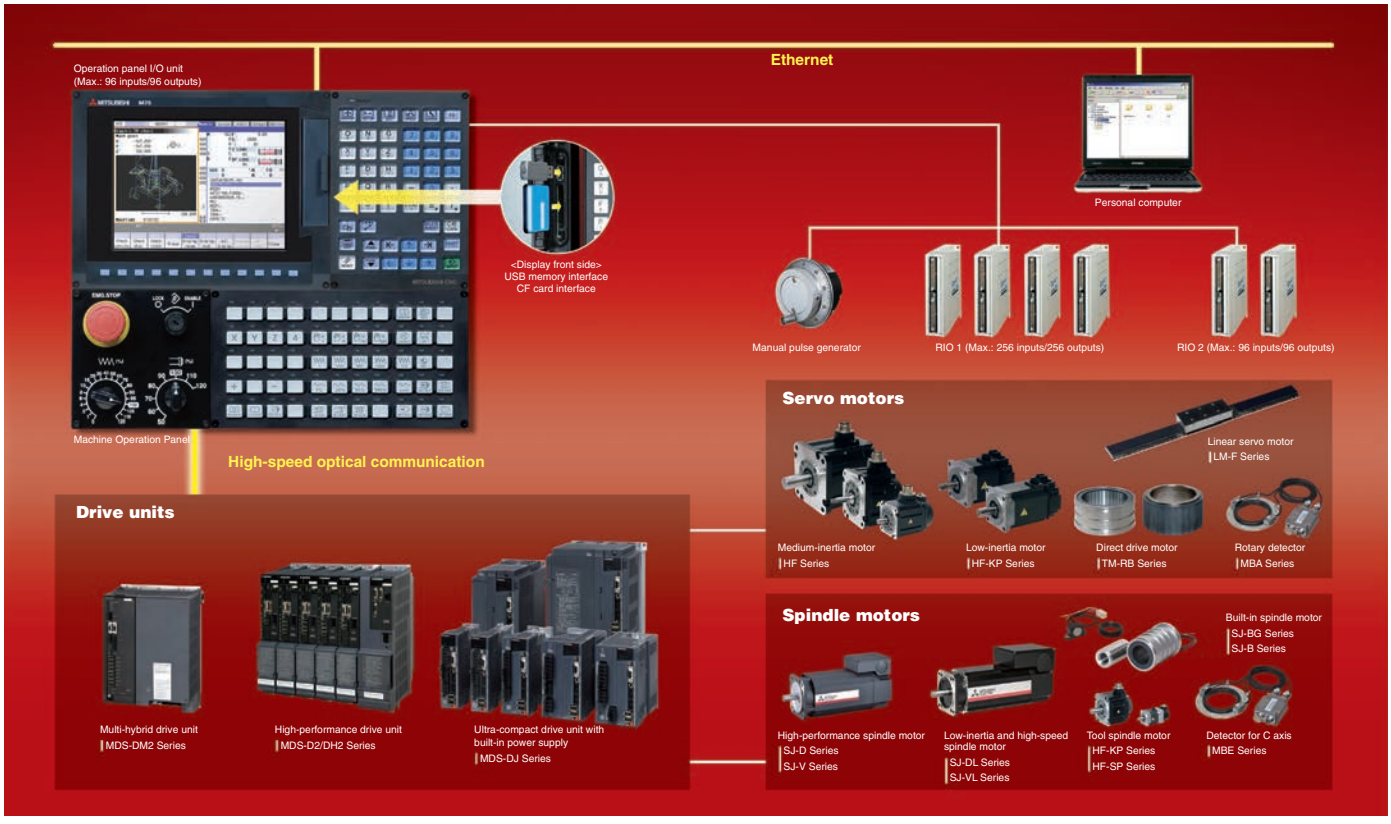
Mitsubishi CNC's new M70v series offers high-speed performance and high accuracy to its customers. The solution helps reduce the cycle time with higher machining control. Also, it offers high accuracy tapping with high-speed compensation control of spindle and servo. The highlight of this solution is it achieves smoother cutting surface even with one-nanometer position interpolation. Read on to know more about this high-quality CNC solution.

The M70v series solution from Mitsubishi CNC offers ease of operations.

Source: Mitsubishi CNC

Key Highlights

Versatile lines boasting compact size and less wiring



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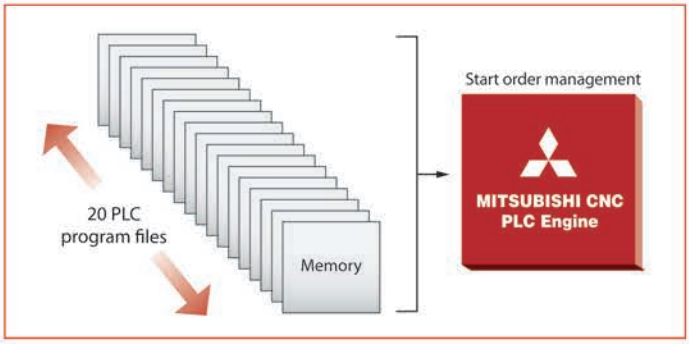
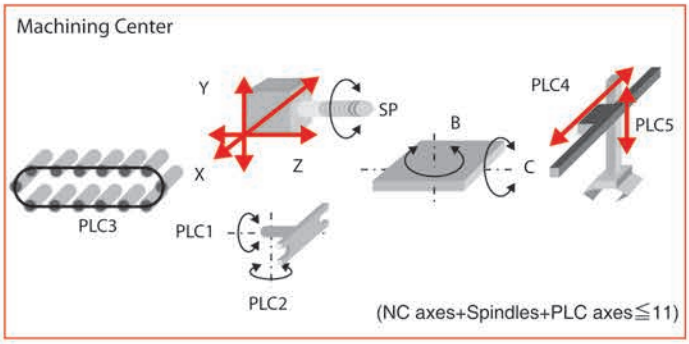
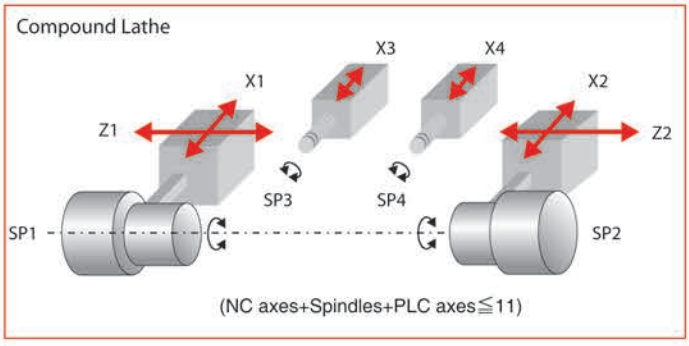
- **High-speed PLC engine installed (TypeA)**
  TypeA is equipped with a high-speed PLC engine, helps enhance the performance.



Multi-part Systems Multi-axis

- **A maximum of two part systems and 11 axes can be controlled for both the machining center and lathe.**

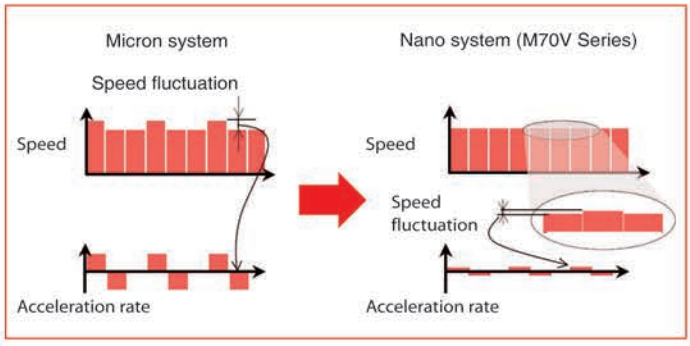




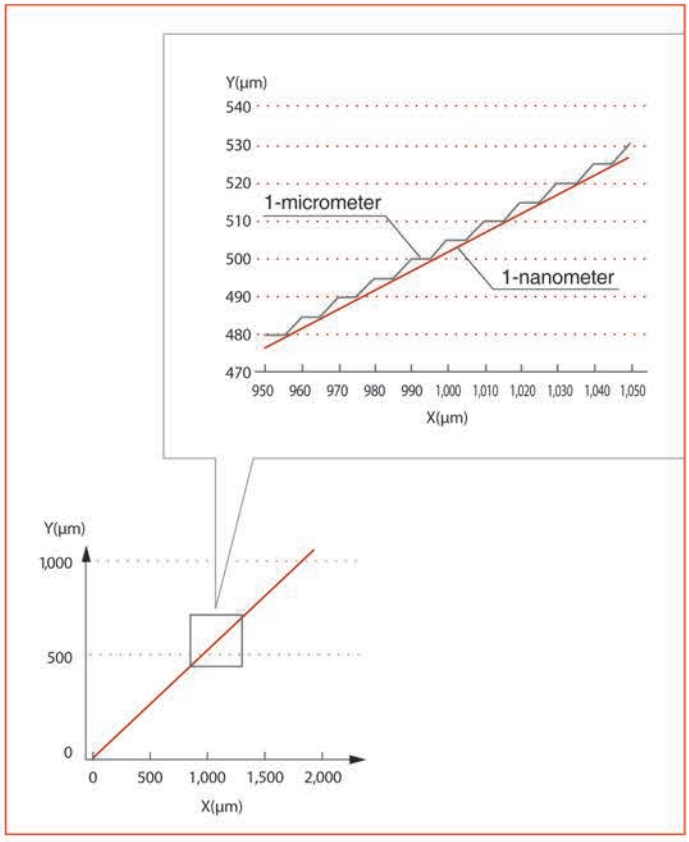
Nano Control

The least control increment is one nanometer, the command increment is ±99999.9999, and the rapid traverse rate is 1000 m/min. All processing from the analysis of machining programs to servo commands is performed in nanometers.

- **Speed command fluctuation reduced**
  In nano control, the position command calculation fraction of the interpolation calculation is small, so fluctuations in speed command due to the fractions is reduced. This reduces acceleration fluctuations, resulting in finer lines at the time of repeated acceleration/deceleration.



- **Interpolation calculation accuracy improved**
  Even with one-micron-unit commands in the machining program, interpolation is in nanometer units. As the calculation accuracy of a block intersection is improved, lines on the surface is finer.

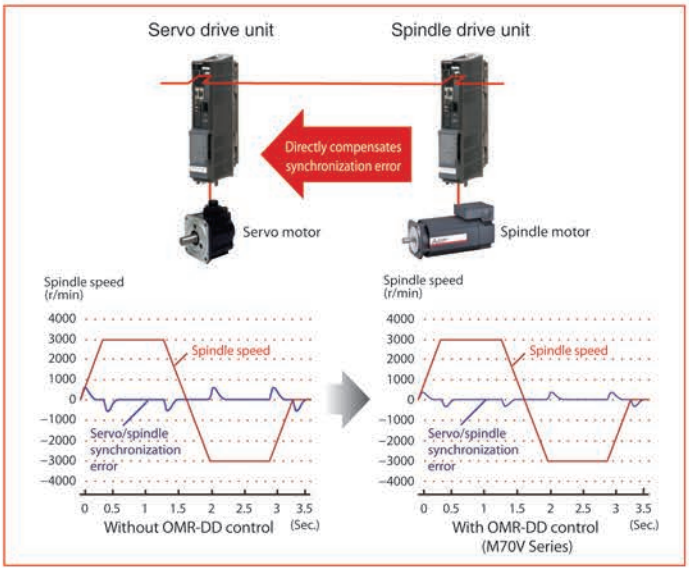


OMR-DD Control

(High-speed synchronous tapping)

Optimum Machine Response Direct Drive

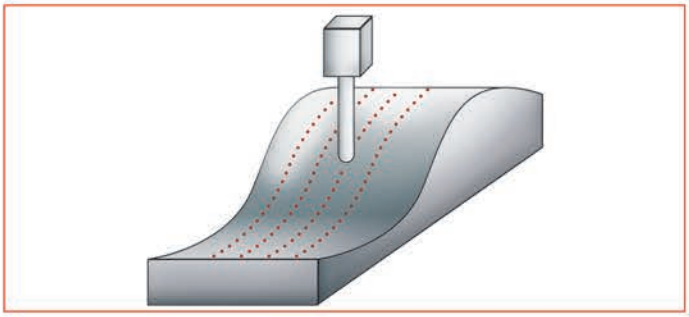
▶ **A high-speed, error-compensation function is used for controlling the spindle and servo, enabling accurate tapping.**



High-speed Machining Mode

(Machining Center System)

▶ **By reading ahead some blocks in a program that contains successive fine travel distances, the program can be rapidly executed at up to 33.7 k blocks/min. (8.4 k blocks/min for TypeB)**

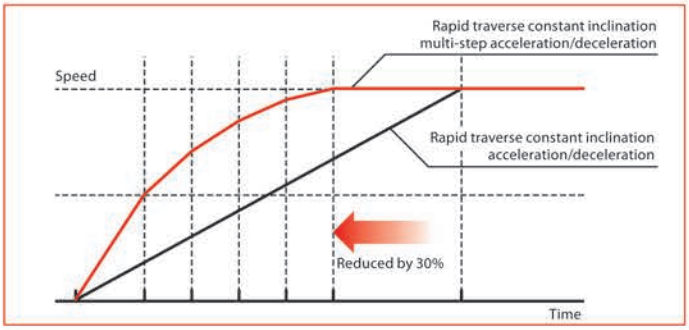


Rapid Traverse Constant Inclination Multi-step Acceleration/Deceleration Function

(Machining Center System)

▶ **Rapid traverse acceleration/deceleration is performed according to the motor's torque characteristics.**

▶ **As the motor's characteristics can be utilized optimally, positioning time is reduced, and cycle time is improved.**

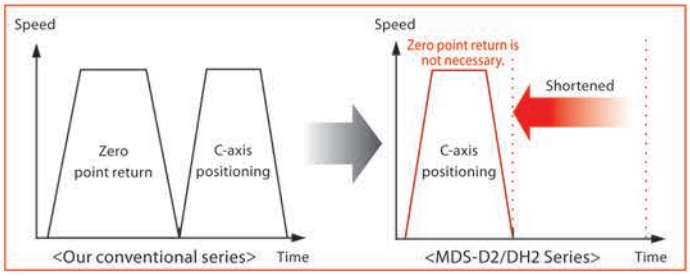


Position Loop of Spindle Control

▶ High traceability to command (High-gain control II), which has been developed in servo axis control, is now available for the spindles, contributing to shorter machining time and higher accuracy.

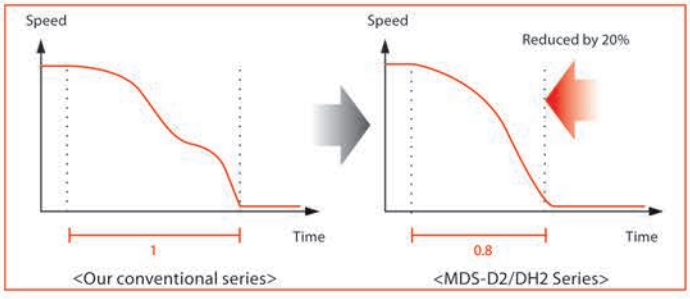
Spindle/C-axis control

▶ The spindle's constant position loop control has eliminated the zero point return time when switching from the spindle to C-axis.



Orientation time is reduced

▶ Deceleration is performed with the maximum torque to minimize the spindle orientation time.

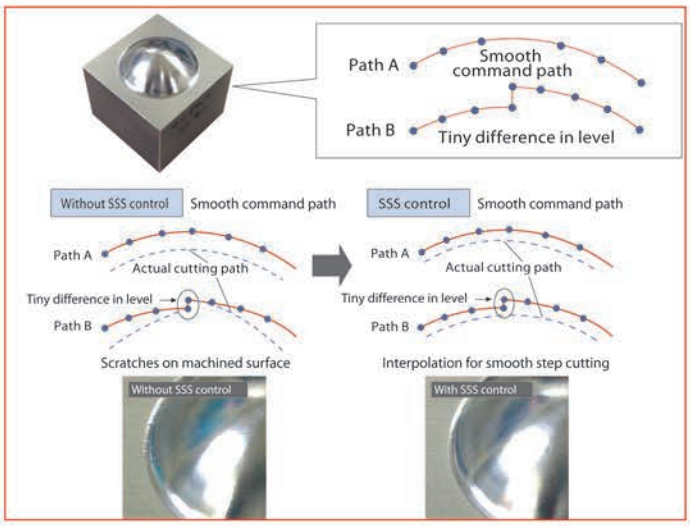


SSS Control

(Machining Center System) Super Smooth Surface

▶ By judging shapes in large from commanded paths, unnecessary deceleration is reduced even when fine steps exist; thereby, realizing smooth and deviation free die-mold machining. Machining time can be shorter by 5–30 per cent relative to our conventional system, especially more effective at a higher feed rate.

(Note) Additional hardware is required. In order to use this function also in the 2nd part system, the option 'High-accuracy control in 2 part systems' is required.



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Milestones in the Manufacturing Industry

In the manufacturing industry, innovations have brought ease of operations, energy efficiency and also cost-efficiency. MaschinenMarkt (MM), which is turning 120 this year, honors the outstanding innovations made by the various mid-sized companies in last 120 years. Come take a walk down memory lane to know more about technologies that made the industry work better and faster.

DIGITAL VERSION

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Milestones in the...

The German manufacturing industry is known to be highly innovative. However, statistics from European Patent Office (EPO) suggest that around two-third applications to the EPO in 2013 were of non-European origin. Approximately, 24 per cent patent applications came from the US while, 20 per cent were generated from Japan. On other hand, with a thin 12 per cent, Germany just made it onto the victory rostrum.

But this does not mean that the German industry is any less competitive than others. It is observed that the Top Ten list of patent applicants is led by large corporations such as Samsung, Siemens, Philips, BASF and Bosch. Many medium-sized companies shy away from efforts and cost involved in the patent application process. This does not necessarily mean that these companies are less innovative. In fact, they can be termed as Hidden Champions.

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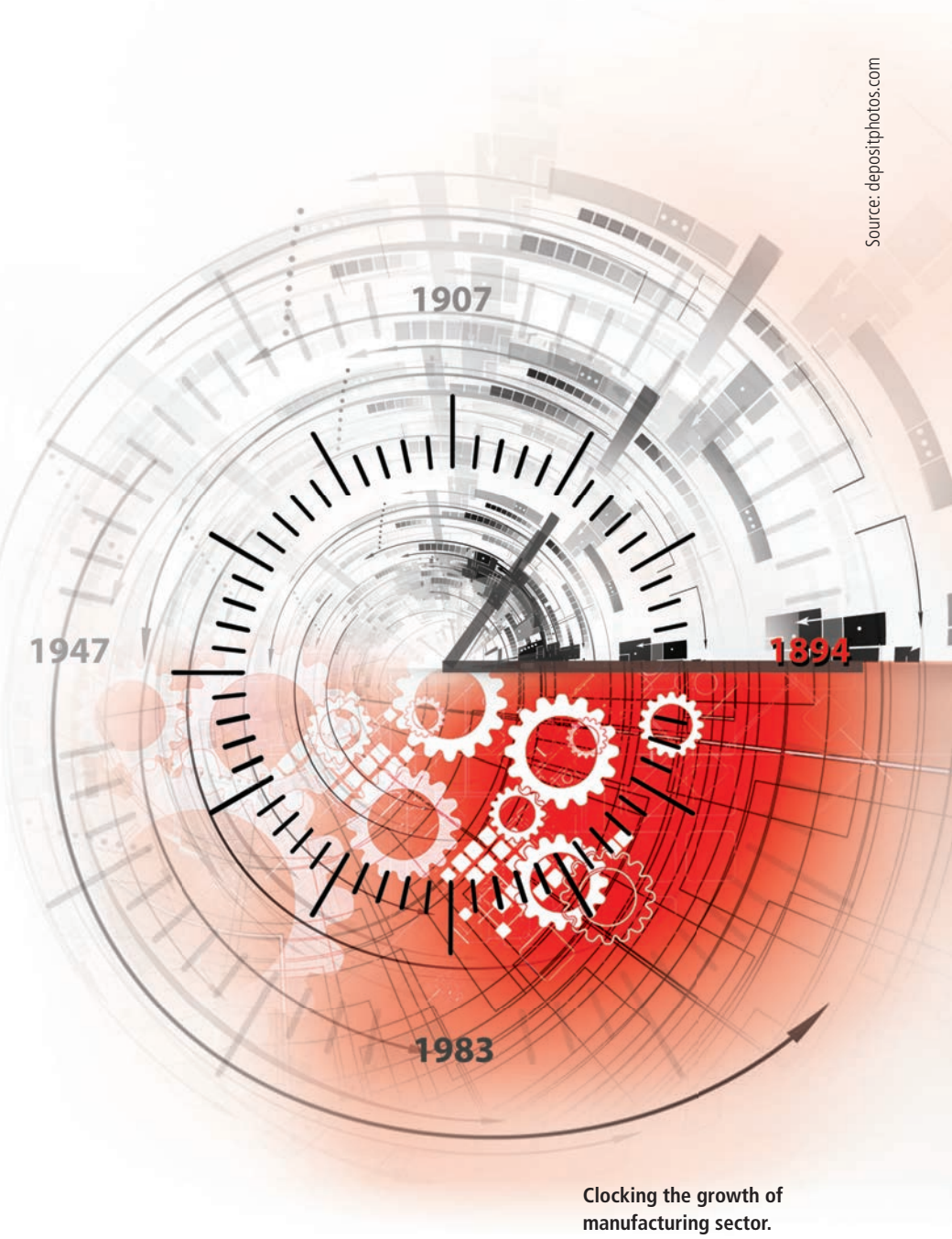


Source: depositphotos.com

Clocking the growth of manufacturing sector.

