

A Times Group publication

ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

THE MACHINIST

RNI No 71129/98

Volume 11 Issue 3 • March 2016 • Rs 75

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We need to be intolerant!

“You would be wondering why a business magazine like ‘The Machinist’ is getting into a controversial issue like this, which perhaps has no direct relevance to the industry! Many of our ‘enlightened’ country folks have been saying that we are becoming (or have become) an ‘intolerant’ nation. Well, I don’t agree. The truth is far from it!

We are possibly one of the most tolerant countries in the world, and I have a problem with that. We tolerate inefficiency, we tolerate corruption, we tolerate pollution, we tolerate filth, we tolerate ignorance, we tolerate poor quality, we tolerate unsafe practices, we tolerate indiscipline, we tolerate poor performances, we tolerate political bull-shit and we tolerate a lot more non-sense. The list can be quite long, in fact.

“LET US PLEDGE TO MAKE THIS NATION TRULY SUPER – A NATION THAT IS CLEAN IN EVERY SENSE, SAFE FOR ALL, PROGRESSIVELY PRODUCTIVE, POSITIVELY INNOVATIVE, TECHNOLOGICALLY PROFICIENT AND SOCIALLY WELL-DISCIPLINED.”

It is this tolerance that is preventing us from achieving our real potential as a nation. This attitude, which is very well captured in the well known Hindi phrase – ‘Chalta hai’ (It’s fine), is severely detrimental to our progress. Until and unless we throw this tolerance out of our minds and country, we cannot (should not) dream of becoming a progressive and economically strong nation. This tolerance is the poison that is destroying the roots of our growth.

As we stand on the verge of a national transformation, let us pledge to develop intolerance towards all things that prevent us from becoming the true India that we should be. Let us pledge to make this nation truly Super – a nation that is clean in every sense, safe for all, progressively productive, positively innovative, technologically proficient and socially well-disciplined. Are you with us?

Editor & Chief Community Officer



Chief Executive Officer **Deepak Lamba**

Chief Financial Officer **Subramaniam S**

Publisher, Print & Production Controller **Joji Varghese**

Brand Publisher **Rishi Sutrave**
rishi.sutrave@wwm.co.in
+91 9820580009

Editor & CHIEF COMMUNITY OFFICER **Niranjan Mudholkar**
niranjan.mudholkar@wwm.co.in
+91 9819531819

Assistant Art Director **Sanjay Dalvi**
sanjay.dalvi@wwm.co.in

ADVERTISING

South **Mahadev B**
mahadev.b@wwm.co.in
+91 9448483475

West **Ranjan Halder**
ranjan.halder@wwm.co.in
+91 9176267474

SUBSCRIPTIONS

subscriptions.rmd@timesgroup.com
022 22733274 / 66354083

Printed and published by Joji Varghese for and on behalf of owners Worldwide Media Pvt Ltd (CIN:U22120MH2003PT142239), The Times of India Building, Dr DN Road, Mumbai 400001. Printed at JRD Printpack Private Limited, 78, Resham Bhavan, 7th Floor, Veer Nariman Road, Churchgate, Mumbai - 400 020. Editor: Niranjan Mudholkar. Published for March 2016.

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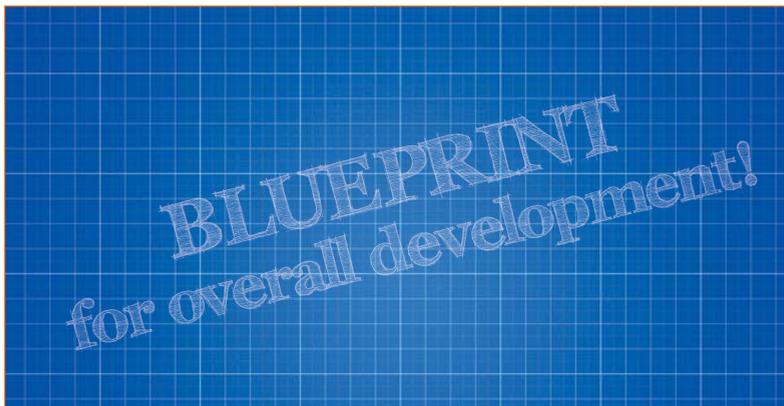
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Open House in Gosheim 20 – 23 April 2016

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Blueprint for overall development!

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Where others stop, we continue...



Mitsubishi Materials releases its next generation indexable drill—MVX Series—for Steel, Stainless Steel and Cast Iron applications. The MVX series drill has many new design characteristics including a High Rigidity Body and Flute Design that enables efficient and reliable drilling up to 6xD for most diameters.