Machine construction: the sector of the hidden champions

German machine construction industry consists of almost 87 per cent of such medium-sized hidden champions. According to figures issued by German Engineering Federation (VDMA), Germany's machine building firms achieved around 23 per cent of their turnover with new or substantially improved products. Seven in ten have introduced at least one product and/or process innovation between 2010 and 2012.

Potential of this sector was realized by Carl Gustav Vogel in 1894 when he founded MaschinenMarkt (MM) in Pößneck in Thuringia. With this magazine, Vogel provided machine makers a new platform to reach its target audience effortlessly and effectively.

Honoring milestone achievements

Since then, MM has witnessed the growth of this sector that was multiplied owing to globalization. Also, the sector aided globalization with the continuous flow of innovations. To honor the contribution of the manufacturing industry in the globalization, MM, on the occasion of its 120th anniversary, has listed Milestones of the Manufacturing Industry. Editors at MM have noted path-breaking developments in the fields of technology, processes, logistics, distribution, etc., which have left their marks on industrial history.

One of such developments includes the double-row self-aligning bearing by Sven Wingquist. In the beginning of the 20th century, Wingquist worked in an engineering firm, where he was unhappy over the reliability of the spinning frames available at that time. In his free time, the engineer developed a revolutionary product, known as the double-row self-aligning bearing. The new product provided a surge of productivity in the textile and many other sectors. This nocturnal experiment made such an impact on the firm that in 1907, he founded the Aktiebolaget Svenska ball bearing factory (SKF) with his employer as a sponsor. By taking this step, Wingquist became the first CEO of SKF.

Revolutionizing rolling bearing technology

Later on Wingquist developed an angularly flexible bearing, a double-row self-aligning bearing with a common spherical race in the outer ring on which the two rows of balls run. This bearing had a capability to align itself, which was a decisive advantage in times of clayey and unstable floors. Because of the alignment freedom of the inner ring, the new bearing solved the cardinal problem of its predecessor, which had to be set up manually. The new version also solved the problem of overheating. Moreover, the self-aligning ball bearing also turned to be energy efficient. The company still follows the mantra of energy efficiency with its BeyondZero Portfolio.

In the same time frame, almost simultaneously, the requirement of higher energy efficiency in electrical drives gave engineers at ABB food for thought in the field of rotational speed regulation. In 1902, the company developed mercury-arc valve. Later, in 1913, a joint venture involving Hartmann & Braun and BBC (ABB's previous name) put in place a research & development department. The significance of the mercury-arc valve was immense as it could undertake both rectifier and converter functions.

Torque regulation changes high-performance drives

Mercury-arc valves were produced by BBC until the middle of 1960s, when they were replaced by another revolution in power electronics – the semiconductor. The first semiconductor, a germanium diode, was developed by the company in 1954. Without this development, there would have been no convertors. The introduction of thyristors enabled forced commutation with inverters and the development of drives with regulation of rotating speed via the frequency.

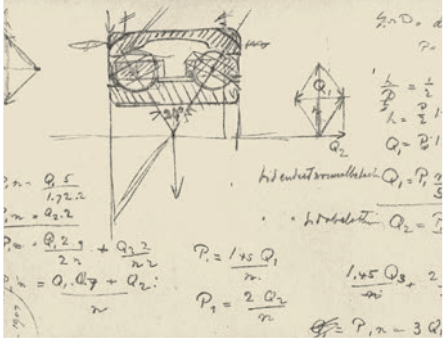
The most widespread procedure for generating a three-phase voltage at a suitable frequency, pulse width modulation (PWM), was presented by BBC in 1964 and is still in use today. These devices allow regulation of rotational speed and torque of AC motors.

With the usual pulse width modulation, a modulation of the voltage applied to the motor is necessary as this prolongs the signal processing time. ABB, the successor of BBC, was able to work on this problem and in 1995, presented a new technology for motor regulation, direct torque control (DTC), and changed high-power drives to what it is in the present day. The advantage of this technology is that it eliminates the need of modulator, so that reaction times can be up to ten times faster than with the conventional regulation procedures. It enables an extremely fast reaction to load changes on the motor shaft or to changes in the set values of torque or rotational speed. Such variable-speed drive is a cost-effective alternative to mechanical methods of speed regulation. This drive laid the base for the modern, energy-efficient drive.

Standardized and intelligent modern robot gripper

Apart from drives, what makes automation process easy are standardized grippers, which were developed by Schunk in 1983. The Founder, Friedrich Schunk, was gifted with a curious nature that forced him to find solutions to the problems. For example, he developed a machine for making holes in lampshades and also brake drums for the NSU Prinz 4 car. But Schunk's standardized

Milestone SKF



Source: SKF

The invention of the double-row self-aligning ball bearing: a sketch by Sven Wingquist from the year 1907.

Milestone ABB

Source: ABB

2012: ABB (the firm was called BBC then) produces the first mercury vapour valve.

Milestone SCHUNK

Source: Schunk

With standardization and intelligence, Schunk became a gripper specialist. The picture shows the first PPG gripper.

Source: Trumpf

A glimpse of laser assembly at Trumpf in Ditzingen: much know-how and dexterity is required to put them together.

gripper technology is a benchmark. This was preceded by the firm's developments in the clamping technology field, with which the company gained a leading position.

In 1982, with grippers, the firm entered into a completely new market segment. Previous gripping tools for robots were bulky, clumsy and costly. In contrast, Heinz-Dieter Schunk, present director of the company, wanted to bring lighter, compact, precise and cost-efficient grippers onto the market. One year later, this vision became reality. The first standardized industrial grippers in the world with wedge hook mechanics were invented by the company. Recently, in 2012, Schunk took a further leap with its gripping hand. In the latest version of the anthropomorphic gripping hand, the electronics are integrated completely into the wrist, enabling particularly compact solutions.

Autogenous welding technology

Such gripping technology enables robotics to deliver high performance. However, that is not the only recipe of success for robotics. Kuka, a well-known name in robot manufacturing, was founded in 1898. However, it was far away from its current core business at that time. Autogenous welding technology was the topic of the day then, and was only produced by Kuka. Additionally, it remains a recurrent theme in the history of the company.

Welding and cutting were necessary in tank construction, so they took up the construction of large tanks in 1920. From boiler and tank construction and the production of vehicle superstructure, it was a short step to the manufacture of communal refuse and service vehicles.

The new area of automation

The foretaste of automation came in 1956. Kuka's electric welding department made the first automatic welding installations for refrigerators and washing machines and delivered the multi-spot welding line to Volkswagen AG. It was then that the company really took off, in 1971, with 'robotized' welding. The first welding transfer line with robots in Europe was built for Daimler. It was equipped with robots from Unimation, a US brand, at that time. In the future, however, Kuka was to develop its own robots. The company's first creation was called 'Famulus' and it had several functional deficits. Its successor, the IR 6/60, was capable of moving loads of up to 60 kg and worked better.

However, Kuka took a quantum leap at the Hannover Fair in 1996 with an operator-friendly control concept. The company presented new robots by combining mechanics and control technology in a new generation of robots. Based on the lightweight robot (LBR) research project by the German Aerospace Centre (DLR), the LBR 4 was developed. It weighed only 14 kg, had a payload of 7 kg and provided programmable yielding. With its integrated sensorics, it was capable of yielding to external forces. The further development of the lightweight robot came in 2013 with the robot LBR iiwa, which was designed with human/robot collaboration. With the LBR iiwa, the intelligent industrial work assistant, complex assembly tasks can be automated where the use of robots was previously not possible.

Mobility of coordinate measurement technology

Another technology that helped medium-sized companies in their production processes

Milestone **KUKA**

Source: Kuka

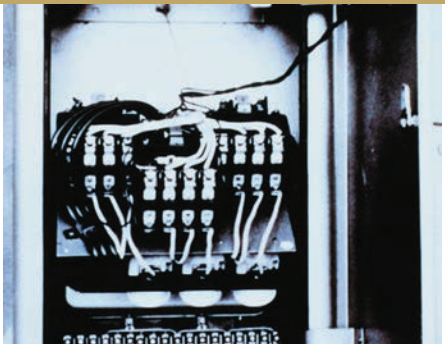
With the lightweight robot LBR iiwa, Kuka set the benchmark in automated assembly of highly complex components.

Milestone **FARO**

Source: Faro

With their Edge mobile measurement arm, Faro brought to court in a measurement technology directly into production.

Milestone **RITTAL**



Source: Rittal

When switching cubicles used to be made individually, Rittal reached a milestone with the series switching cubicle.

is portable measurement arm developed by Faro. This mobile measurement arm has brought the activity of measuring components and installations directly in the production process. In this way, production errors can be detected quicker than with using conventional stationary coordinate measurement technology. The added advantage of this arm is it requires comparatively less investment while its user-friendly operations make the measurement job easy. This makes 3D coordinate measurement affordable for medium-sized firms as well.

House it!

In the mid 20th century, the industry had another need of an hour i.e., housing for the safety of the facility and personnel. Earlier, the companies made a switching cubicle on its own as per their needs with mixed results. Realizing importance of the housing, Founder, Rittal, Rudolf Loh made very first range of switching cubicles, the AE. This was the milestone not only for the firm but also for the whole automation sector. Initially, there were three versions of the model, now the series has expanded to include 35 versions. Since 1971, Rittal switching cubicles have become standard equipment at the Volkswagen (VW) Group. Gradually, further products joined the evergreen AE range. A hit in 1985 was the PS-4000 baying system with 60 accessory components. This well-accepted product became popular globally. Apart from industrial facilities, the company also serves the IT sector. Besides individual solutions for computer centers, Rittal has also been offering the standardized computer center Rimatrix S with a building set concept since 2013.

Source: Rittal

For computer centres, Rittal developed in 2004 the Rimatrix 5 system solution. These series modules for computer centres have all functions.

Powerful laser shows little stamina

Around the same time in the mid 1970s, Trumpf, the family owned business was engaged in building conventional technology for sheet metal working. However, the company came across the news regarding non-contact cutting of sheet metal with laser light and its curiosity grew. In 1979, a 500 W laser from the US was installed in a Trumpf punching/nibbler machine, causing a stir on the sheet metal scene. But, because the US laser suppliers also supplied to the competition, it was clear that the company had to make their own light source. Aided by scientists, the company built a cross-brimmed 900 W laser, but it ran out of steam during cutting.

The firm continued with further research in laser cutting systems. In 1985, Trumpf made a breakthrough by developing in-house CO_2 lasers that attracted huge attention at EMO. Events followed in quick succession. A 20 W compact laser with double-decker construction was suitable for installation in robots. Taking laser technology a step ahead, with the first diode-pumped laser marker in 1998, Trumpf launched diode excitation technology. The following year, the first laboratory disk laser came out and is still the basis of all Trumpf high-power lasers. The latest highlight is the ultra-short pulse laser for industrial mass production. With this, a micro-hole can be made in a match head without the match catching fire.

How a white giant press became a pussyfooter

From microcosm to macrocosm – this is how we can describe the journey of Schuler AG. The presses built by Schuler turned to be a boon for many manufacturers in China and US. This is especially true in case of the press with Twin-Servo-Technology (TST), the latest major technology launch by the company. It

Milestone **TRUMPF** Milestone **SCHULER** Milestone **DMG MORI SEIKI**

Source: Trumpf

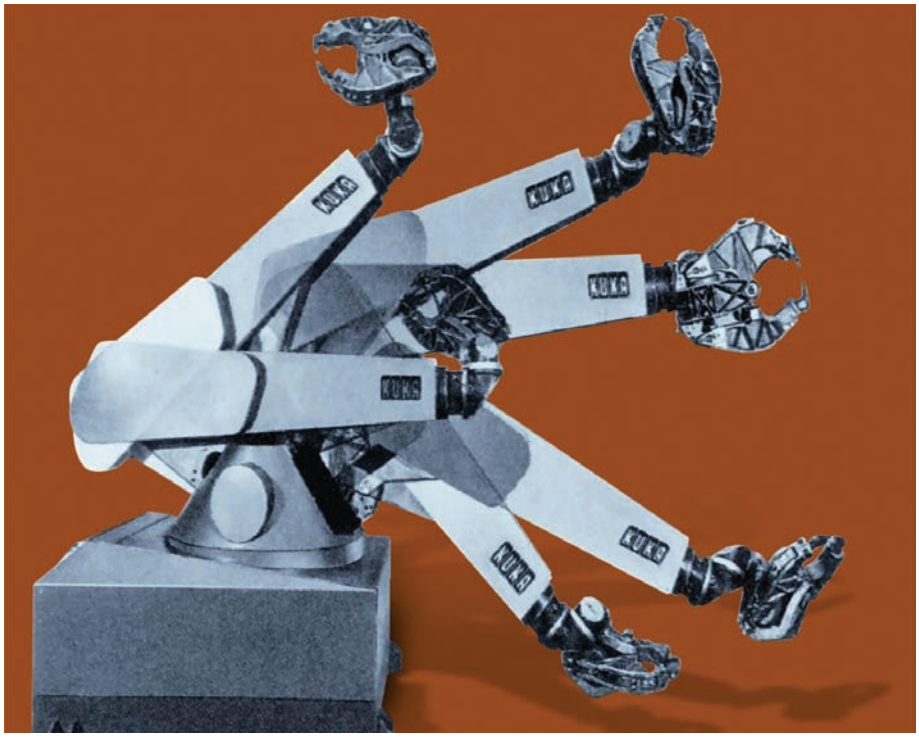
With the Lasercell – the light source is made in-house – Trumpf made the breakthrough in 1985.

Source: Schuler

Forming technology is inseparably linked to the name Schuler. Their Twin-Servo-Technology marks the state-of-the-art.

Source: DMG Mori Seiki

With the DMC 85 V linear high speed vertical centre by DMG Mori Seiki, the linear drive made its breakthrough.



Source: Kuka

After many years of experience with outsourced robots, Kuka made its first own robot in 1973, the Famulus. It did however still have many failings.

is built to be used in forming technology for sheet metal and parts for the automobile industry. Even firm founder Louis Schuler would not have overcome the amazement at everything that the 'big white box' can do. This 16,000 t giant is based on a new drive concept with two decentralized servo-motors in the press table. This enables compact construction and a substantial reduction in noise emissions. In addition, access and stiffness are improved in comparison with previous servo-presses.

Machining technology

As far as machining technology is concerned, DMG Mori Seiki is now doubtless the leader in the world market. Time and again, this machine tool maker, which is closely connected to the Japanese Mori-Seiki group, has led the field with technological highlights and countless world premières. The initial technology developed by the company interested many enthusiasts; however, it had its own limitations. Against this background, the DMC 85 V linear marks a milestone in production technology because it was the first series machine in the world equipped with linear drives in all axes. It worked perfectly. The users were convinced not only by the speed and dynamics, but principally by the highly precise positioning and the workpiece accuracy and surface quality attainable. The DMC 85 V linear, thus, proved those wrong who had long doubted the use of linear drives in machine tool building.

When logistics people think of Linde, they don't think of gases

Linde Material Handling clearly stands for forklifts, although the story began with a Hugo Güldner and his internal combustion engines bursting with power. Carl von Linde, who gave his name to this company, guaranteed the sales of these devices, as he needed them for his refrigerators. In 1959, the firm Güldner presented an invention that wrote technological history: Hydrostatics. Owing to this, the company's forklifts have maintained their outstanding position on the world market for industrial vehicles. The first vehicle that was equipped with this technology was named as Hydrocar. The special point was the hydrostatic power transmission, which enabled continuous big acceleration without gear changes, forwards and backwards, at full motor power.

In 1959, the first Linde forklift was presented at the Hannover Fair. At that time, with hydrostatics, double pedal control and a central control lever, the vehicle named Hubtrac set the standards for driver and operator comfort. Since then, all its successors have been providing the same comfort e.g., the current 39X series manages gears without mechanical reduction. With this the firm expanded into the international market and also developed a complete program of industrial vehicles as part of the KION Group in last few years of the 20th century. In August 2012, KION and the Chinese company Weichai Powers announced an agreement on a long-term strategic partnership.

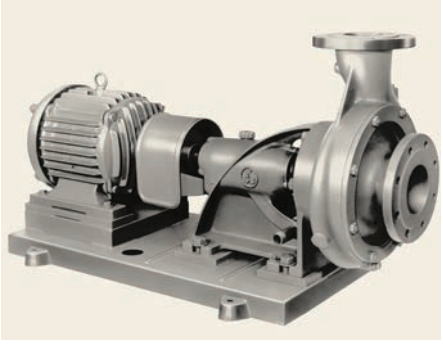
Pumps is another area, where a there was a chance of bringing innovation that matched users' expectations. At the time when each manufacturer made its pumps as it liked, ma-

Milestone **LINDE**

Source: Linde Material Handling

With the Hubtrac, the first Linde forklift with hydrostatics and double pedal controls was presented in 1959.

Milestone **KSB**



Source: KSB

Because users wanted a norm, the Eta series by KSB was summarily chosen as the standard.

Milestone **HANNOVER MESSE**

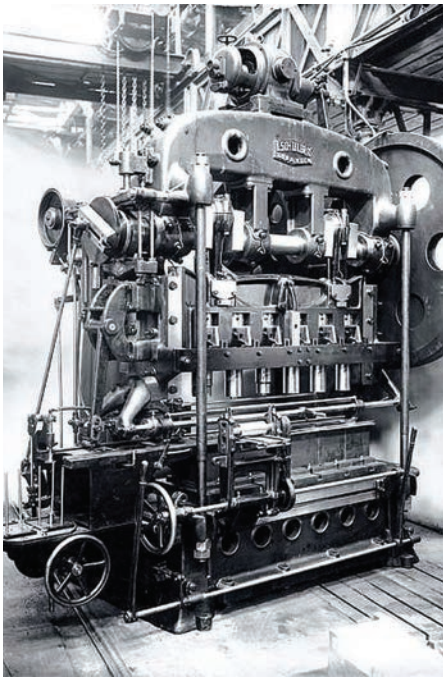
Source: Deutsche Messe

An export fair in 1947 was the first step in a real success story. Today, however, the Hannover Fair is the world's number one.

Source: Deutsche Messe

View of the first edition of Hannover Fairs held in August 1947.

ny users expressed a wish for a norm to which all makers should adhere to. In this scenario, the Eta series from KSB ensured that every pump matches users' requirements. This is how it worked: in each pump, the customer could adjust the external diameter of the centrifugal pump impeller to the operating point by turning. It was thus possible to achieve the required delivery heads with one size of pump using different impeller diameters, which saved substantial amounts of energy. The power consumption was proportional to the fourth power of the impeller diameter.



Source: Rittal

An astonished expert public at the Paris Exhibition of 1900 saw the world's first transfer press, from Schuler.

A range of pumps defines an international norm

This milestone concept has already occurred to KSB in 1911 and was applied in the Monos series of pumps. But the decisive step came in the 1930s when Dr Fritz Krisam categorized the one-stage centrifugal pumps and grouped them together in one production range. Because of their high efficiency, the series received the name Eta, for the Greek letter ή, as we know, represents efficiency in technology. It was launched on the market in 1935.