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PMI data shows rise in manufacturing biz in Feb

MANUFACTURING business conditions in India continued to improve, with new orders, exports, output and purchasing activity all rising in February. At 51.1 in February, unchanged from January's reading, the seasonally adjusted Nikkei India Manufacturing Purchasing Managers' Index (PMI) – a composite single-figure indicator of manufacturing performance – pointed to a second consecutive monthly improvement in business

conditions across the sector. Reflecting sustained growth of new work, Indian manufacturers raised their production volumes in February. That said, the rate of expansion eased since January and was marginal overall. Incoming new work increased for the second straight month and at the quickest rate since last September. According to survey members, underlying demand continued to improve. Sub-sector data indicated that consumer goods was



the best performing category, where growth rates for output and new orders surpassed those seen at intermediate goods firms.

Bharat Forge ships 1st titanium forging for Boeing



BOEING and Bharat Forge Ltd. (BFL) announced the first shipment of titanium flap-track forgings made by the Indian supplier for Boeing's Next-Generation 737. BFL will also supply forgings for the 737 MAX, scheduled to enter into service in 2017. Baba Kalyani, CMD, BFL said, "The fact that we have achieved this milestone including all regulatory approvals in a very short timeframe is a testament to our technology and capability. I would like to thank Boeing and our supplier

partners for their strong support over the past two years. BFL keenly looks forward to working with Boeing and its supply chain partners to grow our relationship to significant levels. In addition to continually enhancing and upgrading our capabilities, we will also pursue merger and acquisition options – especially for machining and assembly, to accelerate our progress to become a significant player in the global aerospace component business."

Cabinet approves Trade Facilitation Agreement (TFA)

THE Union Cabinet chaired by the Prime Minister Narendra Modi has approved the Proposal for Notification of Commitments under the Trade Facilitation Agreement (TFA) of World Trade Organization (WTO), ratification and acceptance of the Instrument of Acceptance of Protocol of TFA to the WTO Secretariat and constitution of the National Committee on Trade Facilitation (NCTF). The Trade Facilitation Agreement contains provisions for expediting the movement, release and clearance of goods, including goods in transit. It also sets out measures for effective cooperation between customs and other appropriate authorities on trade facilitation and customs compliance issues. These objectives are in consonance with India's "Ease of Doing Business" initiative. The Trade Facilitation Agreement shall enter into force for the notified members upon acceptance by two-third WTO Members. To facilitate both domestic coordination and implementation of the provisions of the Agreement, a National Committee on Trade Facilitation would be set up under the Joint Chair of Secretary, Department of Revenue and Secretary, Department of Commerce.

Railways to consolidate holding companies

WHILE presenting the Railway Budget 2016-17 in Parliament, the Railway Minister Suresh Prabhu has proposed the Aekikaran – Consolidation of Holding Companies of Railways. Prabhu said that the companies owned by Indian Railway are its assets with immense future potential. "We propose to examine the feasibility of bringing most of these companies under an umbrella of a holding company which would provide the necessary strength for leveraging the combined resources as also in providing

the much needed flexibility in utilizing the strength of each of the subsidiaries," he said. The Railway Minister added that for ensuring delivery of quality services to its customers, IR needs to be equipped with modern and cutting edge technology. Priority areas of IR, like High Speed Rail, heavy haul, rolling stock and signalling require us to collaborate with the best in the world. In the short term, we have partnered with some of the best railways to develop indigenous capability in these areas.

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Racold Thermo plans aggressive launches in 2016

PUNE-BASED Racold Thermo Limited, a leading manufacturer and seller of water heaters in India has aggressive plans for 2016. Racold will be having a battery of launches across water heating categories this year. In the Electric portfolio, some new products are planned in both instant and storage categories. The company also plans to expand its heat pump portfolio with enhanced offerings, both in commer-

cial and domestic segments. Apart from this, Racold will be further consolidating its solar water heaters portfolio with new product introduction. V.Ramnath, MD, Racold Thermo said, "Considering that the penetration of the category is low -10% in urban India, there is a good opportunity for all quality play-



ers. We foresee 2016 as a very exciting year for us."

JNPT extends DPD facility to all ACP Clients

JAWAHARLAL NEHRU Port Trust (JNPT) India's first Container Port built on the concept of operating Container Freight Stations (CFS) beyond Terminal premises has extended its Direct Port Delivery (DPD) facility to all its Accredited Client Programmer (ACP) clients with immediate effect irrespective of their trade volume. Around 143 ACP clients will immediately benefit from extension of DPD facility. Presently, about 10 agencies which are fulfilling the criteria of importing more than 300 TEUs on an average per month are availing DPD facility at Jawaharlal Nehru Port Container Terminal. The extension of DPD will enhance container movement at port thereby increasing cargo volume. As per



existing norms, DPD container has to be picked up by the ACP clients within 72 hours of its landing. Otherwise, the same will be moved to JNP-CFS presently operated by Speedy Multi-modes Ltd after 72 hours to avoid piling-up of containers, if any, leading to multiple shifting/congestion.

Wind energy JV to invest Rs.7,500 crore in India

EDF Energies Nouvelles (EN), a wholly owned subsidiary of the EDF group, has entered into a JV with the SITAC Group, a leading Indian transnational, founded by Malvinder Singh for the development of wind assets in India. The JV, known as SITAC Management & Development Pvt. Ltd. (SMDPL) is a 50-50 partnership between the SITAC Group and EDF EN. The partnership agreement was exchanged by the Singh and Jean-Bernard Levy (CEO and Chairman of EDF Group) in the presence of the French president, Francois Hollande and the Prime Minister of India, Narendra Modi as part of the recently concluded India-France Business Summit at Chandigarh. As part of the partnership agreement, both parties will complete four projects with a total of 142 MW in installed capacity, in Gujarat by the end of this calendar year. This will be done through a 25-year Power Purchase Agreement (PPA) with the Gujarat Urja Vikas Nigam Ltd. (GUVNL). Going forward, the JV aims to execute a minimum of 1,000 MW across India through an investment of about Rs.7,500 crore, spread over the next 3- 5 years.

Endress+Hauser aims to double India revenue by 2020

ENDRESS+HAUSER a leading Swiss instrumentation and process automation company announced that the company is looking to double India revenue to Rs800 crore by 2020 by undertaking smart cities projects. Sajiv Nath, MD, Endress+Hauser (India) said, "Our entire strategy of doubling the revenue by 2020 hinges on water and energy management projects in smart cities. Around 55% of our revenue focus will be on smart cities initiative." "We are planning to invest 7-8% of global revenue worth € 2.1 billion in R&D globally and our

India operations will benefit the most with the technology transfer. We aim to achieve exports worth Rs1,000 crore from India operations to SE Asia, South Africa and Australia," informed Matthias Altendorf, Global CEO, Endress+Hauser. Endress+Hauser is expanding its capacity at Aurangabad factory by half to cater to expected rise in work flow, heeding the government's 'Make in India' and 'Smart Cities' mission. The company is investing Rs30 crore approximately on the capacity expansion that is expected to be completed by October.



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A list of key events happening between March 2016 to April 2017, both nationally and internationally.

| | | | |
|--|--|--|--|
| <p>Grindex International 2016 March 3-5, 2016, Mumbai www.grindexpo.in</p> | <p>MODEX 2016 April 4-7, 2016, Atlanta (USA) http://www.modexshow.com/</p> | <p>Hannover Messe 2016 April 25 to 29, 2016, Hannover (Germany) www.hannovermesse.de/home</p> | <p>Rapid 2016 May 16-19, 2016 Orlando, Florida (US) http://www.rapid3devent.com/</p> |
| <p>CeMAT 2016 May 31-June 3, 2016, Hannover (Germany) http://www.cemat.de/home</p> | <p>AMTEX 2016 July 8-11, 2016, New Delhi http://www.amtex-expo.com/</p> | <p>IMTS 2016 September 12 - 17, 2016, Chicago (US) www.imts.com</p> | <p>MINExpo International September 26-28, 2016, Las Vegas (USA) http://www.minexpo.com/</p> |
| <p>India International Textile Machinery Exhibition 2016 December 3-8, 2016, Mumbai http://itme2016.india-itme.com/</p> | <p>BAUMA CONEXPO India 2016 December 12-15, 2016, New Delhi http://www.bcindia.com/</p> | <p>ACMA Automechanika New Delhi 2017 March 21-24, 2017 New Delhi, India http://acma-automechanika-newdelhi.in.messefrankfurt.com/newdelhi/en/exhibitors/welcome.html</p> | <p>ProMat 2017 April 3-6, 2017 Chicago, US http://www.promatshow.com/</p> |



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WERNER BAUMANN TO BE NEW BAYER CHAIRMAN

Effective May 1, 2016, Werner Baumann will become the new Chairman of the Board of Management of Bayer AG. This was decided by the company's Supervisory Board at its meeting today. The current CEO of Bayer AG, Dr. Marijn Dekkers, proposed to the Supervisory Board that his contract be dissolved effective April 30, 2016, following the Annual Stockholders' Meeting. The Supervisory Board approved this proposal. "With its clear focus on the Life Science businesses and its new organizational structure, Bayer is in a position of strength. The course for successful future development has already been set at all levels. Also with a successor from within the company there will be no need for a familiarization period. I would like to wish Werner Baumann every success in his new role," said Dekkers, whose contract was originally set to run until December 31, 2016. Going forward, the Board of Management of Bayer AG will comprise seven members instead of eight.



AKITO TACHIBANA IS NEW MD FOR TOYOTA KIRLOS KAR MOTOR

Toyota Kirloskar Motor Pvt. Ltd. (TKM) has announced the appointment of Akito Tachibana as the new Managing Director of TKM, with effect from 1st April 2016. Tachibana has spent three decades at Toyota. His experience in Toyota Motor Corporation spans across various functions like Domestic and Overseas Planning, Used Car and Product Management. He has worked in the Corporate Planning Function at Toyota Motor Manufacturing North America Inc. and also been responsible of Product Planning for North America. He has also headed Toyota Motor Vietnam Co Ltd as the President. Tachibana currently heads the Technical, Purchase and Quality Assurance functions at TKM. Before his current assignment, he was working as the Executive Vice President - Toyota Motor Thailand. The current MD of TKM, Naomi Ishii, has been appointed as the General Manager of Corporate Planning Division - Toyota Motor Corporation, Japan from 01st April 2016. This appointment is a part of the organization changes at Toyota Motor Corporation, announced earlier.