The fairs

Like KSB, aiming at higher efficiency Hannover Messe started Hannover Fairs in 1947 on the grounds of an abandoned metal factory in Laatzen. The very first fair generated the business of $31.6 million and almost 2,000 orders were placed. The Hannover Fair not only brought the world to Germany, but also went to distant markets with its own 'branches' of the fair, thus making the journey from the first export fair to the first place in the world of fairs. The first fair abroad took place in Shanghai in 1991, with the PTC Asia. Since 2001, the Deutsche Messe with its partners has operated China's biggest fair area, the Shanghai New International Expo Centre at Shanghai. MMI

IN A NUTSHELL

The manufacturing industry has seen various innovations during the last century. However, some of them have left their footprints behind with its immense contributions towards growth of the industry. That's not all; these innovations have also pioneered further research and development. MaschinenMarkt (MM) recognizes and honors these technologies' remarkable contribution towards the global manufacturing industry through the Milestones of the Manufacturing Industry.

ABB:
Drive Technology
Direct torque control for drives

Trumpf:
Laser Technology
First combined punching/laser machine

Schuler:
Forming Technology
First Twin-Servo press

KSB:
Pumps and Fittings
Mother of all norm-pumps

Schunk:
Clamping Technology and Gripping Systems
World's first standardized industrial gripper with wedge hook mechanics

SKF:
Construction Elements
Invention of the double-row self-aligning ball bearing

Linde:
Material Flow
Forklift evolution with hydrostatics

Faro:
Measurement and Testing Technology
Portable 3D measurement system

Kuka:
Robotics
Sensitive lightweight robot as intelligent assistant

Rittal:
Electrical Equipment
Production of the world's first baying switching cubicle, the AE

Deutsche Messe:
Industrial fairs
Hannover Fair – the gateway to the world economy

DMG Mori:
Machining Center
First machining center equipped with linear drives in all axes

Incorporating the Right Solution brings Mutual Success

With the growing demands of high quality manufacturing, together with tight timelines of project deliveries, the manufacturing industry is constantly facing the challenges of working on higher productivity with improved quality. Learn how a customized solution by Blaser Swisslube brought about these improvements for five of its customers.

DIGITAL VERSION

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Incorporating the...

Manufacturing technologies are evolving to support the needs of the industry to ensure optimized quality of components with least possible manufacturing time, which will reduce the overall cost per component and assure optimal process reliability.

The Blaser Swisslube motto 'serving before earning' has a very long history and started back in 1936, when Willy Blaser founded the company. "Three generations later, we are still committed to this theme. Based on this, the Liquid Tool approach has come into play," asserted CEO, Blaser Swisslube AG, Marc Blaser.

Liquid Tool approach

Blaser Swisslube's goal is to optimize its customers' manufacturing processes with the Liquid Tool and to improve their economic efficiency, productivity as well as the machining quality. "In close cooperation with the customers and based on a holistic view of the manufacturing process, Blaser Swisslube presents the possibilities to fully exploit the potential of machines and tools by using the right metalworking fluid which becomes a Liquid Tool. This promise is backed by excellent products, customized services, competent experts and its long experience in the metalworking industry," continued Blaser.

"After careful analysis of manufacturing, we found that there is a great potential to work on the different dimensions of productivity with our competence, which has been generated in the company globally over decades, and be a valuable and reliable partner to customers."

CEO, Blaser Swisslube AG, Marc Blaser

The approach enables customers to exploit the full potential of their machining processes and increase profitability in tangible terms. It is a global approach of the company that ensures mutual success through delivery of value adds and substantial benefits to the customers in sustainable way. This leads to making cutting fluids an investment platform for customers rather than a cost.

"Various tests witnessed at customers' machines have allowed us to become confident in saying that it is feasible to improve tool life in the range of 20–40 per cent and overall productivity in the tune of 8–15 per cent, which in turn has a direct impact on the conversion cost and profitability. Time is the biggest currency. By working on cut time reduction, we can save significantly for customers," averred Managing Director, Blaser Swisslube India Pvt Ltd, Punit Gupta.

The Benefits of the Liquid Tool approach are applicable to all those industries, where metal removal is carried out. Economic efficiency, productivity as well as machining quality are key factors in all industries these days.

Here's a look at five customer stories wherein Blaser Swisslube made customized solutions with the Liquid Tool approach. **MMI**

Nedra Pereira
Senior Feature Writer
Vogel Business Media India
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High performance through water-miscible cutting fluids.

Source: Blaser Swisslube

"Time is the biggest currency. By working on cut time reduction with our Liquid Tool approach, significant savings can be leveraged with high reliability."

Managing Director,
Blaser Swisslube India Pvt Ltd, Punit Gupta

Perfection is a Never-ending Journey!

Subros Ltd, a leading manufacturer in the automotive components sector, incorporated the Liquid Tool approach by Blaser Swisslube and has seen encouraging results. Follow their journey so far in achieving quality improvements in their processes and products.

DIGITAL VERSION

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Perfection is a...

Subros Ltd, founded in 1985, is the leading manufacturer of thermal products for automotive applications in India. The company has grown from a capacity of 15,000 AC units in 1985 comprising of largely an assembly operation, into the largest and only integrated manufacturing unit in India for auto air conditioning systems. It manufactures compressors, condensers, heat exchangers and all connecting elements required to complete AC loop and caters to all segments viz. passenger vehicles, buses, trucks, refrigeration transport, off-roaders and railways.

"According to Blaser Swisslube India, we can explore the other aspects of Liquid Tool to increase competitiveness in manufacturing which will help us to make our machining processes more stable and secure."

Head – Operation, Subros Ltd, Lalit Mohan

According to Head – Operation, Subros Ltd, Lalit Mohan, the company firmly believes in enhancing its operations to bring about enhancements that benefit both the company and its customers. He affirmed, "Our mantra for continual improvement is 'Perfection! It is a never ending journey at Subros'. This has been stated by our Chairman, Ramesh Suri."

Challenges before Liquid Tool

The company wanted to reduce the costs of metalworking fluids by implementing improved metal working fluids and better processes in shop floor.

Speaking on the issues the company faced prior to working with Blaser Swisslube Mohan asserted, "Productivity with a stringent quality parameter was the challenge for us before moving to Blaser Swisslube. As cylindricity was always a concerned area with high speed VMC and high end PCD tools. And sustaining the high quality parameter was a compromise on productivity."

Blaser Swisslube joined cumulatively with the company and decided to use a stepped approach in optimizing processes for the company. Gupta stated "Our research & development team works in close collaboration with our customers to constantly develop new state of the art formulations, which can assure high performance with high reliability."

For Subros, the Liquid Tool approach was first used in product testing. A team consisting of members from each company was set in place and it was then decided to test and implement Blasocut 4000 Strong first and then upgrade to Blasocut BC 20 SW.

Subros Ltd

Industry
Automotive Components

Production of
Auto air conditioning system

Operation
Facing, boring, drilling

Material
Aluminum

Objective
Reduction in cost per component

Success guaranteed

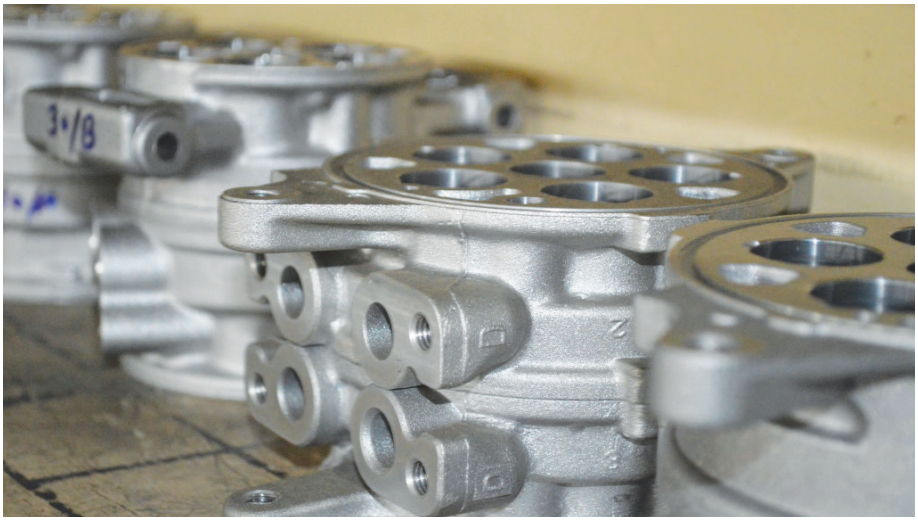
Both the teams had studied the whole process for a long enough period and developed an effective solution with a centralized emulsion and feeding system. Additionally, there was a close follow up by both the teams to achieve the desired target.

"The outcome of the tests was promising. Owing to the implementation of good practices of a concept for emulsion top-up and excellent sump life of Blasocut products, the oil cost per component was reduced by 30 per cent with improved machinability. It also resulted in reduction of annual disposal volume by 210,000 liters," declared Mohan.

The company is very happy with the results and believes that its relationship with Blaser Swisslube will be a long and continued one. "We would recommend using formulations from Blaser Swisslube in order to achieve significant reduction in overall cost," concluded Mohan.

Products manufactured by Subros Ltd.

Source: Subros Ltd



Uncovering the Potential of Continuous Improvements

KA Industries machines parts used in the automotive, valve and engineering components sector. As part of its drive to improve the overall profitability, the company looked at a solution by Blaser Swisslube. Learn how it improved its productivity and reduced its tool cost.

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Uncovering the...

KA Industries (formerly part of HI-Q engineers) is the brainchild of R Kalaiarasan who has over thirteen years of rich experience in the field of precision CNC machining of components used in the automotive, valve industry and engineering components.

Since the inception of the plant, the company was focusing on continuous improvements. The recent slump in the automotive industry had seriously affected the company.

Improvement despite adversity

In addition, machining of precision components comes with several challenges. Proprietor, KA Industries, R Kalaiarasan expressed, "Machining of precision components has always been a challenge owing to the desirable surface finish quality, close tolerances and cost incurred in procurement of expensive cutting tools and accessories."

"We feel that the Liquid Tool concept is unique and has potential of bringing impressive returns. Another project is going to be initiated soon to reduce the cycle times of another component and generate substantial benefits for our plant."

Proprietor, KA Industries, R Kalaiarasan

The company was looking at various ways to increase the productivity of their machines. During one of the interactions, the Blaser Swisslube India team gave the company the idea of the coolant contributing to increased productivity.

The project towards achieving this goal was initiated with a clear focus on gaining improvement in cutting efficiency. KA industries decided to invest in an innovative formulation from Blaser Swisslube for the trials.

Once the formulation—B Cool 9665—was implemented for trial, the results of the tests were indeed excellent. "Thanks to the high performance of B-Cool 9665, it was possible to reduce cycle time for the turning application and achieve nearly 21 per cent increase in productivity by only changing the coolant," exclaimed Kalaiarasan.

After establishing the improved cycle times, a joint study was conducted to monitor the tool life. The reliability of B-Cool 9665 made it possible to achieve a 31 per cent saving in tool costs. The firm feels that the investment made by using the Liquid Tool was more than justified with substantial returns.

Machined components produced at KA Industries.

Source: KA Industries

KA Industries

Industry
Automotive Components

Production of
Tappet valves, Adaptors

Operation
Turning

Material
Chilled cast iron

Objective
Reduction in cycle time, cleaner machines and lower cost per component

Future Forward

The company feels that the potential for the use of this approach has not been fully exploited yet. With the ongoing collaboration, another project is going to be initiated soon to reduce the cycle times of another component which will again, in turn, generate substantial benefits for the plant and will help in stabilizing and streamlining our processes. "Our view on metalworking fluids has changed completely. We feel that Blaser Swisslube Liquid Tool concept is unique and it has potential of bringing impressive returns," asserted Kalaiarasan.

Blaser mentioned, "Blaser Swisslube's goal is to optimize its customers' manufacturing processes with the Liquid Tool and to improve their economic efficiency, productivity as well as the machining quality. Interestingly, after careful analysis of manufacturing we found that there are great potentials to work on the different dimensions of productivity with our competence which has been generated in the company globally over decades and be a valuable and reliable partner to customers." MMI

Working Together for a Brighter Future

Bharat Gears Ltd is one of the world leaders in gears technology and India's largest gear manufacturer. Take a look at how Blaser Swisslube together with the company brought about a solution that improved its productivity and was compliant to EHS standards.

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Working Together...

Bharat Gears Ltd

Industry
Automotive Components

Production of
Gears

Application
Hobbing

Material
Alloyed steel

Objective
Dimensional consistency, reduction in cycle time, lower cost per component and minimal smoke

Bharat Gears Ltd (BGL) is a major global supplier of automotive gears and heat treatment furnaces. The company manufactures a wide range of ring gears and pinions, transmission gears and shafts, differential gears, gear boxes majorly for the automotive industry in manufacturing facilities across India.

The company attributes its success to its strong teamwork, continuous R&D and the dedication and commitment of each and every member of the BGL family to deliver unsurpassed quality and reliable products and services to the total satisfaction of all its customers.

"The formulations developed and manufactured by Blaser Swisslube are absolutely safe for humans and the environment. This inspired us to start working with them as partners."

Corporate Head – Operations, Bharat Gears, Sandeep Bathla

Evolving to stay ahead

In its relentless efforts to meet and exceed the needs and demands of its customers, the company focuses on continuous improvements. The need to improve productivity and compliance to EHS standards were the initial triggers for looking for a solution that fit.

"We came in contact with Blaser Swisslube team and understood that there is a possibility to enhance productivity through Liquid Tool and also that the formulations developed and manufactured by Blaser are absolutely safe for humans and the environment. This inspired us to start working with them as partners," explained Bathla, informing on the company's decision to incorporate the Liquid Tool approach.

Objectives achieved

The company aimed to improve hob life and reduce cut time with improved dimensional consistency and surface finish in an aim to improve cost savings. The experts from Blaser Swisslube initiated a joint project along members from BGL to use a high-performance vegetable oil-based formulation, Vascomill 35, with clear focus on achieving the improvement goals.

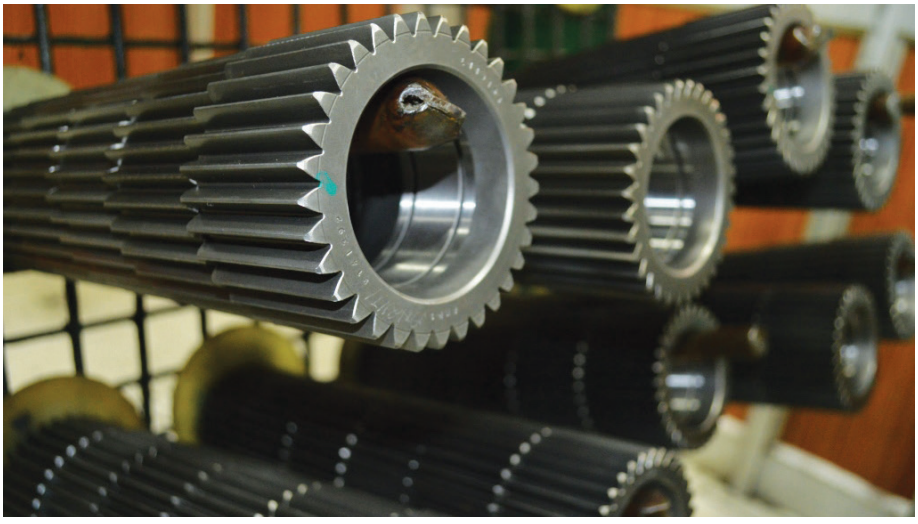
After thorough analysis of the process, it was possible to improve the dimensional consistency and surface finish with substantial reduction in cut time. The wear pattern on the hob was uniform. The minimal smoke generation during hobbing operation brought smiles on the faces of the workforce. The cut time was reduced by 33 per cent on the costly machine

Bathla is happy with the results but feels that this is only the beginning. He concluded by saying: "The journey towards our improvement goals is still not complete as there are numerous opportunities available. The Blaser experts and team of Bharat Gears are working together on further exploiting the potential of the Liquid Tool in order to understand and feel its full scope."

Speaking on the importance of bringing out solutions that are environment-friendly, Blaser averred, "Over forty years ago, our company designed a concept—Blasocut—that works in perfect harmony with nature. It enables colonization by the stable primary bacteria, which eliminate all other bacteria by taking over the available nutrition, thus limiting their own growth as well. The result is long-term emulsion stability and one of the safest formulations to use across the world for operator's health and environment. By avoiding tons of bactericide, we contribute, along with our customers, towards a greener planet." MMI

One of the products Bharat Gears Ltd manufactures.

Source: Bharat Gears Ltd



Collaborating to Gain a Winning Edge

Vijaya Auto Products, an ISO 9001:2008 & TS 16469 certified company, wanted to reduce costs and enhance the productivity of the existing resources without compromising the quality. Review how it cumulatively with Blaser Swisslube brought changes to achieve its goals and more.

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Collaborating to...

Established in 2001, Vijaya Auto Products is a professionally managed company that deals with the manufacturing of precision-machined components. The company strives to promote leadership in quality-machined components for their various customers in the automotive, hydraulics, oil & gas, and medical industry.

"Continuous improvement in process, tooling is very important as this proportionally effects the delivery times, quality and profitability."

Proprietor, Vijaya Auto Products, Praveen Jayaram

Speaking on the company's philosophy, Proprietor, Vijaya Auto Products, Praveen Jayaram asserted, "We at Vijaya Auto Products believe in transparency, customer satisfaction and integrity. We are pledged towards redefining quality and as a team we epitomize passion at work."

Need for improvement

Voicing why the company needed to adopt new technologies, Jayaram stated, "Having customer satisfaction as our goal, the focus is always to redefine the quality at competitive prices. Thus, there was always a need for the company to reduce the costs and increasing the productivity of the existing resources without compromising the quality."

In the course of a test in collaboration with Blaser Swisslube, the conventional coolant previously used was replaced with Blaser Swisslube's formulation Blasocut BC 935 Kombi to achieve the defined goals.

According to Blaser Swisslube, the customer's perspective can give immense insight to improving processes. Gupta connoted, "Understanding the manufacturing processes from customer's eyes and to deliver a formulation which is mature in all respects for high economic efficiency, superlative surface quality and high productivity is the key."

Precision components machined at the facility.

Source: Vijaya Auto Products

Vijaya Auto Products

Industry
Precision-machined components

Production of
SIG 19

Operation
Milling and reaming

Material
Alloyed steel

Objective
Cutting tool cost reduction

Accomplishing results one step at a time

On implementing the solution from Blaser Swisslube, the company found the results overwhelming. The right coolant helped it to not only reduce the cut time but also improve the average tool life by 24 per cent, which was resulting in an annual saving of tool cost by 19 per cent in total. Thus, an increased production output was achieved with better quality.

Being happy with the results so far Jayaram expressed, "It is still an initial stage for us with Blaser Swisslube, but this collaboration has shown us a lot of positive improvements. We hope to see much better results in days to come. The step forward for us is initiating more projects to reach the next milestone in terms of further tool cost reduction and improvement in cut time. We are sure that continuous involvement of Blaser Swisslube team with our team will be able to reach many more successful milestones such as these." MMI

Setting Milestones for Triumph

Carraro India is an international group that leads the world in highly efficient, eco-compatible power transmission systems. Seeking to disseminate and consolidate a culture of safety, the company joined hands with Blaser Swisslube to reduce its coolant disposal load.

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Setting Milestones...

Founded in the 1930s, Carraro India, started as a manufacturing business focused on the production of sowing machines and equipment for agricultural works, over the years, the company has expanded and enjoyed increasing fame, becoming one of Italy's most important tractor manufacturers. From 1970s onwards, the company concentrated its core business elsewhere; specializing in parts and becoming a key player in the world's manufacturers of drive systems for agricultural and earth moving machinery.

"Thanks to the stable properties of Blasocut and to the continuous involvement of the Blaser Swisslube team for valuable suggestions and guidelines to stabilize the process, we have been able to sustain continuous reduction in tool costs."