PANKAJ THAPLIYAL JOINS AS PRESIDENT OF SMART UTILITIES

Dr. Subhash Chandra led diversified Essel conglomerate, has announced the appointment of Pankaj Thapliyal as President for the Integrated Utility Business, Smart Utilities – the flagship brand of Essel Utilities Distribution Company Ltd. Smart Utilities simultaneously caters to five essential utility services namely power distribution, water distribution, solid waste management, city gas distribution and cable & broadband. Commenting on his decision on joining Essel Utilities Distribution Company Limited, Thapliyal said, "Globally Utility Companies face the triple challenge of improving environmental performance, keeping consumer's cost down and maintaining system reliability. We see there is a huge scope of improvement in the existing public utilities in India by investing in the assets and deploying global best practices. The Public Private Partnership (PPP) model is way forward to go in utility business and long term association spanning 25 to 30 years will nurture integrated smarter communities across major cities of India.



RATTANINDIA POWER LTD APPOINTS VENUGOPAL KESHANAKURTHI AS CFO

RattanIndia Power Ltd has recently announced appointment of Venugopal Keshanakurthi as the Chief Financial Officer of the company with immediate effect. The decision was taken in a board meeting held on 12th February 2016. Keshanakurthi will oversee corporate finance, accounting, investor relations and financial strategies for the company. He will be directly reporting to the Chairman of the company Rajiv Rattan. Keshanakurthi has around 27 years of rich and diverse experience in finance and fund raising. Prior to joining RattanIndia Power, he was associated with GVK group as Director and Chief Financial Officer. Before that he had worked with Adani Power Ltd for over a decade.



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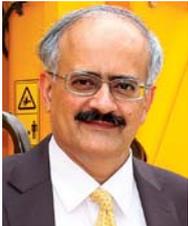
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BLUEPRINT for overall development!

The Machinist presents a quick overview of industry's reactions to the 2016 Union Budget



WELL ALIGNED TO 'MAKE IN INDIA'

The union budget 2016 is also well aligned to PM's vision of 'Make in India Campaign' by enlisting nine key pillars to help transform India. Infrastructure sector is a key contributor and the focus to address core growth issues including agriculture, social programs, rural development, education with skill development and job creation, financial reforms, policy reforms in terms of ease of doing business; fiscal discipline and tax reforms would definitely give impetus to the economy."

■ **Vipin Sondhi**, MD and CEO, JCB India



A BUDGET FOR ENSURING ECONOMIC STABILITY

Overall the budget proposals are in line with the development priorities of the nation. The FM has made a strong attempt to pump prime the rural economy and the infrastructure sector. This would yield dividends and we foresee a multiplier effect in the form of demand generation and employment creation over time. The state of the agriculture sector on account of two consecutive years of monsoon failure was precarious and it deserved the attention that was needed.

Besides the rural economy, another area where the outlays have been significantly enhanced is infrastructure particularly in roads and highways sector. Industry expected a major thrust on infrastructure and the

Finance Minister has delivered on this front as well.

The measures announced to support start-ups either by way of 100% deduction of profits for 3 out of 5 years or through exemption of tax on capital gains will go a long way in promoting start-up activity in the country that is bustling with entrepreneurial energy.

■ **Harshvardhan Neotia**, President, FICCI



WILL HAVE A LONG-TERM POSITIVE EFFECT ON THE AUTO INDUSTRY

"Taxing the luxury cars will be deterrent for the growth of the industry. We expected some reforms in the duty structure, which could have infused growth in the sector and would have provided additional employment. The rationalization of the duty structure would have also created a level playing field for all brands. Overall, we applaud the infrastructural spending and the focus on building more roads and highways, which will have a long-term positive effect on the auto industry. But in the short to mid-term, we missed an opportunity to drive growth in the sector, which could have further benefitted the long-term prospects of the auto industry."

■ **Roland Folger**, MD & CEO, Mercedes-Benz India



AN INCLUSIVE BUDGET

We welcome the focus of the budget on rural, social & skill development, making it an inclusive budget as also steps which have been proposed to simplify tax laws and improve ease of doing business. We also welcome the increased investments in railways & highways and hope that the government acts upon rationalising corporate tax & interest rates to encourage private sector spending.