Manager – Maintenance, Carraro India, Sachin Khadke

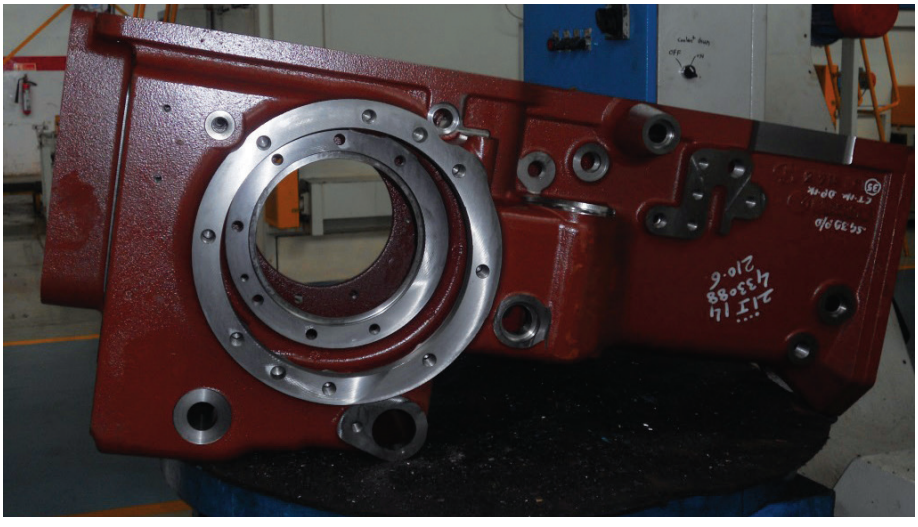
Looking to improve its processes in the disposal of coolants and the use of safer coolants from the health and environment perspective, the company sought a solution from Blaser Swisslube. Manager – Maintenance, Carraro India Ltd, Sachin Khadke disclosed, "We also work to preserve and improve the working conditions, health and safety of the employees on a continuous basis. Thanks to the unique bio-concept of the Blaser Blasocut products, it was possible to improve the sump life by four times, reducing the disposal volume by 52,500 liters and reduce the load on effluent treatment plant. This resulted in disposal savings of ₹4.2 lakhs."

Nature-friendly solution

Gupta gives insight into the reason why Blaser Swisslube is able to provide customized solutions for its customers: "Research & development at Blaser Swisslube AG, is one of the largest in the world for metal working fluids in competence, is the backbone of our value delivery structure worldwide. All the formulations being developed are put to the toughest tests on various machining processes for performance optimization at our technology center before reaching the end user. This support gives us the energy to deliver the Liquid Tool to customers in a committed way."

Hunter gear box housing manufactured at the facility.

Source: Carraro India



Carraro India

Industry
Automotive Components

Production of
Transmission systems

Application
Grinding and machining

Material
Cast Iron

Objective
Reduced disposal load

The bio-concept of the Blasocut product line helped the company to boost the morale of the workforce owing to a healthier environment in the shop floor. "This couldn't have been possible without the continuous involvement of ever supportive team of Blaser Swisslube India. The team has been active in creating awareness about the workplace safety and benefits of using formulations without bactericides, which helped our operators and other shop floor people feel good and motivated to work in a safe environment," continued Khadke.

Another project leading to success

Apart from successfully making the work environment safer, another collaboration with Blaser Swisslube proved beneficial for the company. Its Production & Maintenance department also saw great success with a tool life improvement of 20 per cent in the machining of gear box housings.

Speaking on how the Liquid Tool approach helped the company, Khadke stated, "We feel proud to use solutions from Blaser Swisslube and appreciate their way of looking into our manufacturing processes from our eyes. Their team has always been preferred for their high class service and we look forward to work with them more deeply in order to achieve more milestones of mutual success. We would like to see other dimensions of Liquid Tool as well in our manufacturing processes in days to come."

MMI

Global Branding is the Need of the Hour

On the background of upcoming event India Engineering Sourcing Show (IESS) IV, Chairman, Engineering Export Promotion Council, India (EEPC) India, Anupam Shah talks about future of Indian exports in the field of engineering. He believes that the 'Make in India' campaign has generated enthusiasm amongst Indian SMEs. Excerpts of the interview…

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Global Branding...

What enthusiasm has Prime Minister Narendra Modi's 'Make in India' campaign generated amongst Indian engineering firms particularly MSMEs? How is the response of the manufacturing industry towards this initiative? And, how do you see India's exports growing in the near future?

Anupam Shah: The best aspect of 'Make in India' is its magnetic appeal that it is resonating around the world. All the major manufacturers are exploring opportunities arising in India. Until now, the impediments, which had kept these opportunities at shore, are now under the focus of various reforms and policy initiatives to improve manufacturing and exports environment. 'Make in India' is the answer to one of the biggest challenges that SMEs face i.e., international branding and promotion. We know how China pushed its manufacturing and exports competitiveness. Thanks to these efforts, China's GDP is expected to surpass the US by end of this year.

"'Make in India' is an answer to one of the biggest challenges that SMEs face i.e., is international branding and promotion."

Chairman, EEPC India, Anupam Shah

However, for India, there is still a long way to go, because we do not have the option of pursuing such an unnatural path of growth. Our foundations are more organic and have emerged out of our inherent qualities and vision of democracy upholding economic freedom.

It is the global branding, which is the need of the hour. For instance, I would like to highlight the findings from our recent EEPC India study on the pumps and valves sector. It revealed that although China is far ahead of India in almost all the markets, as the most competitive supplier, India has managed to emerge itself as the most competitive in the mentioned countries and products. (Ref to table)

It is not only in the pumps and valves industry, we are also observing increasing growth in the machine tool segment. Indian machine tools manufacturers have started giving tough competition in the Chinese markets to their Chinese counterparts themselves. Thus, it is quite reasonable to assume that Indian engineering products remain un-branded in many parts of the world. Hence, 'Make in India' has brought most encouraging avenues for SMEs in the field of engineering.

SMEs would definitely want to utilize this momentum and we are hopeful that the current government will not let this momentum subside until we achieve our targets.

EEPC is organizing IESS IV next month. How will this show lay emphasis on this 'Make in India' campaign?

Shah: IESS IV is the only 'Indian Show' and the flagship event of the Ministry of Commerce & Industry, Government of India, showcasing 'Made in India' brand globally. Its main objective is to display latest Indian engineering products and capabilities on a global platform. IESS IV will leverage the extensive partner network of EEPC India and various central and state government agencies. The event is promoted extensively among foreign government agencies, trade promotion bodies and other international trade promotion bodies to achieve global exposure.

The show will focus on challenges that the manufacturing industry is facing and bringing international stakeholders on a single platform to explore and highlight emerging opportunities out of them. The event is hosting UK's Smart City Project Delegation and Smart City Summit that are among the most current theme under 'Make in India' initiative. Additionally, special displays of new age technologies have also been planned for the global audiences. In effect, IESS IV by its very nature will promote 'Make in India' to global audience.

How will the show help foreign companies that are looking to invest in India mitigate risks and create sourcing opportunities from Indian companies?

PERSONAL

Hannover Fairs enjoys outstanding reputation as a source of products, technology and know-how. This makes it the ideal place to promote national economic interests by strengthening India's market standing in international circles.

Anupam Shah

Shah: Apart from being recognized as one of the major sourcing event in India, it also enjoys the backing of Ministry of Commerce, Government of India. It is essentially a partnership program that aims at developing relationships and collaborations in the field of promotion of manufacturing, international investments and joint ventures. It is the largest confluence of international delegation under one roof for the manufacturing industry. Moreover, it creates a well informed environment for business decision making process through transparent trade facilitation procedures through EEPC India and Ministry of Commerce & Industry.

The exhibition hosts delegation and acts as one stop shop for their sourcing requirements. It is worth mentioning that the venue of the event has also been chosen in the commercial capital of India. International delegates have an opportunity to explore further, plan their business trips in and around this region. Here, it is important to note that the region surrounding Mumbai, Gujarat and Maharashtra has acquired global attention for Delhi-Mumbai Industrial Corridor. KPMG has accorded this project among 100 most innovative mega projects. The corridor has also attracted buzz of investment activities recently, which will be much of interest to the international buyers and professional visitors.

Thus, in many ways, foreign companies will be able to avail this unique opportunity to forge rewarding partnerships with Indian counterparts and strengthen future cooperation.

India is now a partner country for one of the biggest engineering show – Hannover Messe. What positive impact of this partnership do you see on the Indian exports in terms of attitude towards made in India products and solutions, acceptance in the global market, etc?

Shah: If Hannover Messe is the biggest engineering shows, India is the biggest engineering opportunity. It is the top industrial technology expo and a leading dialogue hub for the industry and government leaders organized by Deutsche Messe AG. The event enjoys outstanding reputation as a source of products, technology and know-how. This makes it the ideal place to promote national economic interests by strengthening a country's market standing in international circles.

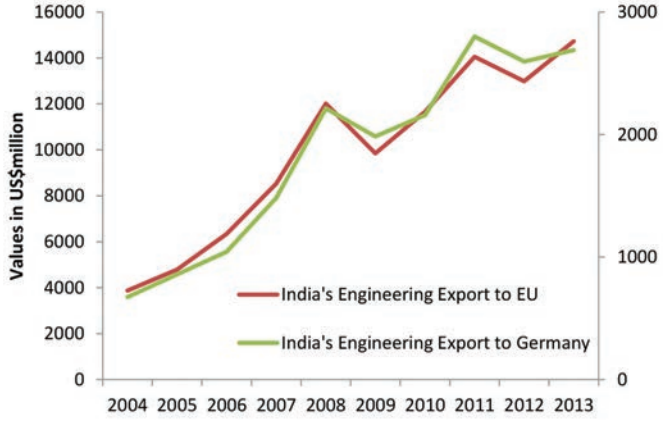
When India was a partner country at Hannover Messe 2006, it led to generation of business over $1.3 billion. In 2015 too, the special status of the 'Partner Country' at Hannover Messe will automatically provide a high-profile platform for the presentation of our innovative industrial and business achievements and its fitness for the future. The resulting bilateral dialogues between the industrial and political communities will open doors at every level. Moreover, this opportunity will create unrivalled opportunities for scientific endeavors, businesses and technologies. MMI

Table: India has managed to emerge itself as the most competitive in the mentioned countries and products.

Product Description	Country
Pumps for dispensing fuel/lubricants, of the type used in filling-stations/garages	Canada
Hand pumps Nes, O/T those of subheading no. 8413.11 or 8413.19	Russian Federation
Fuel, lubricating or cooling medium pumps for Int comb piston engines	Burkina Faso & Brazil
Concrete pumps	Sri Lanka
Parts of pumps for liquid whether or not fitted with a measuring device	Madagascar

Source: EEPC India

Fig 1: India's Engineering Exports to EU and Germany



Source: EEPC India

The interview was conducted by:
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Regulating Business with a Robust Approach

The overall Indian market conditions have been uncertain in the last couple of years. Sailing through such a scenario requires a rugged business approach. Brose India has not only entered but also established itself in the Indian market in the difficult market conditions. Here, we chart the roadmap of the company's success in India. Read on...

Brose, the German auto component manufacturer, started its journey in India in 2006 with development and sales activities. Talking about the entry in the Indian market, Executive Vice President, Brose Group, Kurt Sauernheimer said, "The Indian market is very unique. It has a large number of global and domestic auto component suppliers. Also, it is a highly price-competitive market where customers demand global quality standards at local costs. Managing these sides of the equation was a unique challenge for us. For this, in 2008 we started with an engineering center in Pune."

Swati Deshpande
Assistant Editor
Vogel Business Media India
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Challenging Indian market

However, the Indian auto and auto components sector is experiencing uncertainties for the last couple of years. "This has put considerable pressure on the entire auto industry in India including suppliers like us. But our company is not only dependent on the Indian market as we also focus on exports. Additionally, we provide engineering services to our customers. In adverse conditions, this balanced business approach has helped us as we were less impacted by the economic slowdown," averred President, Brose India, Ashwani Aggarwal.

With the objective of serving the Indian as well as global market, Brose India opened a production facility in Pune for window regulators in 2011. "With this step, we mapped the entire value chain in India, from development and procurement to final assembly and delivery," noted Aggarwal.

Source: Brose India

Brose India's state-of-the-art facility located at Pune.

Exports

"This facility started with exports of window regulators to Europe in 2011. Consequently, we also started exporting our manual seat height adjusters to Thailand. We added the production of manual seat height adjusters for an international tier-1-supplier, followed by the start of production of two more kinds of window regulators for Indian automakers that operate globally. Though our primary objective is to serve our domestic customers from this facility, we will continue to

"The Indian market is a highly price-competitive where the customers demand global quality standards at local costs. Managing these sides of the equation was a unique challenge for us."

Executive Vice President, Brose Group, Kurt Sauernheimer

"Many auto brands are looking to make India an export hub. This would be a favorable situation for the Indian auto market."

President, Brose India, Ashwani Aggarwal

explore export opportunities that make sense for us to pursue," stated Aggarwal.

He further added, "Many auto brands are looking to make India an export hub. This would be a favorable situation for the Indian auto market. On one hand, OEMs would be able to reduce the cost of vehicle production while the auto component manufacturers like us would benefit from the economies of scale in catering to higher vehicle volumes. This brings forward the entry of high-level technology like our mechatronic components and systems in the production of high-volume cars."

Innovation

Apart from various seat height adjusters and window regulators, the Pune plant also produces door latches. By the end of this year, the company is expected to industrialize side door latches.

Moreover, the company has also introduced lightweight doors made of in carbon fiber reinforced plastics (CFRP) in order to make the car doors lighter. "We see great potential in CFRP used for lightweight door structures that assume even more functions than currently possible with plastic solutions. Our CFRP prototype saves almost 4 kg of weight per door compared to aluminum and as much as 11 kg compared to steel," informed Aggarwal. According to experts, door systems made of CFRP will be viable for high-volume production by 2020. "Also, OEMs in India are continuously evaluating such technologies and hopefully will adapt these as the market develops further. This gives Brose an edge as we are ready to serve our customers with weight optimized solutions. The consumer in the Indian marketplace is extremely value conscious, so I believe that we will gain further acceptance of our innovative products," he added.

Source: Brose India

Window regulator being assembled in the Brose's new facility in Pune.

IT Support

Apart from various innovative products and solutions, the company also offers IT support to its group. "We mainly work in the areas of SAP software development, electronic document exchange, customer portals administration, PC client services, software packaging, data backup, 24x7x365 systems monitoring and escalation services. Additionally, we also work in areas of engineering IT services that are required by our engineering departments namely computer aided design, electronics and simulation as well," continued Aggarwal.

New facility

In order to handle the whole gamut of services that the company offers, Brose has further expanded its operations in India by moving production into a new facility that is spread over approximately 46,000 sq ft. "The manufacturing floor space of this new facility is three times bigger as compared to the previous space," informed Sauernheimer. "The new facility will help us increase the company's range of locally manufactured products and further enhance the local value addition to product development," hoped Aggarwal. This state-of-the-art facility features new testing and prototyping equipment and a walk-in climate chamber. These advanced features will help the company enhance its product development capabilities.

Talking about the investment made in India, he noted, "It is one of our core values that we produce and deliver high-quality products that meet international standards. Therefore, we invest in high-end technology for production."

In addition to the advanced manufacturing capabilities, the facility also houses a laboratory for validation testing to further support domestic business development.

The company has also standardized its production processes globally. For example, manufacturing technologies such as clinching and riveting are standardized at all the Brose plants across the world.

Conclusion

With its technological edge, Brose's products have been well-accepted in the Indian and global market. "This is one of the reasons why we have expanded our manufacturing plant. With our innovative products, state-of-the-art production technologies and strategic investments, we aim to provide a long-term partnership to our customers even in the future," concluded Sauernheimer. MMI

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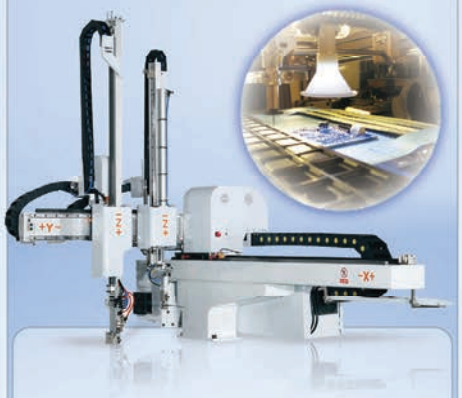

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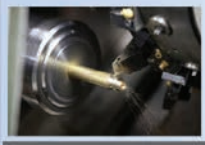

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Medical Shapes a Shop

Medical job and contract shops face various challenges—some unique to the market they serve—that push them to become more efficient. Learn about the efforts this shop has made to clear the hurdles it has encountered along the way.

Machine shops are shaped by their customers and 3D Medical Manufacturing in Riviera Beach, Fla., validates this idea. As its name suggests, this shop serves exclusively to the medical industry. Specifically, it manufactures implantable components, electromechanical assemblies & surgical devices and drilling instruments for a variety of medical customers. Customer demands as well as challenges inherent to serving the medical market have influenced not only the equipment that the company has purchased over the years, but also the shopfloor practices and business strategies it has adopted to become more competitive.

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Senior Editor
Modern Machine Shop
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Medical Shapes a Shop

Challenges faced

Talking about this business, Executive Vice President, 3D Medical Manufacturing, Joe Davis highlighted two tough challenges that today's medical manufacturing shops face. The first is process validation. In recent years, the US Food and Drug Administration (FDA) has become more proactive in inspecting medical machine shops to validate their machining processes. This takes time and money on the shop's end. And the inspection goals can be as detailed as ensuring that a CNC machine's software is performing as it should be (For example, it might be necessary to prove that the M code for turning on a machine's spindle achieves the correct rpm via testing with a tachometer). In fact, re-validation is necessary even if the machine is moved a few feet to a new location in a facility.

Source: mmsonline.com

3D Medical Manufacturing has 48 Swiss-type lathes in addition to five-axis machine tools, wire EDM units and robot-loaded CNC grinding machines.

The medical OEMs are feeling the same pressure. That is why once a machining and manufacturing process for a new component is established, it can be very burdensome to make a change to that process and re-validate. This traps medical machine shops in an innovation paradox. After gaining experience in running a job, a shop may find ways to manufacture a component more effectively. Davis says that shops can make small changes without notifying the customer to have the process re-validated, such as small modifications to speeds or feeds, or perhaps using a different grade cutter. However, large changes that might affect the integrity of the part must be re-validated (such as suggesting a new coolant or part-cleaning technique). And because re-validation can be tedious for shops and medical OEMs alike, the OEMs are not apt to consider a process change unless it will result in a significant improvement in cost, time, etc.

The second challenge shops face is pricing

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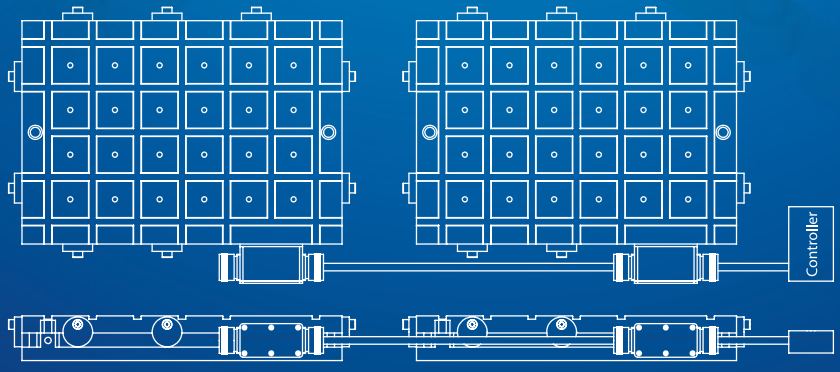

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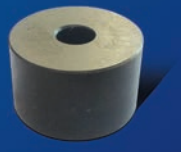

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competitiveness. The Patient Protection and Affordable Care Act (aka Obamacare) includes a new tax on medical devices; therefore, medical device OEMs are looking for suppliers that offer competitive cost advantages for the parts and assemblies they provide. Whereas, years ago OEMs were likely to stick with component suppliers that delivered the requisite quality at a competitive price and on time, today there is more pressure on shops to decrease prices.

Medical devices and components are becoming increasingly complex, so shops clearly require advanced machining equipment to deliver the requisite geometric accuracy and excellent part appearance that medical OEMs demand. However, the challenges of serving the medical industry are spurring shops such as 3D Medical Manufacturing to find other ways to become more competitive.

Source: mmsonline.com

FIGURE 1: The shop prepares job carts like these to streamline setups. These carts contain cutting tools, hand tools, gages, instructions and virtually everything else required to set up a machine for a new job.

Medical experience

3D Medical Manufacturing is led by Joe Davis and his brother Jim Jr, who grew up in the metalworking business, working at their father's machine shop in 1970s and at a shop owned by one of his friends. Both brothers received manufacturing engineering degrees and subsequently started their first medical machine shop in 1987. After selling that business, they started 3D Medical Manufacturing in 1994. The business currently has 265 employees and two facilities—one in Florida and other in New Jersey.