■ **Sunil Mathur**, MD & CEO, Siemens Ltd

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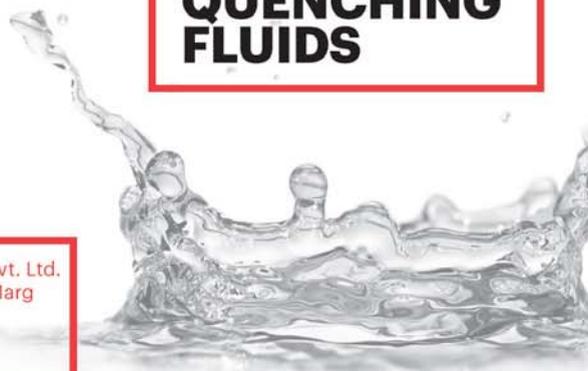


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WILL CERTAINLY YIELD DIVIDENDS FOR THE ENTIRE ECONOMY

The government has rightly realised that a sustainable and equitable growth model cannot be built as long as the rural economy is in distress. With successive monsoon failure, the farm sector was in distress and the Finance Minister has tilted the balance in favour of the agriculture sector; this would certainly yield dividends for the entire economy and provide a solid foundation for a robust economy. There has also been a realisation that in the absence of demand for the industrial products all over the world with the businesses battling under-utilisation of capacity, the growth has to be led by the under-developed infrastructure. A huge commitment of Rs 2.18 lakh crore on the rail and road infrastructure will not only kick start the economic growth but would also result in having a multiplier effect on India's economy."

■ **Sunil Kanoria**, *President, ASSOCHAM*



A FILLIP TO CONSTRUCTION EQUIPMENT MANUFACTURERS

The huge investment proposed on the infrastructure development like road, airport, railway and power projects will definitely give a fillip to construction equipment manufacturers. The road equipment manufacturers are likely to be benefitted the most because of the huge investments planned in the national highway sector as well as in the upgradation of state highway roads to national highway level. After a dull period of almost three years, the construction equipment manufacturers can look at growth in the coming years. Significant emphasis on irrigation projects and rural road projects under PMGSY scheme will also help the construction equipment industry."

■ **Anand Sundaresan**, *Vice Chairman & MD, Schwing Stetter India*



WILL HELP THE STEEL INDUSTRY MEET ITS GROWTH TARGET

India is the world's third-largest producer of crude steel (up from eighth in 2003) and the world's 3rd largest consumer of finished steel. Steel sector should get the much needed demand boost through the government spending in infrastructure. The budgetary proposals will help the industry meet its growth target and reach its full potential. However, the doubling of Clean Energy Cess from Rs 200 to 400 per ton would further increase the input cost for domestic producers."

■ **TV Narendran**, *MD, Tata Steel India and SEA*



COMMENDABLE MOVE TO BOOST THE INFRASTRUCTURAL FRAMEWORK

"The total outlay for infrastructure at Rs2,21,246 crore comes as a commendable move to boost the infrastructural framework of the country. Allocation of Rs 35,984 crore for agriculture and farmer welfare is a promising step in bolstering confidence and reviving demand in the rural economy. This is further supplemented by the impetus to catalyse the housing market with several measures"

■ **Prashant Vatkar**, *MD, HIL-Limited*



SHOWS IMMENSE PROMISE

"The budget shows immense promise. With the proposed advancement in the infrastructure, the country shows that it is now ready for the advent of smart transport options. These initiatives are truly the right ones for stimulating the off-highway products where ZF is present and will be glad to contribute. Also, the dedicated R&D team of ZF will continue their endeavour to find suitable innovative and futuristic technologies that can be introduced in India. All in all, we at ZF are looking forward to this financial year as this budget gives us the motivation to continue on our path of futuristic and sustainable growth."

■ **Suresh KV**, *Country Head of ZF in India and Head of ZF India Pvt. Ltd.*

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A PROGRESSIVE BUDGET THAT ADDRESSES INDUSTRY CONCERNS

“This is a progressive budget and the FM has tried to address concerns of the industry through various initiatives. The budget reiterates the need and importance to accelerate growth in the manufacturing sector. Announcements regarding incentivising domestic value addition towards the Make in India initiative have been well received. Also, changes in customs and excise duty rates to improve competitiveness and boost the domestic manufacturing has been seen as a welcome move by the industry. As a company which operates in the manufacturing sector, we believe that through this, there will be a spurt in the spirit of entrepreneurship, giving boost to the home-grown industries. Overall, we welcome the budget and hope

these are implemented in a time bound manner so that all stakeholders can gain from it and country can achieve its ambitious growth targets.”

■ **Manish Goel**, MD, *Shilpi Cable Technologies Limited*



HAS SOMETHING FOR EVERYBODY

It is well-balanced and comprehensively addresses all aspects that industry was looking for, including revitalizing the rural economy, infrastructure build-up, relief for stressed assets, and simplification of taxes. CII is happy that the fiscal deficit as announced by the Finance Minister in Budget 2015-16 has been maintained given current compulsions of the Seventh Pay Commission and the challenging global situation. We believe that the focus on macroeconomic stability, boosting domestic demand and continued economic reforms would further cement India’s position as a haven of growth in a fragile global economy.

The nine pillars of the Budget are well-strategized with emphasis on agriculture and doubling farmer incomes, healthcare, education, infrastructure and investments, and so on. Innovative schemes have been rolled out in all the nine areas.

■ **Sumit Mazumder**, President, *Confederation of Indian Industry (CII)*



BALANCE BETWEEN INFRASTRUCTURE DEVELOPMENT AND CONSUMPTION

The budget this time has made a very strong case for improving the Global Competitiveness of India by focusing on infrastructure, ease of doing business by bringing in regulatory reforms to cut bureaucracy and improve existing taxation norms and help to generate jobs. It is a good budget from the Government of India (GOI) which lays great emphasis on Agrarian / Rural Economy. The crisis under which the rural sector finds itself gets a very comprehensive coverage in the budget. FM has tried to balance between infrastructure development and consumption with a smattering of tax reforms. From the industry perspective, I feel that it’s neutral. I do hold a belief that the annual budget exercise over the years showcases the government

intent and its desire on what it wants to do. This time it does clearly look like the focus is on rural sector.

■ **Sanjeev Ranjan**, MD, *International Copper Association of India (ICA India)*



PRO-RURAL AND PRO-FARMER BUDGET

The budget is pro-rural, pro-farmer, pro-common man. They have rightly seen the need to increase the income of the people who virtually live on grass roots and are the grass roots of the country. This in itself will generate tremendous GDP. We congratulate Mr. Arun Jaitley for his vision and we are sure that in the history of India his budget will be seen as a landmark.

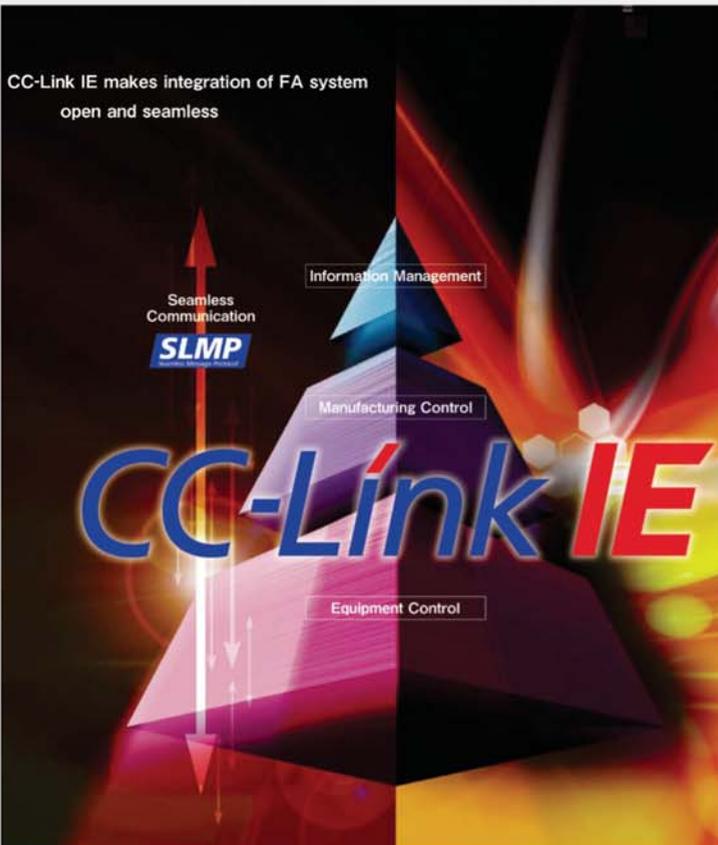
We acknowledge the concessions he has given for the export sector and simplification of tax administration and litigation. The Finance Minister has gone into great details in the agriculture sector when he has acknowledged the importance of honey in the economy and it is our wish that the sweetness and flavour of honey permeates throughout the economy.

Mr. Jaitley has promised light to all the villages throughout India in a defined timeline manner. It is a welcome progressive move to give warmth to the rural people.”