The Davis brothers were early adopters of Swiss-type lathes, and they continue to tap the advantages that this multi-process platform offers. The shop currently has 48 Swiss-type machines from Marubeni Citizen-Cincom as well as five-axis machine tools, wire EDM units and automated CNC grinding machines. However, it also has a wealth of non-machining processes in-house, such as citric and nitric passivation, vacuum heat treating, laser welding, laser marking, media blasting and shot peening. It has electronics test equipment and a Class 7 clean room for electronics assembly, too.

The shop finds great value in being vertically integrated in this way. Having complete in-house control over these processes ensures it will not have a vendor change a validated process without alerting the shop. In many cases, it can perform the service less expensively, too. In fact, once the price of a contracted service begins to increase, the shop will consider bringing it in-house. For instance, electropolishing and titanium anodizing are likely to be the next processes the shop will add to its in-house repertoire.

Vertical integration is only one way the shop is able to meet the challenge of being a successful supplier to the medical industry. Here are three other ways:

Setup time reduction

Because the shop's average lot size is only 340 pieces, it has to be proficient at setups and, in turn, effective at scheduling. By carefully planning job sequence, the shop is able to run like jobs together on a machine to minimize the number of tools that must be changed during a set up. Scheduling also makes best use of the shop's limited amount of setup personnel, so machines are not down for extended periods of time waiting for a setup person to become available.

According to Vice President – Manufacturing, 3D Medical Manufacturing, Eddie Peña, Swiss-type lathes, can take more than seven hours to set up, which is why the shop often holds kaizen events to determine how to streamline setup of those machines. For one recent event, the shop brought a well-rounded team together to study and improve the existing process. This team included Peña, the CNC Swiss supervisor, Swiss setup machinist, tooling and pre-kitting specialist, and manufacturing engineer.

The team analyzed the original set up, which included taking video, in order to document not only every step of the process, but also every physical step a setup person had to take during that process. This led to the development of the complex 'spaghetti chart' (ref Fig. 2). This chart illustrates the setup person's paths to complete the task. Total time for the original setup was just less than 6 hours, and the setup person walked a total of 5,170 ft. Reviewing and revising this process yielded a faster setup time of 3 hours 41 minutes with only 1,125 ft of walking distance, as illustrated in the other more streamlined and 'cleaner' spaghetti chart (ref Fig. 3). One significant change was the addition of job carts to the setup process. Now, all documentation, tools, gaging and any other necessary equipment is pre-configured into carts that are staged for setup personnel to access (ref to Fig. 1).

Tooling control

3D Medical Manufacturing is currently on its second iteration of a tool vending system from MSC Industrial. This system enables the shop to accurately track every nondurable tool for each job while, providing daily tool usage reports for those jobs. This enables tight cost control and ensures that the shop never runs out of the tools it needs, which was a problem in the past that led to extended machine downtime and high next-day shipping charges. The vending system automatically reorders tools once a specified minimum inventory level is reached, and the shop's tool crib manager reloads the tools

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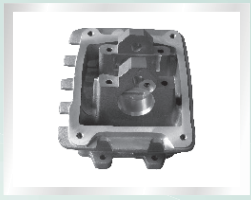

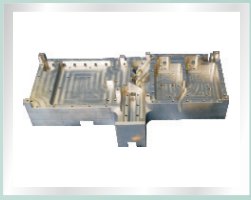

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when they are delivered.

However, this system also serves as an important problem-solving device, Peña notes. He says each job has a maximum number of tools that an operator can pull. The system locks out operators who attempt to pull a tool beyond that limit and notifies the supervisor of the situation. That way, the supervisor can work with the operator to determine why tools are breaking or wearing sooner than expected. In some cases, the operator can precisely explain the problem, meaning a change to the process might be warranted. In other cases, the operator might be unsure of the problem. Therefore, the notification turns into a teachable moment, because the supervisor can help the operator pinpoint the issue and remedy it. The shop also has expanded this concept to its inspection devices, some of which are supplied by customers. This eliminates time wasted looking for special gages, for example, and ensures accountability for those devices.

Source: mmsonline.com

The shop has implemented a similar vending system for its inspection devices.

Kanban

The kanban inventory system that the shop has established for its largest customers was an eye-opener. At the time of my visit, the shop had approximately $4 million in pre-packaged inventory ready to ship to customers in the lot sizes they commonly require.

Davis explains that this represents an atypical strategy for most shops, but it makes sense for 3D Medical Manufacturing. In the past, customers would have the shop quote small batches to cover their needs over a short time frame (so they would not have to hold too much inventory themselves). This made scheduling challenging because the shop wasn't sure when an order would be placed and what the lot size would be. Plus, customers that encountered an unforeseen spike in part requirements would place emergency orders that needed to be filled faster than normal, disrupting job sequence.

By maintaining a level of pre-packaged inventory, significant as it is, the shop can more effectively plan work because customers place their orders far in advance. Davis says the clearer product forecast also enables him to better plan for the addition of new equipment and personnel.

For customers that commit to large orders, the shop agrees to stock an established amount of pre-packaged, finished-parts inventory as well as raw material in cases where special alloys are specified. When inventory levels are reduced to a certain point, a card is pulled and scanned to notify production planners to introduce that job into the schedule.

The key to the success of this system is developing long-term contracts with customers that might run 9, 12 or 16 months. Davis says the shop develops detailed customer contracts because there are medical OEMs that want to establish this type of relationship with a vendor, but do not know how to do it. The shop's contract specifically explains what both parties are committing to so the customer never runs out of the components or assemblies it needs and the shop will not have to sit on inventory for an extended period of time.

Conclusion

As Davis notes, it is all about making customers happy. 3D Medical Manufacturing is willing to carry a high level of inventory to ensure that. But the shop applies this concept in reverse by setting up similar relationships with its cutting tool suppliers to reduce overall tooling costs. When arranging long-term agreements with those suppliers, the shop also will often ask them to provide value-adding training to employees. In fact, a representative from cutting tool manufacturer Kennametal holds training classes at the shop and even issues diplomas to those who pass the course. Topics covered in these classes include identifying insert failure, determining optimal cutting data and general tooling best practices. MMI

Source: mmsonline.com

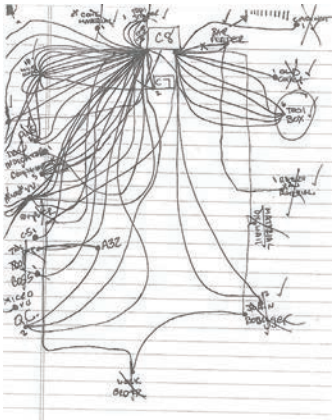


FIGURE 2: This 'before' spaghetti chart shows how complicated a setup process was for one of the shop's Swiss-type lathes. The setup process shown here took just shy of 6 hours, and the person performing the setup walked a total of 5,170 ft.

Source: mmsonline.com

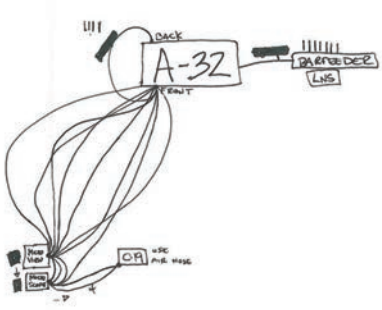
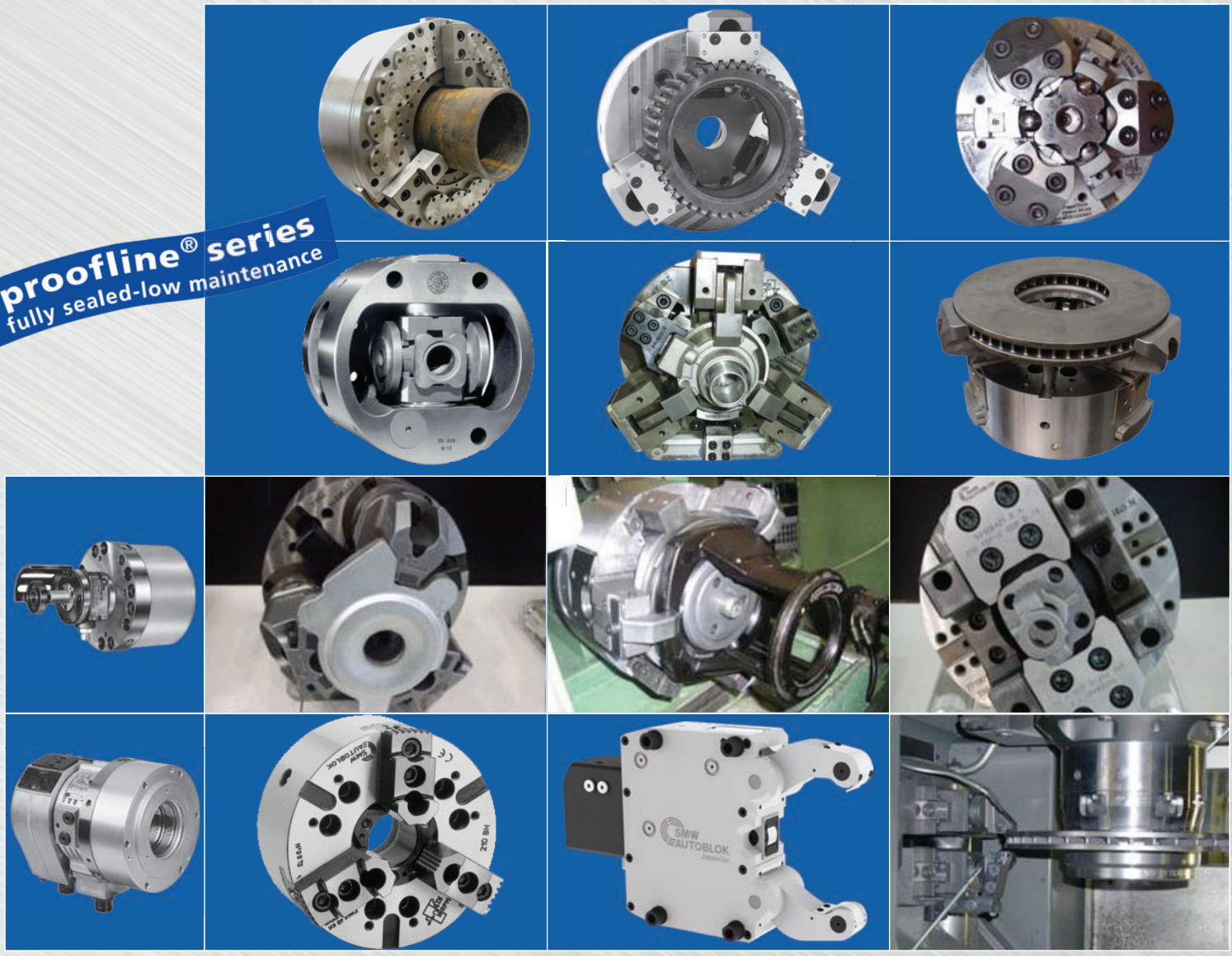


FIGURE 3: Reviewing and revising this process yielded a faster setup time of 3 hours 41 minutes with only 1,125 ft of walking distance, as illustrated in this 'cleaner' spaghetti chart.



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CAM System Supports 5-axis Machining Strategies

Germany-based HF-Zerspanungstechnik has reduced machining and programming times by merging two CAM systems into one. In an increasingly competitive environment, the company can now make full use of its 5-axis machining capabilities.

What began in 1996 in Saaldorf, Germany, as an individual enterprise on a farm now presents itself as an efficient supply business. Since 2011, HF-Zerspanungstechnik (HFZ) has been occupying a 1,300 sq mt light-filled hall and 300 sq mt space for the office. Owner, HFZ, Fritz Huber has always invested in the right technology and conveys his own vigor and enthusiasm to the 14-member workforce. In a relaxed, performance-oriented atmosphere, the team works a two shift schedule on machines such as a DMU 50 and a DMU 125P from DMG MORI, and B300 and a Hermle C42U.

Barbara Schulz
Editor-in-Chief
ETMM
barbara.schulz@vogel.de

Machines Count

There are also various lathes, such as a Gildemeister CTX 410 V6 with driven tools, Y-axis and counter spindle, as well as a DMT Kern CD 480 and a Wenzel LH87 3D coordinate measuring machine. Huber procured all milling machines with the iTNC530 control from Heidenhain. "For me they were exemplary in quality and user-friendliness from the beginning," Huber said. Equipped with an automatic switch-off function, the machines are also suitable for lights-out operation.

Core area of business

The company accepts commissions from many different sources. For a long-term customer, for instance, HFZ supplies welding electrodes for welding foil from which blood or infusion bags are made. These high-precision tools need to be completely measured, recorded and assembled.

Part of the turnover is generated as a supplier to the motor-racing industry. With self-designed molds for carbon fiber parts - such as structural components for monocoque racing cars and components and assemblies such as wishbones and lateral control arms for GT3 vehicles. The firm works as a main supplier to various well-known companies. Other focal points are the parts for mechanical engineering and mold making where high demands are made on surface quality as well as the accuracy. In terms of materials processed, 80 per cent are non-ferrous metals and the rest plastics or high-strength aluminum for the aircraft industry.

Source: HF-Zerspanungstechnik

The NC programs for 5-axis simultaneous machining on modern CNC centres are created on two workstations with the CAD/CAM software Hyper Mill.

5-axis simultaneous milling for mold makers

In the past, this broad range of tasks has been handled with two different CAM systems. "In many assignments the preparation work takes as long as the machining on the machine," Huber revealed. "Some of our parts programming is very time-consuming," he added.

In 2011, new customers in the mold making sector triggered a growth spurt and 5-axis simultaneous milling became increasingly important, forcing the company

to take a good look at their CAM strategy. Besides the two existing systems, the company evaluated the CAD/CAM system Hyper Mill/Hyper-CAD from Open Mind. In demonstrations, it quickly became apparent that the different requirements could most efficiently be met with this system. "In addition to the wide range of functions and the good price/performance ratio, we also saw an advantage in the well-matched products from Open Mind and Heidenhain," explained Huber.

Role of CAM workstation

Meanwhile, the two CAM workstations are now manned over two shifts. There is no distinction between machine operator and NC programmers, Huber informed. "Here, every employee has the time and the know-how to write the programs for his machine on the CAM workstation and make changes at the machine itself. As a result, knowledge of current tool technologies and possible cutting speeds and feed rates always feeds back into the NC programs," he noted.

Experienced employees discovered the first advantage of using a single CAM system through the common tool management offered by Hyper Mill. "We aim to reduce the set-up times by using large capacity tool magazines on the machines, automatic tool removal and automatic zero point clamping," Huber said.

HFZ sees further benefits from the functions in 5-axis milling. 3D strategies are converted to 5-axis tool orientation by the 5-axis module in Hyper Mill—up to the fully automatic calculation of the tool orientation for machining with a uniform tolerance. "We were given approximately 15 different cycles and we could try them all in direct use," said Hermann Thanbichler, NC programmer. "This enables us to always find an efficient path to the required surface finish."

The high feed rates of HSC machining inevitably require higher axis acceleration on curved workpiece contours. For each machining task it must be ensured that there is no deterioration in quality due to machine vibration even during highly dynamic tool movements. Motion control for 5-axis machining places particularly high demands on the machine control.

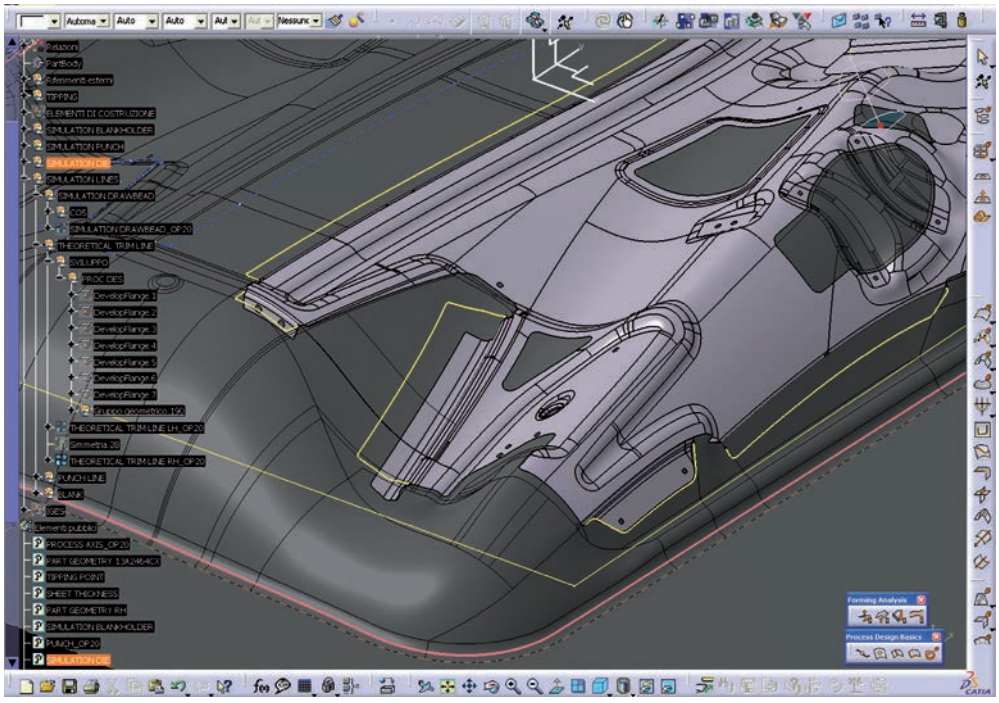
At the same time machining times must be kept to a minimum whilst achieving excellent surface finish and complying with the specified contour accuracy. The iTNC530 offers various functions for multi-side and five-axis machining that are harmoniously supported by the post processor. One example is the plane function. Programs for contours and drilling on inclined surfaces are often very complex and involve a lot of computation and programming. With the plane function machining is programmed as usual at the main level. The TNC then executes the machining in the tilted system.

Conclusion

Another advantage for the user is in clearly structured NC programs. Moreover, due to the space restrictions in 5-axis machining, 3D simulation of the machining sequence is an indispensable aid. "We often use this feature to check whether a particular 5-axis machining task is at all possible with the given spatial conditions of the machine, the required tools and fixtures," Huber explained.

Everything runs smoothly at HFZ, from data acquisition by the Hyper-CAD system, into which all of the customers' 3D models have now been uploaded and prepared for milling, up to the optimization of the kinematics by the iTNC530, Huber said. "We are very pleased with the interaction of Open Mind and Heidenhain. We have optimized our processes in order to remain competitive. We have made progress in shortening programming and machining times," he concluded. MMI

Source: AutoForm Engineering



Development of flanges on addendum using AutoForm-ProcessDesigner[forCATIA].

Rapid Creation of Quality Surfaces for the Automotive Industry

Fontana Pietro is considered the technological tailor of sports cars for their expertise in turning challenging ideas into feasible and extraordinary shapes. The company uses tools and technologies that include AutoForm software and in particular AutoForm-ProcessDesigner[forCATIA] for the fast creation of high quality CAD surfaces. Here's a look at how AutoForm's software solutions for the die-making and sheet metal forming industries along the entire process chain has helped the company implement state-of-the-art technology to meet customers' requirements.

After thorough testing, Fontana Pietro selected AutoForm-Process Designer[forCATIA] with its functional benefits as their software of choice for its internal product development process.

Sheet metal forming involves the creation of surfaces, which depending on their own complexity, enable adjustments to be made at the right time and according to the desired level of precision and quality. The technicians working for the engineering department at Fontana Pietro are well aware of this. The company is the Group's headquarters and has been the domestic and international reference point for the design and manufacture of stamping dies in the field of sheet metal forming for more than 50 years. It serves the best known, prestigious car makers all around the world. In order to meet the needs of its customers in terms of lead time, precision and quality of surfaces, it started testing the features offered by AutoForm-ProcessDesigner[forCATIA] last year. This software is dedicated to the rapid creation of high quality CAD surfaces. As a result of the positive feedback, the software was bought and implemented internally within the product development process to optimize the methodologies and strategies already in place.

Source: AutoForm Engineering

Successful strategies

"We are satisfied", says Senior Die Surfaces Technician, Fontana Pietro, Valentina Cavenago, "with having started this collaboration with AutoForm Engineering to investigate the benefits offered by the AutoForm-ProcessDesigner[forCATIA] software. From the very beginning it has demonstrated the potential to meet our needs."