■ **Farrokh N. Cooper**, Chairman & MD, *Cooper Corporation Pvt. Ltd.*

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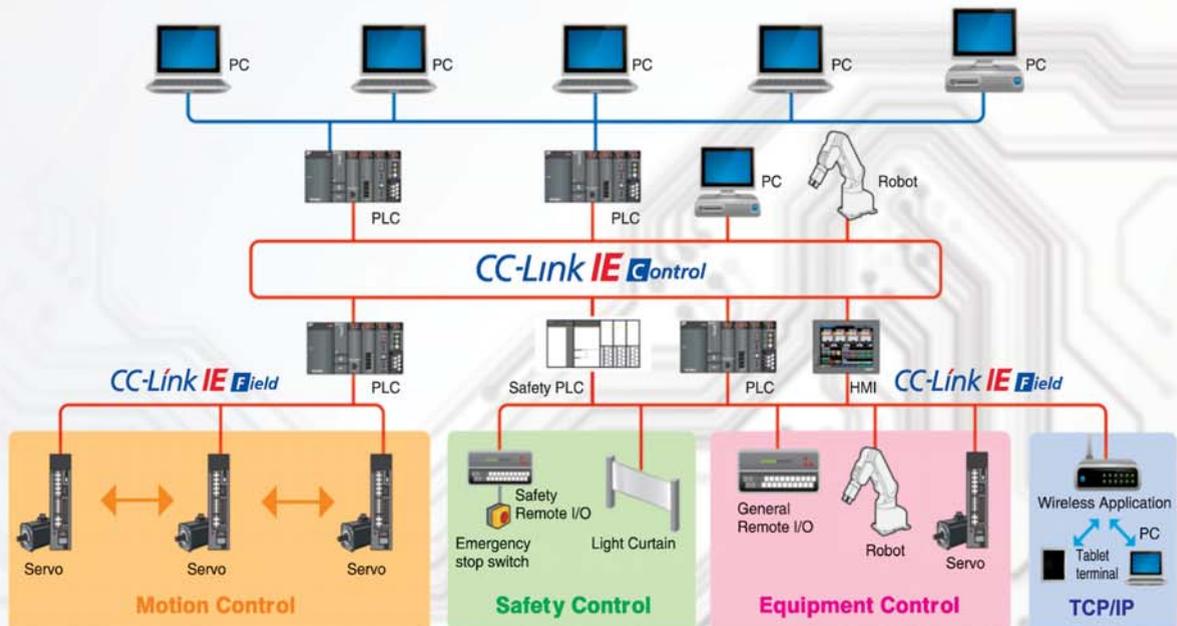
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A BOOSTER FOR THE ECONOMY

This is the first budget in decades which has rightly given an 'implementation' based thrust to agriculture and rural segments. I think the specifics covered are practical and will surely yield results. It is not only about vision, but would actually act as a booster for the economy, covering the largest segment of our country's population. However, I have not been enthused with the announcements pertaining to infrastructure, not because it has been neglected, but it does not have the specificity for implementation, unlike agriculture. The infrastructure sector, which is the backbone of the economy, has been addressed, but the announcements will take a long time for implementation."

■ **Hemant Kanoria**, *CMD, Srei Infrastructure Finance Limited*



REFLECTS INTENT TO ACHIEVE ACCELERATED GROWTH FOR RURAL INDIA

"The Union Budget's proposals are reflective of the Government's intent to achieve accelerated growth for rural India and revive the agricultural economy, which is much welcome. It is noteworthy to see commitment to achieve 100% rural electrification by 2018, along with focus on education and skill development. Having said that, the budget did not promise a lot for the manufacturing sector. With no clear or bold reforms announced in manufacturing, (apart from 100% FDI in food processing) the budget did not showcase the intention to coordinate efforts under 'Make in India' initiative."

■ **Gyanesh Chaudhary**, *MD and CEO, Vikram Solar*



A POSITIVE BUDGET

It's a positive budget as neither import duties nor vat has been tweaked. Increase rural spending and exemption on house rent will improve housing sector and thereby giving a boost to steel consumption. As steel users apex body SUFI would have liked if issues pertaining to MIP, Safeguard duties and BIS were addressed in this budget and some relief was given to users of steel as the protection for Steel Plants has been given which was also necessary. The Govt. has to strike a fair balance between the legitimate needs of steel user industry as well as steel producers.

■ **Rajeev Vyas**, *Director and spokesperson of Steel Users Federation of India (SUFI)*



WILL HELP THE BRASS SCRAP USERS

The Budget has brought down the customs duty on imports of brass scrap from 5% to 2.5%, which will help the brass scrap users for metal recycling. But the duties on imports of other categories of scrap such as steel scrap, stainless steel scrap, zinc scrap, lead scrap, aluminium scrap, copper scrap have not been reduced. Indian metal recycling industry imports 100% of its stainless steel scrap requirements and the industry was demanding to reduce the duty from the current rate of 2.5% to nil, which has not been considered. The Metal Recycling Industry could have received a major boost had the duties been rationalised."

■ **Sanjay Mehta**, *President, Metal Recycling Association of India (MRAI)*

SHOULD TRIGGER SPENDS

The impetus provided to infrastructure and farm sectors in this union budget is a welcome move. The plan to upgrade roads and improve port connectivity should see heightened economic activity. The farmer welfare schemes and incentives provided for the agricultural sector should improve the rural economy. Overall these two sectors should trigger spends which will have a multiplier effect on the overall economy. As for the automobile sector, the surcharge levied on cars over Rs 10 lakhs coupled with the infrastructure cess at varying rates will increase the cost of acquisition. The auto industry is hopeful of early introduction of GST and merging of all taxes for a simplified tax structure.

■ *Hyundai Motor India Limited spokesperson*



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Smart factory is here and now!