AutoForm-ProcessDesigner[forCATIA], one of the software products which AutoForm offers for the die-making and sheet metal forming industries, connects the competence in sheet metal forming with the effective design functionalities of CATIA V5. This software enables company-wide workflow standardization and a significant reduction in time needed to

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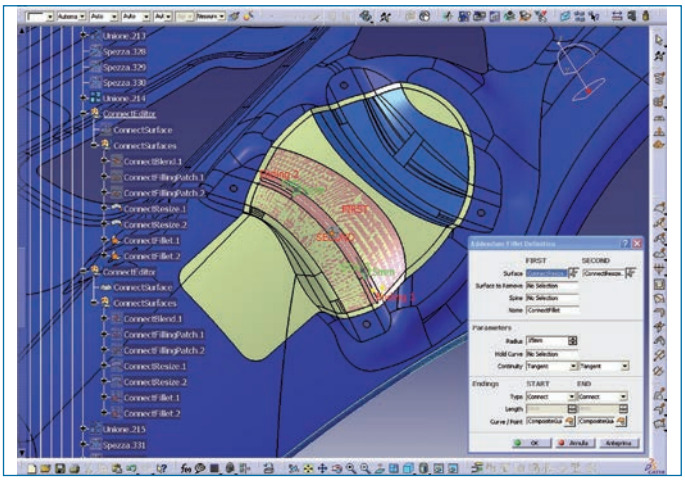
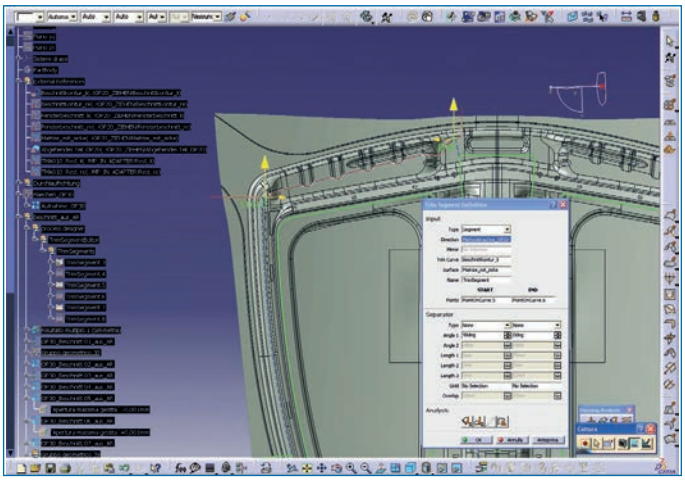
Source: AutoForm Engineering



Addendum creation using the software (Boundary Editor, Connect Editor).



Source: AutoForm Engineering

Trim plan definition of the surface using the software (Trim Segment Editor).

create high quality CAD surfaces. Die Surfaces Coordinator, Fontana Pietro, Giuseppina Milani points out: "CATIA has been used in our engineering department for over 25 years; although it is certainly a powerful system, it unfortunately does not offer solutions for those working in the design and manufacture of stamping dies and more importantly it does not fulfill our specific needs."

The creation of surfaces is becoming a critical aspect in this complex market where the competitive edge is timing. The engineering department at Fontana requires a direct connection (not a manual transition) between the conceptual creation of surfaces carried out by engineers and the creation of surfaces which can be immediately used for CNC machining.

"We had", adds R&D Engineer, Fontana Pietro, Riccardo Brivio, "a fast and efficient simulation method based on surfaces created with AutoForm-DieDesigner^{plus}. These surfaces were not easy-to-handle within CAD. It had become clear that this procedure was slow, complex and above all time consuming for the creation of CAD quality surfaces which could be immediately used in CNC machining."

AutoForm-ProcessDesigner^{forCATIA} software is the strategic missing link which enables the user to create a die layout, which includes not only the drawing but also all secondary operations, without having to leave the CATIA environment. The software fulfills these requirements and offers significant benefits in terms of the reduction of time as well as the minimization of mistakes made.

From theory to practice

In order to assess the operating potential and adaptability of AutoForm-ProcessDesigner^{forCATIA}, the engineering department carried out thorough tests on a designated project of one production line. At the same time, another two projects were carried out implementing the strategies currently in use. "Each of the three projects", says Cavenago, "went through the same work phases. In the end we noticed that when applying the features of AutoForm-ProcessDesigner^{forCATIA}, the designated project clearly showed relevant time savings."

One positive aspect, which is not to be underestimated, is that when compared with a CATIA license, this software can be used during the running session by adding the AutoForm-ProcessDesigner^{forCATIA} license, every time it is required. At the same time, the software allows for a high quality level of data update. "Our objective", continues Cavenago, "is to use AutoForm-ProcessDesigner^{forCATIA} with any of our customers' files. We hope to create an even closer connection between AutoForm-DieDesigner^{plus} and AutoForm-ProcessDesigner^{forCATIA} in order to reproduce the parameters already defined during simulation on surfaces or drawbeads."

Following the customers' needs, better integration is required with even more targeted features in order to make the procedures mentioned above more efficient and faster. AutoForm Engineering has already planned a new market release to make some of these functions available. This release will be an interesting update, soon to be followed by others, that will make the software even faster and immediately effective, even when implemented in synergy with other software systems.

The added value of quality

The positive feedback received on the performance of AutoForm-ProcessDesigner^{forCATIA} has convinced Fontana Pietro to extend the use of it to other departments within the company, such as in the Die Process Engineering department. The die process engineer's job is facilitated, especially when elaborating the early product development phase, thanks to the validity and speed of analysis. What is significant are the benefits and advantages that include the reuse and reproducibility of data, the efficient exchange of data (internally among departments and externally among OEM and their suppliers) and the fast creation of a die layout that includes drawing as well as all secondary operations. The various sketches and construction elements used in CATIA V5 are assembled in a few very powerful features which allow for easy and rapid surface design. A comprehensible data structure simplifies the usage of these new features and improves the collaboration internally. The created high quality surfaces are characterized by a significantly reduced number of control elements and the appropriate surface continuity. These high quality surfaces can immediately be used for further operations, such as over-crowning, compensation or CNC machining.

"Over-crowning", concludes R&D Engineer, Fontana Pietro, Guglielmo Oleari, "will be the object of further and future operating strategies within our company. Rules will be generated in order to further reduce the time needed to develop surfaces. I wish to highlight how our collaboration with AutoForm, which has been ongoing for many years now, has been reinforced thanks to this project. It is a synergy that will not only see the implementation of the software at the company, but will make this software in the future even more attractive." MMI

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Drive the Printed Car

It looks like a distant dream. However, with advancements in the 3D printing technology, one can now print a car and take it home too. This innovation was showcased at IMTS 2014.

Henry Ford's assembly line transformed the automobile industry in the 20th century, whereas a similar revolution in the is being initiated now with the recently unveiled 3D printed vehicle. Technologies such as additive manufacturing/3D printing/direct digital manufacturing technology play an immense role in this development. Additive manufacturing, which was developed in 1990s as a prototyping and design validation tool, now spread across various sectors. This approach has widened the scope of designer's imagination by eliminating restrictions of the traditional manufacturing methods.

Background

Today, the auto industry faces several challenges like reducing weight of the vehicle, the initial cost of tooling when creating new variants/models, etc. Overall, the making of the car involves various steps and challenges at each step. Manufacturing just a cabin of the car involves several steps like exterior body panels, trim, internal structure for rigidity, interior panels, dash covers, etc., contributing to lengthy bills of materials. A significant investment in tooling can be justified in case of mass production. So, the main issue is, to reduce the initial investment in designing, the part count and also the follow-up investment that will be required if the design changes. What if one could create major elements of the exterior like structure and interior of the vehicle, and then, could think of modifications or changes without involving additional cost of tooling? This thought process gave a birth to the 'Direct Digital Manufacturing Project'.

The designing process

A design competition was organized, which aimed at building a 2-seater car using 3D printing technologies. Out of the 200 entries received, 'Strati' designed by Michele Anoéof, Italy was chosen as the winning model based on excellent balance between innovation, complexity and practicality. Once the design was ready, next challenge was to convert it into the reality. Major structure of the vehicle was built using an additive/subtractive hybrid methodology. Cincinnati Incorporated together with Oak Ridge National Laboratory (ORNL) developed a large-scale additive manufacturing system capable of printing polymer components up to 10 times larger than currently producible, and 200 to 500 times faster than existing additive machines. This machine, named as Big Area Additive Manufacturing machine (BAAM) used carbon reinforced ABS plastic material and built the entire car body in 48 hours. The process involved building the body layer by layer with each layer being 4.5 mm thick, deposited and compacted by the extruder of the machine. Other parts like the seat, wind shield and wheel supports were also built in similar fashion.

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Drive the Printed Car

Completing the design

The next step is to bring the necessary style and glamor to the outer body. Since the shape borne out of additive manufacturing process, it contains a staircase of layers. This was accomplished in a 5-axis router from Thermwood. Once the parts were ready, vehicle assembly was the next move. A team of 'rapid assembly' engineers from local motors put the individual pieces into place, thus making it a reality. As a result, the world's first 3D printed car—Strati, was ready in a mere six days.

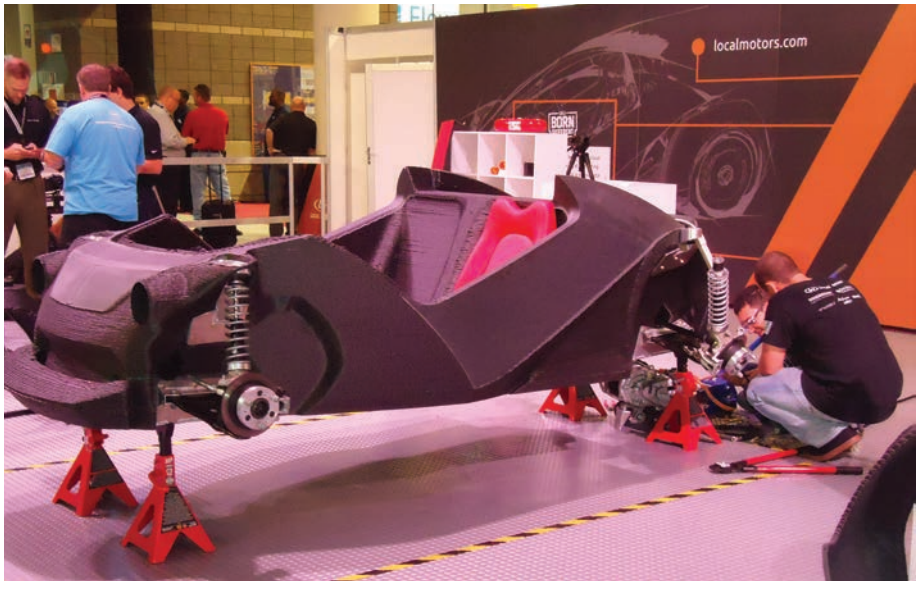
At IMTS 2014 CEO and Co-Founder, Local Motors, Jay Rogers and President, AMT, Douglas Woods made a grand entry in the newly finished Strati.

Future

The direct digital manufacturing technique can help automotive design and manufacturing industry take a quantum of leap. The day is not far when one chooses the specifications of the car, commands print and drives home a new vehicle on same day. MMI

Source: IMTS

Source: IMTS



Strati, the world's first printed car was showcased at IMTS which took place in Chicago, US.

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EVENT CALENDAR

Event Name	Contact	Date & Venue
ALUCAST	Rucheeka Chhugani T: +91 (11) 47168828 E: rucheeka.chhugani@nm-india.com www.alucast2014.com	Dec 4–6, 2014 BIEC, Bengaluru, India
International Aviation Conclave	T: +91 (11) 47050228 E: info@aviationconclave.com www.aviationconclave.com	December 11–13,2014 Pragati Maidan, New Delhi, India
India Engineering Sourcing Show IV	Rajat Sharma T: +91 (11) 23711124/25, E: rsharma@eepcindia.net www.iesshow.in	Dec 16–18, 2014 Bombay Exhibition Centre, Mumbai, India
IMTEX 2015	Balasubramanian Pillai bala@imtma.in www.imtex.in	January 22–28, 2015 BIEC, Bengaluru, India
SPS Automation India Control India Motek India	Anand Nair T: +91 (11) 6676 2310 E: anand.nair@india. messefrankfurt.com www.sps-automation-india.in	February 5–7, 2015 Mahatma Mandir Convention cum Exhibition Centre, Ahmedabad, India
ACMA Automechanika	Syed Mohd. Javed T: +91 (22) 61445900, E: syed. javed@india.messefrankfurt.com www.acma-automechanika.in	Feb 26–Mar 1, 2015 Pragati Maidan, New Delhi, India
TIMTOS 2015	Gin Yang Tel: +886 (2) 27255200 timtos@taitra.org.tw www.timtos.com.tw	March 3–8, 2015 Taipei World Trade Centre, Taipei, Taiwan
Metal+ Metallurgy China 2015	Constance Chen T: +86 (0)21 - 5045 – 6700 – 281 E: constance.chen@hmf-china.com www.mm-china.com	March 31–April 3, 2015 China Expo Complex (Shanghai Hongqiao), Shanghai, China
Northwest Machine Tool Expo	Tel: +1 (800) 5477377 info@cygnus.com machinetoolexpos.com	April 1–2, 2015 Oregon Convention Center, Portland, US
INTEC 2015	Tel: +91(422) 2222396 intec@codissia.com www. intec.codissia.com	June 5–9, 2015 Codissia Trade Fair Complex, Coimbatore, India
IMTOS 2015	Kamlesh Gohil Tel: +91(0) 9328899503 www.kdclglobal.com	July 4–7, 2015 Pragati Maidan, New Delhi, India
Automotive Engineering Show (AES)	Sameer Khedkar T: +91 (22) 61445900 E: Sameer.khedkar@india. messefrankfurt.com www.aes-show.com	July 7–9, 2015 Chennai Trade Centre, Chennai, India

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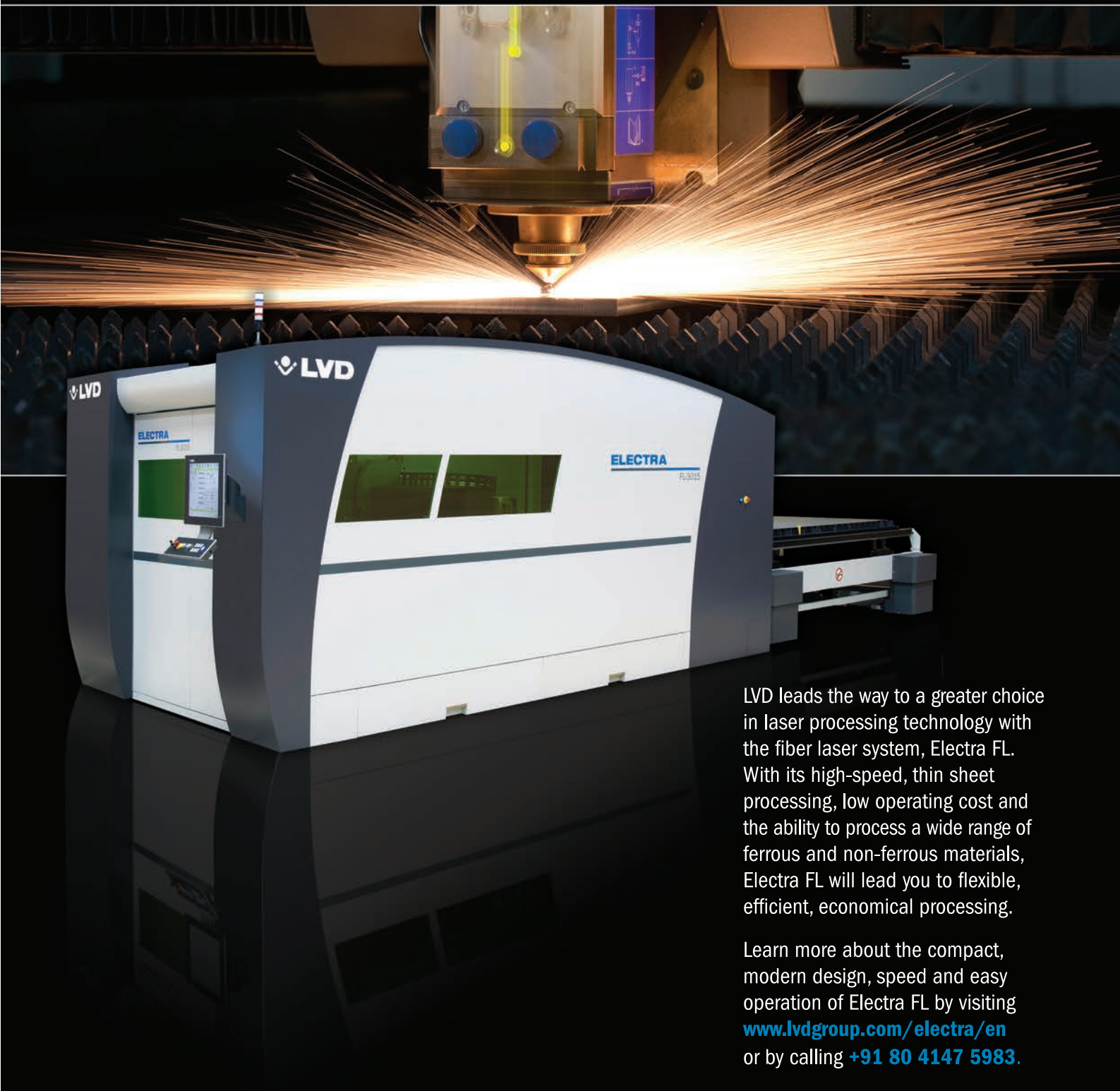

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Promoting Growth and Innovation

The 3rd VDMA Engineering Summit was held on September 19, 2014, at the Leela Hotel, Mumbai. Owing to India's market potential, the country is looked upon as an important base for business. The summit aimed to bring together representatives of all segments and branches of the VDMA member companies and to discuss the latest developments in the Indian market.

The engineering summit has been growing in terms of participation since its inception in 2012 and the event this year witnessed around 140 participants. A welcome from Managing Director, VDMA India, Rajesh Nath, started off the event. Nath mentioned that the GDP growth had dipped to below 5 per cent levels in the past two years. India's lumbering economy registered its fastest growth in two and a half years for the quarter ending June 2014. This positivity is triggered only after the elections and the unanimous victory of now Prime Minister Narendra Modi and bringing in the new government into power.

Giving a brief account of what the association had achieved in the current year, Nath highlighted several seminars that were organized across India on industries such as agriculture, ceramics, heavy clay. He also mentioned that the vocational training project of VDMA in Cleaning System and Facility Management is progressing well.

The India outlook

The Chief Guest, Consul General of the Federal Republic of Germany in Mumbai, Michael Siebert, thanked VDMA for being present in India helping the German companies bridge the gap between two countries. He said that when VMDA started in India in the late 1990s, the export of German machinery to India was only €500 million. This has since grown exponentially, almost sevenfold, peaking of €3.6 billion in 2011.

According to him, the textile machinery and the automotive sectors are only two examples of the long standing Indo-German co-operation. "Today, there are over 1,450 German companies present in India, together creating several lakh jobs in this country. In Asia, India is Germany's second most significant market. Our bilateral trade is around €16 billion, and it is growing again after two difficult years," declared Siebert.

This was followed by the address of CEO, Maharashtra Industrial Development Corporation (MIDC), Bhushan Gagrani. MIDC provides businesses with infrastructure such as land (open plot or built-up spaces), roads,


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Promoting Growth...

Source: VDMA

(LtoR) MD, VDMA India, Rajesh Nath; MD, Foreign Trade Division within VDMA Frankfurt, Ulrich Ackermann; Consul General of the Federal Republic of Germany in Mumbai, Michael Siebert; CEO, Maharashtra Industrial Development Corporation, Bhushan Gagrani, and Managing Director - South Asia, Frost & Sullivan, VG Ramakrishnan releasing the publication by BDB India titled 'An Overview on Indian Manufacturing Industry' at the summit.

"The German industry has a long association with the Indian market. This is evident from the fact that VDMA now has more than 550 member companies in India."

Managing Director, VDMA India, Rajesh Nath

water supply, drainage facilities and street lights. He informed the members about the industrial policy of the state of Maharashtra. He also put up interesting facts about Maharashtra being only state in the country to have surplus power besides being the largest producer. Gagrani said that he looked forward to the industry making more investments in the state as it provided an ideal platform for business and lifestyle.

Managing Director, Foreign Trade Division within VDMA Frankfurt, Ulrich Ackermann elaborated how the Indo-German relationship has grown over the years. Out of the many things he stated what clearly stood out was that while India was Germany's 20th largest trade partner in 2011 (Statistisches Bundesamt, 2012), the previous year saw India climbing up the ladder finishing as 10th largest partner in the mechanical engineering sector.

He stated that in 2013, the turnover of German mechanical and plant engineering dropped by 0.5 per cent to about ₹16,000 billion (€206 billion). He expects India—after two years of decline—to show a growth of more than 5 per cent for 2014 in comparison to last year and stressed on how India is still one of the most important future markets for the German manufacturers.

The Knowledge Partner for the Summit—BDB India released a publication "An Overview on Indian Manufacturing Industry" along with the other dignitaries and it was circulated amongst the delegates at the Summit. Managing Director, BDB India, KC Mani spoke about the publication and gave more insights.

Trends in India

The keynote address on 'Trends in Indian Manufacturing Industry' was made by Managing Director- South Asia, Frost & Sullivan, VG Ramakrishnan. He announced that India is to have 4 mega regions, 21 sustainable cities, 8 mega corridors, 70 satellite towns, and 100 smart cities by 2025. India is to have the highest increase in working age population (15–64 years) globally (2010–2020) at 119 million; a booming 'She-Economy'—women to account for 40 per cent of working population. India's GDP is to reach $4.6 trillion in 2025. With the fastest growth rate—CAGR of 9.2 per cent for 2014-2020, India will become the second largest BRIC economy in dollar terms by 2020.

Technical sessions & panel discussions

The summit also held technical sessions. 'Skill Gap and Need for Skill Training in India' headed by Executive Director, DB Tech, Fr AM Joseph gave an overview of the present educational system in India and the contribution of DB Tech (Don Bosco Institute of Technology) in shaping up the underprivileged youth. And stressed on how it was important to have a trained skilled workforce ready as the present economy will create 500 million job opportunities and 75 per cent will be skill based.

The second session began with Prinicipal, Roland Berger Strategy Consultants, Rahul Gangal, whose focus was on 'India Post Elections—Kya Ache Din Ayenge'. He said that after the change in governance, the GDP growth has risen to 5.7 per cent in April-June 2014, the fastest economic growth in the last 10 quarters. The road map for India is hence leading to the path of progress due to the positive measures undertaken by the government in this direction.

The last speaker, Trainer - Intercultural issues, Germany, Sujata Banerjee, spoke about 'Old and new challenges and opportunities in Indo-German co-operations from an intercultural perspective'. She spoke about the perceptions carried by Indian workforce and how it is in comparison to both Germany and the rest of the world. It was obvious that Indian working environment is more connected with values, emotions and indirect communication which can be an obstacle for a German company aspiring to do business in India. Direct communication with clear goals and deliverables is the key to success and would resolve most of the cultural differences and attainment of company vision.

The last session of the summit was the much awaited panel discussion on 'Leadership in Engineering Industry'. The esteemed

"At the summit, being able to personally talk to many renowned industry leaders gives us a strong contact pool. Wherein, we can carry follow up discussion even post the summit."

Managing Director, ifm electronic India Pvt Ltd, Bipin Jirge

panelists were: Managing Director, Lenze Mechatronics Private Ltd, Debasis Nandi; Managing Director, Wirtgen India Pvt Ltd, Ramesh Palagiri; Managing Director, Groz, Beckert Asia Pvt Ltd, Anton Reinfelder; Managing Director, Lechler India Pvt Ltd, Suresh Vasani; Managing Director, Karcher India Pvt Ltd, Ruediger Schroeder. The panel discussion was moderated by Rajesh Nath.

The panelists shared their experience and the activities being undertaken by the respective companies towards grooming and retaining talent. The lively panel discussion covered topics like, important traits of a leader, role played by the Indian Managing Director in coordinating with German head office, how to set up manufacturing base in India, work life balance, Importance of monetary incentive to retain employees, suitability of 'Jugad' in manufacturing. Summing up the discussion it was understood that to survive in India, it is mandatory for all companies to tailor make it products as per the needs and demands in the country.

Concluding note

The summit is an informative forum that allows member companies to gain perspective and network with other member companies. Managing Director, ifm electronic India Pvt Ltd, Bipin Jirge affirmed, "At the summit, being able to personally talk to many renowned industry leaders gives us a strong contact pool. Wherein, we can carry follow up discussion even post the summit."

The Summit concluded with lucky draw of two return tickets to Dubai. These tickets were sponsored by Emirates Airline. MMI

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Achieving the Supersonic Dream

Asian Technology Summit (ATS) 2014, held at Gyeongju, South Korea paved the way for the future of technologies. On one hand, Delcam launched updates for its software systems while on the other hand, it showcased an insight into the making of a supersonic car. Here is the report …

For Delcam Plc, it is an annual affair to showcase its excellence and updates to journalists, analysts and customers using the platform of Asian Technology Summit (ATS). The ATS 2014 unfolded the galore of the company's latest product developments and innovations. The event that was organized from September 24–25, 2014, was held at Hotel Hyundai, Gyeongju, South Korea.

Collaboration

This year's ATS was of more importance as it revealed answers to many questions related to Delcam's acquisition by Autodesk. As a result, the highlight of the event was a presentation given by Sr Vice President – Design, Lifecycle and Simulation, Autodesk Inc, Robert Kross. Talking about the takeover, he said, "The acquisition of Delcam is an important step in Autodesk's continued expansion into manufacturing and fabrication and beyond our roots in design. Together with Delcam, we look forward to accelerating the development of a more comprehensive Digital Prototyping solution and delivering a better manufacturing experience."

On the other hand, the collaboration would also turn to be fruitful to Delcam. Speaking on this relationship, Chief Executive, Delcam Plc, Clive Martell said, "This acquisition is going to be advantageous for Delcam as Autodesk brings increased financial strength, unparalleled expertise in design, and a long history of making technology accessible to broad audiences. Through sharing our technology and expertise, this transaction will transform industries and improve how the world is designed and made."

Swati Deshpande
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Center of attraction

Apart from the collaboration, what really caught the audience's attention was the project Bloodhoud SSC. Delcam Plc is supporting the project with its manufacturing software and expertise. This project aims at development of supersonic car that would run at the speed of 1,000 mph. Delcam is supporting the project with its manufacturing software and expertise, as well as producing components for the record-breaking vehicle in the Advanced Manufacturing Facility at its Birmingham headquarters.

Delcam Professional Services has manufactured the first part for the Bloodhound SuperSonic Car (SSC) adventure, making the company both an SME sponsor and a Product sponsor of the project. The component is part of the steering support column and so is essential in ensuring that the car remains on track during its world land-speed record attempt.

Additionally, Delcam's PowerMILL CAM software is being used by the University of Sheffield Advanced Manufacturing Research Centre with Boeing (AMRC) to produce a series of components for the Bloodhound SSC project.

Talking about the role of the company in the project, Applications Engineer – International Support, Delcam Plc, Sanjay Thakore said, "Delcam's software is being used by a number of companies that are making parts for the Bloodhound SSC."

He further added that the Bloodhound project is more focused on changing the mind-set of young people than on affecting

Source: Delcam Plc

A view of the roughing of the component to be used in the Bloodhound SuperSonic Car.

Source: Delcam Plc

A sharp pencil shaped Bloodhound SuperSonic Car, that is expected to be launched in 2016.

current designers. "The UK, along with many other countries around, the world needs to develop more skilled engineers to continue the growth of the manufacturing industry that has been seen in the last few years. It is hoped that the Bloodhound project will excite children about engineering and so encourage more talented youngsters to plan for a career in manufacturing," hoped Thakore.

New releases

In addition to this, the company has launched the latest version of its various software systems such as PowerSHAPE, FeatureCAM, PowerMILL, etc. The PowerSHAPE 2015 Pro CAD for CAM system is an ideal choice for modeling for manufacturing and reverse engineering. The new release includes improvements in direct modeling, surface modeling and reverse engineering, plus support for data from Creaform HandySCAN handheld scanners. Furthermore, the 2015 version of FeatureCAM system includes a range of enhancements in three-axis milling, two-axis and five-axis drilling, turning and turn-mill, and wire EDM to make the software even more powerful and easier to use.

Delcam has also introduced the 2015 version of its PowerMILL CAM system for high-speed and five-axis machining. The new release includes improvements to the Vortex high-efficiency area-clearance strategy, improved collision checking to also cover near misses and more efficient raster finishing. Two enhancements in PowerMILL 2015 will give even greater reductions in machining time with Vortex compared to conventional roughing.

All the updates are available to global customers including those in India. They can be easily downloaded from the customer download portal. "Since the company uploads all the updates and service packs to the central customer web portal, any customer across the globe with a valid license can download updates and service packs for their software, by logging in with their registered credentials. Besides, Delcam support engineers also visit customers who are under maintenance and assist them with the new features in the software," informed Managing Director – India & Middle East, Delcam Ltd, UK and ASEAN Business Development Director, Delcam Professional Services Ltd, UK, Vineet Seth.

Source: Delcam Plc

PowerMILL 2015 gives smoother toolpaths for machines with tilting tables.

Customer base

Delcam PowerMILL, PowerSHAPE, PowerINSPECT and FeatureCAM are the company's largest selling products in India. "The automotive industry and its supply chain including tool and die sector, job shops and ancillaries, are the largest consumers of these software. This is followed by the aerospace and energy industry and their supply chains. Finally, there is also a huge demand in the sign making and woodworking sector that uses DelcamArtCAM for artistic design and manufacture of various end products in wood and composites. Delcam India has a customer base of over 3,000 in the past 14 years of direct operations in India. Globally, Delcam has a user base of over 50,000 customers," explained Seth.

"The automotive industry and its supply chain including tool and die sector, job shops and ancillaries, are the largest consumers of Delcam software. This is followed by the aerospace and energy industry and their supply chains."

Managing Director – India & Middle East, Delcam Ltd, UK and ASEAN Business Development Director, Delcam Professional Services Ltd, UK, Vineet Seth

Not only Indian but Delcam's global customers are satisfied by using the company's software. "There are two main advantages from the use of the Delcam software. Firstly, with the company's Electrode system all the data for design, machining and inspection for each project is kept in a single file. This makes it easier to manage the process. Secondly, and even more importantly, the project data, including electrode geometry, burn position, undersize and burn area, can be exported directly from Delcam Electrode to Makino and Ingersol EDM machines. With up to 200 electrodes needed for some of our tools, using manual programming from drawings was very slow and had high possibilities of mistakes. Delcam eased this complex process for us," said Manufacturing Manager, Schneider Electric, Bimo Hartanto.

He further added that the training provided by the company also helped them use the software easily and successfully. "We continue to work with Delcam to make our processes even more efficient," Hartanto continued.

Conclusion

With the presence of top management from Delcam and Autodesk, customers, journalists and analysts, the ATS 2014 was a grand success. It revealed company's oncoming journey with Autodesk while it also gave a sneak peak of future technologies and developments. With these releases and a glimpse of the supersonic car and the hope of meeting again next year, the event concluded on a positive note. MMI

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Boosting the Manufacturing Industry

Though the Prime Minister of India, Narendra Modi has made an announcement of the 'Make in India' campaign, the path towards it is not easy. Right from the giants in the industry to the SMEs, everyone has to play their role right in order to make India the preferred location for setting up manufacturing units. In order to discuss about challenges faced by the industry in this regards, Confederation of Indian Industry (CII) had organized the Manufacturing Summit in Mumbai. Here is the report.

Honorable Prime Minister, Narendra Modi's explicit announcements about making India a manufacturing hub, with ambitious references to SEZs, and 'Zero-Defect, Zero Effect' Manufacturing Policy, has generated a new enthusiasm in the manufacturing sector. With this announcement, it is clear that new industry-friendly policies would be set in and the new government would support the sectors in various ways. To help the industry map the road of success and growth, Confederation of Indian Industry (CII) had organized 13th edition of the Manufacturing Summit at the Taj Mahal Palace, Mumbai, on November 14, 2014. The theme of the event was "Making 'Make in India' a Reality". It included various sessions, each focusing on a particular challenge or issue that the industry is currently facing.

Compiled by:
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Source: CII

(LtoR): Vice President, CII 2014-15 &Director, Forbes Marshall, Dr Naushad Forbes, Member Secretary, National Manufacturing Competitiveness Council (NMCC), Govt of India, Ajay Shankar, Summit Chairman & Past President, CII and Chairman & Managing Director, Godrej & Boyce Mfg Co Ltd, Jamshyd N Godrej and Chairman, CII Maharashtra State Council 2014-15 and Managing Director, Weikfield Foods, Ashwini B Malhotra unveiled 'Make in India: Turning vision into reality' report at CII Manufacturing Summit 2014.

Inaugural session:

The one-day event kicked off with the inaugural session that focused on 'Make in India – Redefining the Manufacturing Opportunity'. The mission of making India a manufacturing hub, is expected to undergo fundamental changes, translating into policy changes and increased investment. This further calls for industry-friendly policies. Industry veterans such Vice President, Forbes Marshall Pvt Ltd, Dr Nauhad Forbes; Member Secretary, National Manufacturing Competitiveness Council (NMCC), Ajay Shankar; Chairman & Past President, CII and Chairman & Managing Director, Godrej & Boyce Mfg Co Ltd, Jamshyd N Godrej; Chairman, CII Maharashtra State Council 2014-15 and Managing Director, Weikfield Foods Pvt Ltd, Ashwini B Malhotra; Senior Partner & Managing Director, Global topic leader for Leadership and Talent, BCG India, Vikram Bhalla expressed their thoughts on the paradigm shift that would occur due to this change in country's perspective.

On this occasion, CII – BCG published a report entitled 'Make in India: Turning vision into a reality' , where the report takes a hard look at the government's ambitious 'Make in India' program and at what it would take to make it a reality and transform India into a global leader in the manufacturing sector.

Speaking about the report, Godrej opined, "Manufacturing is not just about looking at policy action, but also about what companies can do themselves, and the CII-BCG report just reflects both of these aspects. The report offers learnings and best practices that exist in different pockets and scale them up."

Make in India conundrum: solving the manufacturing puzzle

The Government has undertaken a series of initiatives aimed at improving ease of doing business and creating new opportunities for

"Manufacturing is not just about looking at policy action, but also about what companies can do themselves, and the CII-BCG report just reflects both of these aspects. The report offers learnings and best practices that exist in different pockets and scale them up."

Chairman & Past President, CII and Chairman & Managing Director, Godrej & Boyce Mfg Co Ltd, Jamshyd N Godrej

"India is gauged by prospective foreign investors based on factors like size of the market, availability of skills, governance and proportionate supplies of petroleum products and energy. India today fulfils requirement of market size, skills and governance, which accounts for a bullish view on the Indian growth story and opportunities in the country."

President & CEO, GE South Asia, Banmali Agrawala

investments in areas including defense, railways, smart cities, industrial clusters and parks, freight corridors, etc. This session discussed how far the recent developments will play an instrumental role in bringing about the necessary changes, and how this will make the manufacturing industry sustainable. Chairman & Past President, CII and Chairman & Managing Director, Godrej & Boyce Mfg Co Ltd, Jamshyd N Godrej; Chief Executive Officer & Managing Director, Larsen & Toubro, K Venkataramanan, President & CEO, GE South Asia, Banmali Agrawala and Vice Chairman, Blue Star Ltd, Suneel M Advani unfolded strategic moves that manufacturers should undertake at this point of time.

Agrawala while answering the question on multinational perspective of the country stated, "India is gauged by prospective foreign investors based on factors like size of the market, availability of skills, governance and proportionate supplies of petroleum products and energy. India today fulfils requirement of market size, skills and governance, which accounts for a bullish view on the Indian growth story and opportunities in the country."

Talent Challenge

However, in the discussion, it was realized that while achieving the excellence in the manufacturing industry, one of the major challenges faced by the industry is lack of skilled labor. Addressing the talent shortage is a critical challenge for manufacturing companies as they seek to scale up and compete in the global arena.

During the discussion, it was also realized that unlike IT and other service industries, manufacturing is not a glamorous job. Hence, it attracts less talent and the young generation prefers to have white collared jobs. Therefore, it is the need of the hour to draw the young generation's attention towards the manufacturing industry and industry needs to take the steps towards it.

Role of SMEs

Additionally, in the process of making India a manufacturing hub, the role of SMEs cannot be neglected as they are backbone of the industry. The summit also paid attention towards it by having a separate session on the challenges that SMEs faced. In this discussion, panelists debated on the issues such as lack of innovation, issues in sourcing and retaining talent, inability to compete at a global scale, etc.

Thinking ahead and innovating

Speaking of the innovation, we cannot neglect Industry 4.0. The rapid digitalization is shaping technology changes and fostering productivity improvements in the manufacturing sector. This growing trend is geared to be a driver of change in the way businesses function. Given this context, the session highlighted the view of the industry regarding the future of manufacturing and its shift towards Industry 4.0.

Moreover, it is important for the industry to keep an eye on the happenings around the world and trace the upcoming trends. To grow in the field of manufacturing, the industry will have to take the help of digitization, to achieve higher productivity and precision.

Digital impact in manufacturing

The key question to be considered in this regards is 'Will the future of Indian manufacturing be influenced by this digital wave, and how?' This session featured speakers from industries already experiencing the digital wave, and other industries yet to be influenced by it. Panelists such as Group Chief Technology Officer, Tata Sons, Dr G Katragadda; Managing Director, Dassault Systèmes India Pvt Ltd, Dr Chandan Chowdhury; Head of Manufacturing Operations, Nokia Solutions and Networks India Pvt Ltd, Satendra Singh; Chief Technology Officer, Flipkart Internet Pvt Ltd, Amod Malviya threw the light on impact of this trend globally.

Conclusion

This edition of the Manufacturing Summit facilitated a forum to exchange views. Simultaneously, it created a platform for the industry for healthy discussions and to connect with 250 of the industry's most influential professionals, from across the country. MMI

Source: CII

The event provided a platform to network and share thoughts.

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Aluminum Casting Industry to Get Together at ALUCAST 2014

Aluminium Casters Association of India (ALUCAST) and NuernbergMesse India Pvt Ltd are creating platform for industry to meet and showcase new developments. At the same time, through conference, the event also unfolds the knowledge sharing opportunities.

India's one of the biggest exhibitions for the aluminum die casting industry, ALUCAST 2014 is set to kick off on December 4–6, 2014 at the Bangalore International Exhibition Center (BIEC), Bangalore. The event, comprising of an exhibition and a conference, is being organized by Aluminium Casters Association of India (ALUCAST) and managed by NuernbergMesse India Pvt Ltd. The spectrum of exhibitors includes products and services from aluminum die casting, aluminum recycling, automation of the casting process, melting practices and metal treatment, post casting operations, heat treatment specialists instrumentation and control, software systems integration/rapid prototyping, die casting machinery manufactures, die manufacturers, machine tools, etc.

Compiled by
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Speaking about the show, President, Aluminium Casters Association of India (ALUCAST), Prasan Firodia said, "India has emerged as a significant player in the global automotive supply chain. This industry accounts for 7 per cent of India's GDP. With continued development in the infrastructure and entry of new FDI, auto component industry is expected to be boosted further. This will have a positive impact on the die-casting industry as approximately 60 per cent die castings produced in India are used in the auto industry. Added to this, we have an advantage of educated labor at competitive costs and economies of operations. This should help the industry grow and become the world's largest aluminum die casting base."

Conference

The global auto industry is moving towards improving fuel efficiency by reducing the weight of vehicle. Replacement of heavier parts made from cast iron and steel by lighter aluminum parts is the future. These aluminum parts are now further being redesigned to achieve lower weights. The theme of this year's conference 'Lightweighting of Aluminum Castings' is therefore, very appropriate and timely. Experts of international repute will present papers during the conference sharing their knowledge and experience. Topics like light weighting by product re-engineering and change of production process, die casting technology for structural parts, and advantages of using vacuum technology for lightweighting PDC parts are a few presentations that the attendees can look forward to.

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Aluminum Casting...

Exhibition

Along with the conference, visitors can look forward to being updated on the latest machines, accessories and foundry equipment especially for die casters. Industry counterparts connected to design, development, manufacture and use of aluminum castings will greatly benefit from the exhibition and the conference. Managing Director, NuernbergMesse India, Sonia Prashar said, "We are glad to be the event producers for ALUCAST India and hope to further contribute to the success of this event with our expertise of EUROGUSS –International Trade Fair for Die Casting from Germany."

Conclusion

All in all, ALUCAST 2014 is the right platform for the aluminum casting industry to converge and update on the newest developments in the field. MMI

Source: NuernbergMesse India

Dignitaries lighting lamp at the inauguration of previous edition of ALUCAST.

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Source: EEPC India

The last edition of IESS witnessed participation from more than 300 companies.

Expanding Horizons

India Engineering Sourcing Show (IESS) is recognized as the event showcasing the latest technologies and a preferred meeting place for buyers and sellers from all over the world. The upcoming edition of this show is expected to bring few innovative initiatives helping Indian exporters extend their reach globally.

Each edition of India Engineering Sourcing Show (IESS) has scripted a new paradigm in Indian engineering trade promotion. Now, Engineering Export Promotion Council, India (EEPC) is geared up to organize next edition of the event –IESS IV at Bombay Exhibition Centre (BEC), Mumbai from December 16-18, 2014. The show will promote Indian engineering capabilities in segments like industrial electrical machinery, industrial supply, automotive components, retail engineering, metal shop & floor, innovation & technology and investment & engineering projects exports.

The event is organized under the aegis of the Ministry of Commerce & Industry, Government of India, with EEPC India as the lead agency. IESS 2014 has expanded its ambit and included industrial supply in association with Hannover Milano Fairs India Pvt Ltd (HMFI) and Deutsche Messe AG.

The event has been conceived to support Micro Small and Medium Enterprises (MSME) for their promotion of Made in India brand on the global stage, by providing them a viable platform to partner with international buyers. Therefore, the event is focused on developing comprehensive solutions for the emerging issues and challenges. IESS will not only act as a platform to showcase latest technologies but will also provide an opportunity for MSMEs to participate and interact with global buyers to expand their global footprints.

Talking about the industry, Chairman, EEPC India, Anupam Shah said, "India has emerged as favored supplier for leading OEMs in automotive, engineering design & services, and EPC sector and defense sector, which is witnessing rapid growth. We believe Indian MSMEs are fast upgrading their technological skills to manufacture world class products. The inclusion of industrial supply has been envisioned to promote large numbers of Tier II and Tier II suppliers of components and parts across the entire spectrum of manufacturing."

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Expanding Horizons

Key highlights IESS IV

The highlight of this edition of the IESS is Poland being the partner country. It is one of the fastest growing economies in Europe and offers a perfect gateway to the region.

"Each year we are witnessing more and more global conglomerates who are eyeing Indian suppliers for joint ventures, and sourcing requirements from competitive sourcing partners."

Chairman, EEPC India, Anupam Shah

Besides, the upcoming event envisages focus on robotics and additive manufacturing on its focused display.

The show hosts comprehensive buyer delegations from around the world to facilitate partnerships and their business interests with India. It acts as one stop shop for global sourcing requirements while facilitating leading multinational vendors by organizing dedicated vendor development programs.

The third edition of IESS showcased over 300 exhibitors including international pavilions from Czech, South Korea, Romania, Thailand, South Africa, Canada and COMESA region. The IESS IV aims to build partnership with more international markets. Additionally, in order to offer global exposure to the Indian exhibitors, IESS IV has tied up with world's largest engineering trade show organizers Hannover Messe.

Talking about the foreign participation, Shah noted, "Each year we are witnessing more and more global conglomerates who are eyeing Indian suppliers for joint ventures, and sourcing requirements from competitive sourcing partners. Each year these groups come with new shopping list worth million dollars. Thus, it becomes viable platform for MSMEs to exploit such opportunity."

Additionally, EEPC has organized various initiatives for exhibitors, visitors and delegates.

- **Buyer Seller sessions:** IESS IV expects over 500 buyers from all ovre the world and from different segments of engineering to participate in the show.
- **Visitors:** The third edition of IESS witnessed over 10,000 professional visitors. This number of visitors is expected to grow in the forthcoming edition.
- **Hosted buyer programs:** IESS has become a preferred platform for forging mutual partnerships by various foreign governments and trade promotion bodies in the engineering sector.

Major initiatives

Additionally, IESS IV features following initiatives that enable smooth conversations between exhibitors, delegates and buyers.

UAE Business Forum: UAE has emerged as the second most important export destination for Indian engineering products above China and trailing just behind the US. India's engineering exports grew over 36 per cent in 2013-14 at $5.07 billion. The country has also witnessed increase in engineering imports from UAE by registering an increase of 40 per cent over last three years reaching over $2 billion in 2013. As per HSBC Trade forecast 2014, UAE is set to retain India's top export destination till 2030, while India will emerge as the biggest export and import partner of UAE by the same timeline.

The forum is intended to host high powered business delegation led by UAE chamber of Commerce and industry and is intended to open new vistas of business and investment opportunities in the region.

Delegations: A delegation from UK will be visiting the show seeking to partner Indian companies in execution of smart city projects. On the other hand, delegations from other Asian countries such as Iraq, Myanmar and Vietnam have also confirmed their visit to the show.

EURASIA Business Forum: The business forum aims to highlight the emerging engineering opportunities in the Eurasian region. The Eurasia is the fastest growing region in the world and opportunities for Indian engineering remain largely unutilized, despite the fact that India has close proximity to the region and the country's influence in the geo-political developments of the region.

Sourcing Seminars – FIAT, an Italian automotive major, is coming to IESS for sourcing automotive components. On the other hand, Claas, a German company, will visit the show to expand its supplier base in India. The event will witness one more seminar, which has been organized by Global Procurement Consultants Ltd. This session will highlight various opportunities emerging from International Development Aid Projects such as World Bank, ADB, etc. It will also focus on how business can effectively participate in the international ventures and expand its presence globally. Furthermore, IESS IV will hosts Investment seminars highlighting the latest global business opportunities.

Additionally, Home Depot, a leading retail engineering giant, is organizing seminar, which will help MSMEs that are willing to extend its reach in the international markets

Indian PSU Vendor development program – This program is especially arranged

Source: EEPC India

Visitor taking a close look of the Kuka robot.

Source: EEPC India

Visitors having look at the various technologies and solutions displayed by exhibitors.

to connect Indian PSUs, which are seeking new suppliers for their modernization and upgradation of their manufacturing capabilities, to the equally capable vendors.

New Age Technologies – IESS IV will demonstrate live 3D Printing and also showcase drone's crucial role in supply chain management. Simultaneously, visitors can also see latest happening in the Drone manufacturing.

Four Reverse Buyer Seller Meets: During the three days event, IESS plans to organize four Reverse Buyer Seller Meetings (RBSM) with the hosted international buyers for Indian professional visitors and participants. RBSMs prove to be a highly beneficial and fruitful arrangement for business networking.

Smart City Summit: The summit envisages revolutionary new opportunities for international partnerships emerging out of the proposed 100 smart cities by 2022. As many of the smart cities concept are being implemented on the areas adjacent to proposed manufacturing zones such as Delhi Mumbai Industrial Corridor. These facilities are going to provide crucial infrastructure support in global connectivity for growth of engineering related services.

Modern Manufacturing Summit: Organized by Vogel Business Media India, this summit will cover two topics—'Attracting Investments: Make your Business Grow' and 'Vision in Manufacturing: 2015 Vs. 2030'. It will have industry stalwarts from various sectors highlighting the evolving dynamics of manufacturing and its implications for India.

Source: EEPC India

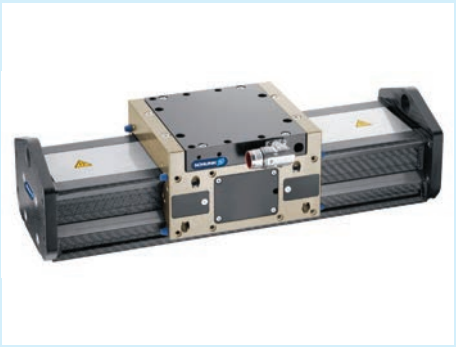
German Business Forum was arranged during previous edition of the IESS.

CXO Forum: IESS will host top CEOs at the CXO Forum to discuss the Indian manufacturing.

Conclusion

On the background of Honorable Prime Minister of India, Narendra Modi's 'Make in India' call, this edition of IESS is expected to achieve new heights. Talking about it, Shah said, "The 'Make in India' has sounded bells of optimism in the ears of manufacturer exporters. It is not just the 'Make in India' theme but the policy and regulatory reforms being initiated, are generating new enthusiasm amongst manufacturers. With this, in the year or two from now, India will be able to realize significant increase on the exports front." **MMI**

Schunk, a leading provider of clamping technology and gripping systems, has numerous innovative products in its portfolio. Here are some of its offerings:



Linear Modules

The linear modules of SCHUNK's LCx series can be accelerated and moved in an extremely fast and energy-efficient fashion. The reinforced carbon composite brings about a whole bundle of other advantages. Because of the high elasticity modulus of RCC, the axes also have superior bending and torsional stiffness. The 'Modules' provide excellent internal damping that reduces vibrations and ensures outstanding dynamic stiffness. Since the thermal expansion of the material is minimal, the axes ensure high precision even when they heat up during operation. Additionally, the profiles of the linear motor axes made of reinforced carbon composite weigh around 58 per cent less than the profiles of comparable aluminum modules.

Hydraulic Expansion Tool Holder

The SCHUNK hydraulic expansion toolholder TENDO E compact is now available for direct clamping of tools with shank diameter 16 mm. The new clamping diameter paves the way for highly efficient tools and processing methods. The combination of run-out accuracy and vibration damping prevents the cutting edge from damage, extends the tool life, and avoids chatter marks at the work piece surface. Moreover, the even load profile extends the service life of the spindle and the spindle bearing. The additional advantage is unlike all the hydraulic expansion tool holders, the TENDO E compact does not require any additional and partly expensive peripheral devices.

Polygonal Tool Holder

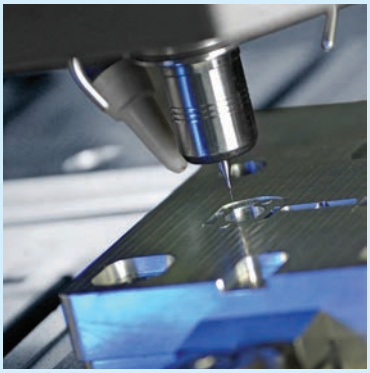
The SCHUNK TRIBOS-Mini HSK-E 20 polygonal tool holder is the first standardized precision tool holder for micro machining with the pioneering HSK-E 20 spindle interface. In comparison to conventional steep taper interfaces, the HSK-E 20 interface provides an axially flat work surface for the tool holder, ensuring excellent change and positioning accuracy, but also a high process reliability. Also, the narrow tolerances of the tapered seat ensure maximum precision and superior running smoothness at high rotation speeds. With a concentricity and repeat accuracy of < 0.003 mm at an unclamping length of 2.5 x D and a balancing grade of G 2.5 at 25,000 rpm, the TRIBOS-Mini HSK-E 20 fulfills the highest demands.

Mini-Speed Rotary Unit

The SCHUNK SRU-mini-Speed rotary unit sets benchmarks in high-performance assembly in terms of cycle time and frequency. With 14 module sizes, these rapid modules provide swivel times from 0.21 s. If lightweight parts are handled with the unit, more than 4,000 cycles per hours can be executed. The Module size 10 achieves swivel times of 0.11 s, and up to 3,600 cycles per hour are possible. As an alternative to higher speeds and number of cycles, higher load capacities can be implemented with an unchanged installation space. The secret of such a high, process-reliable performance is a patented damping design, where an elastomer has been combined with an oil-damped shock absorber. This unique damping has already been successfully implemented in the larger rotary modules of the SRU-plus series.

Special Program for Micro Cutting

SCHUNK has developed TRIBOS polygonal clamping technology specifically for micro cutting. At a true-running and repeat accuracy of less than 0.003 mm at an actual clamping length of 2.5 x D, and a balancing grade of G 2.5 at 25,000 rpm, the HSC-compatible tool holders of the TRIBOS family measure up to highest standards. They are suitable for every tool shank of h6 quality, and depending on the type, they were tested at up to 205.000 rpm. Since the mountings have no moving parts, they are mechanically sound, and therefore, clamping is almost maintenance and wear-free. Furthermore, even after several thousand clamping cycles no material fatigue occurs.



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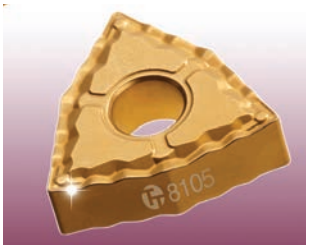

TaeguTec has expanded the range of its Life+ line with the addition of the TT8105 grade for high-speed turning on steel machining applications. Because of its special coating technology, the new tool grants excellent wear resistance while also guaranteeing stable and long tool life. The TT8105 gets an extra boost with the addition of the GoldRush treatment, a special coating that enables better surface roughness and high durability. The expanded Life+ line offers customers a wider range of application solutions and selection.

▸ **TaeguTec India P Ltd**
T: +91 (080) 27839111, E: sales@taegutec-india.com
www.taegutec.com

Grinding Machine

The new machine PMD 2 from Emag complements their crankshaft grinder program. It is designed for the machining of crankshafts for passenger cars and features twin grinding heads that allow for the simultaneous grinding of two pin or main bearings in a single setup, using two grinding wheels. Its capacity covers small components of up to 500 mm length. Up to now, the company's range of machines did not include a horizontal twin-head grinder for smaller crankshafts. This gap is now filled with the PMD 2, a machine whose the excellent price-performance ratio of which is also ideally suited to combat the increasing competition in the automotive industry.

▸ **EMAG Gruppen-Vertriebs- und Service GmbH**
T: +49 (0) 7162/17-267, E: ohagenlocher@emag.com
www.emag.com

Automatic Blanking Press

The new MSC 2000 automatic blanking press offers 50 per cent energy savings compared to previous lines—thanks to its innovative drive system with two electrically coupled programmable pressure points without gear transmission. The intelligent energy management system and integrated energy recovery of the new Crossbar Robot 4.0 for automating press lines also contribute towards its energy efficiency. A new linear hammer featuring servo technology enables savings of 20 per cent compared to conventional forging hammers.

▸ **Schuler AG**
T: +49 (0) 716166-7789, E: Simon.Scherrenbacher@schulergroup.com
www.schulergroup.com

Consumables

Hypertherm has announced the availability of new extended consumables for its Powermax30, Powermax30 XP and Powermax45 plasma systems. These consumables extend three inches longer than standard consumables for better visibility and accessibility when cutting or gouging in hard to reach areas or confined spaces. The improved visibility and access achieved with HyAccess eliminates the need for certain secondary operations or multiple cutting passes. Metal workers specializing in equipment and vehicle repair, structural work and jobs requiring angular cutting or gouging now have a new tool to make hard work easier.

▸ **Hyperthem (India) Thermal Cutting Pvt Ltd**
T: +91 (0) 9940681650, E: HTIndia.info@hypertherm.com
www.hypertherm.com

Turning Grades

The new Sandvik Coromant grades GC4315 and GC4325 with Inveio are designed to support the automotive industry with outstanding reliability and process security. The GC4315 is designed for high-speed steel turning while the Grade GC4325 is a tougher steel turning grade that manages interrupted cuts and uneven depths of cut at high speeds. Both grades enable high cutting data without sacrificing component quality. If the spindle speed limit prevents the full use of their capacity, maximum productivity can be achieved by applying higher feed rates.

▸ **Sandvik Coromant**
T: 1800 233 2444, E: abhijeet.choure@sandvik.com
www.sandvik.coromant.com

Replaceable Tip Milling System

Seco Tools has recently added new through-tool coolant high-feed heads to its Minimaster Plus replaceable tip milling system. The expansion further increases the versatility of this cost-effective system that already features a large selection of inserts and shanks for tackling a broad range of applications. Intended for general machining in the aerospace, power generation, mold, automotive and medical industries, the Minimaster Plus easily cuts steel, stainless steel, cast iron, aluminium and other difficult-to-machine materials. It also makes tool-length remeasurement obsolete.

▸ **Seco Tools India (P) Ltd**
T: +91(02137) 667300, E: seco.india@secotools.com
www.secotools.com/in

Decentralized Drives

NORD plans has released 'Power Saving and Cost Efficient model Decentralized Drives all in one of Motor, Gear box & Frequency drive'. Complementing the SK 200E line of frequency inverters, the new inverter focuses on the core requirements of speed control and efficiency. It is suitable both for standalone variable frequency drives and for synchronized operation with several units. The company's decentralized solutions also include the very economic new SK 135E soft and reverse starter which can carry out simple switching tasks in logistics and conveying.

▸ **NORD Drivesystems Pvt Ltd**
T: +91 (0) 9765490890, E: In-marketing@nord.com
www.nord.com

Cutter and Insert

WidiaVSM11's versatility and a wide breadth of offering is specifically engineered and optimized to provide higher productivity for job shops. Designed for low horsepower draw and free machining, the VSM11 delivers an effective one-two punch of reduced horsepower at the machine and higher speed and feed rates that get jobs done faster. VSM11 cutter bodies have an integral chip gash design for excellent chip evacuation along with hardened-steel construction and hardened pocket seats for improved resistance to deformation. They are available in shell, screw on, cylindrical shank, and Weldon shank models with internal air and coolant capability.

▸ **WIDIA Products Group**
T: +91 (080) 22198341, E: na.techsupport@widia.com
www.widia.com

Multipurpose Inserts

New Beyond Drive inserts from Kennametal feature a bronze TiOCN top coating that increases wear resistance and functions as a wear indicator. These inserts offer enhanced performance and extended tool life that mean many more finished pieces per cutting edge. Moreover, they are specifically designed for cast irons, steels, and stainless steels that mean they can be used in various industries. Additionally, they feature a proprietary post-coat surface treatment that improves edge toughness, reliability and depth-of-cut notch resistance, and a micro-polished surface that reduces friction and workpiece sticking.

▸ **Kennametal India Ltd**
T: +91 (080) 22198444, E: bangalore.information@kennametal.com
www.kennametal.com

Aluminum Bronze

FRW Carobronze, a distributor specialised in special bronze alloys with high technical characteristics for machine shops, now offers the broadest range of extruded, drawn and forged aluminum bronze stock: CuAl-10Ni5Fe4; CuAl9Ni5Fe4/CuAl9Ni3Fe2/CuAl11Ni6Fe6; C63000 and C63020. Its custom-shaped round, square, flat or tubular stock complies with all European and American military, aerospace and civilian standards. Most of its products are in stock or are available within one week, and all are delivered anywhere in the world within 48 hours. Reserved solely for use in wet environments, they are increasingly being preferred over conventional bronze grades for their significantly better mechanical properties.

▸ **FRW CAROBRONZE**
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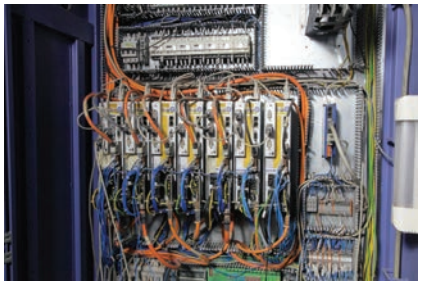
Servo Drive



As an intrinsic part of the design, Kollmorgen S700 servo drives with their multi feedback capability are used with both resolver feedback, mounted on the KBM motor for commutation, and magnetic linear scales for the position loop. The feedback protocol is SSI absolute, EnDAT or alternatively BiSS to suit a choice of CNC controllers with set-up and monitoring via EtherCAT which is integrated in all S700 drives. Many optional features of the advanced servo drive may be included in the machine specification.

▸ **KOLLMORGEN Europe GmbH**
T: +49 (0) 210293942195, E: sandra.becker@kollmorgen.com
www.kollmorgen.com

Tube Bending Machine

Unison has launched Evbend 1000, a new tube bending machine that reduces the cost of manufacturing small-batch and prototyping. The new machine delivers high precision CNC tube bending solution for small-diameter tubing up to 22 mm. Moreover, there is almost no limit to the intricacy and multi-bend complexity of tubular shapes that can be formed, thanks to the machine's ultra-compact bending head, and the versatility that manual operation brings to the manipulation process.

▸ **Unison Ltd**
T: +44 (01723) 582868, E: enquiries@unisonltd.com
www.unisonltd.com

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