Benefits of digital transformation come from vertical integration of all functions and horizontal integration of all processes, says Dr. Andreas Wolf, Executive Vice President, Manufacturing & Quality, Bosch Ltd., India

By Niranjan Mudholkar

Q Technology trends like big data, cloud, mobile and Internet of Things (IoT) are propelling the industry towards a paradigm shift in terms of a digital transformation. Adoption of these trends is making factories 'Smart'. So how are these trends influencing the factory environment across different functions?

Industry 4.0 impact has an overarching impact on the entire value stream. Benefits of digital transformation come from vertical integration of all functions and horizontal integration of all processes. The integration is facilitated digitally by interconnecting all the computer systems together in a smart way. Some illustrative use cases are:

- Production planning is fine tuned consistently with the real demand i.e. orders received. Flexibility increases as the production batch sizes can be really small. Down time to configure production lines is drastically reduced.
- Production planning can be optimised with actual inventory status at warehouses and dealers.
- Advanced data mining and analytics provide predictive inputs to production. It can be predicted which spare parts



Advanced data mining and analytics provide predictive inputs to production. It can be predicted which spare parts will be required at which dealer (geography) and at what time. The entire downstream can then be optimised accordingly."

will be required at which dealer (geography) and at what time. The entire downstream can then be optimised accordingly.

Q How will a 'Smart Factory' adopt to the evolution from simple 'product development' to disruptive innovation?

User centricity in product design is already resulting in ever increasing number of variants. The only way to handle the next generation of production is to increase the flexibility and efficiency of factories through increased automation and connectedness. Smart factories will also put demands on the human capital – workers in smart factories will require higher and even new skills. Since the concept touches every dimension associated with product development and manufacturing it can be called disruptive innovation.

Q Can the 'Smart Factory' optimise the supply chain for a win-win situation?

Yes, not 'can' but it 'will'. Pull principles of lean manufacturing will be even more effective in the highly connected supply chain environments. Big Data will help identify value blockers and opportunities for constant optimisation. Cloud connectivity will enable faster and better reporting and decision making. 

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HIGHLIGHTS

- + Machining of chuck parts = Standardised machine platform
- + Small footprint = Reduced floor space cost
- + Integrated automation = No additional cost
- + Simple workpiece conveyor & interlinking = Flexibility and lower automation costs
- + Short traverse distances = Minimal idle time, high performance
- + Operator friendly = Quick set-up, change-over
- + Standardised parts strategy = Low maintenance costs
- + High energy efficiency = Reduced energy cost





Explosive growth ahead!

Encouraged by the Government’s Make in India programme, the defence sector too can replicate the success achieved in several other sectors. And Godrej looks forward to a sustained growth as Indian manufacturers are becoming increasingly sophisticated and competitive, says **Kaustubh Shukla**, Chief Operating Officer, Industrial Products Group, Godrej & Boyce

Q How would you analyze the ‘Make in India’ initiative in the context of your industry?

The defence manufacturing in India, in general, is at a nascent stage; and even more so for private sector. The need for establishing domestic defence manufacturing capabilities and capacities has been felt and articulated, and work to put in place a vision, policy and regulatory framework, is underway.

From the stage we are at, Godrej sees great opportunity for growth in a sustained manner for the domestic industry – and for us based on the capabilities and capacities we have developed. Competence and capabilities established by Indian Manufacturers, in conjunction with proven track record of sophisticated engineering and R&D with world majors for similar requirements to address the large domestic market, will make it sustainable.

Godrej looks forward to a sustained growth as Indian manufacturers are becoming increasingly sophisticated and

competitive. Encouraged by the Government’s Make in India programme, the defence sector too can replicate the success achieved in several other sectors.

Q Being associated with nuclear and space programmes requires working with difficult materials as well as sophisticated machinery, complying with various international codes and inspection requirements. How has G&B built these capabilities in terms of equipment as well as know-how? What kind of investments have you made in terms of machinery and technology?

These businesses are capital, technology, knowledge and skill intensive. Investment in machinery and equipment is only a part of the overall investments one has to make in building capabilities and capacity. Merely buying and installing machines and equipment cannot help build capacity. It is necessary, but not sufficient condition.

Godrej has been making investments in these businesses for nearly a decade and a half. A ball park figure for defence is about Rs300 crore of investment in plant & machinery and knowhow, capabilities & technologies. For aerospace & nuclear power, it would be another Rs150 crore for plant & machinery, technologies, capabilities & knowhow. Capacities and capabilities have thus been painstakingly built over the years.

Q Since defence is a niche segment, has it been challenging to find the right talent in India? Do you have in-house training infrastructure and programmes to address this issue?

The competencies needed to be a successful defence manufacturer are not readily available. So, our focus has been on grooming the talent in-house. Skills, knowledge and attitude help in building the competencies, and hence all are important.

While India is home to a million engineering graduates every year, it is the industry readiness of this vast talent pool that will play a key role in achieving the vision of creating a scalable and sustainable defence industry in India.

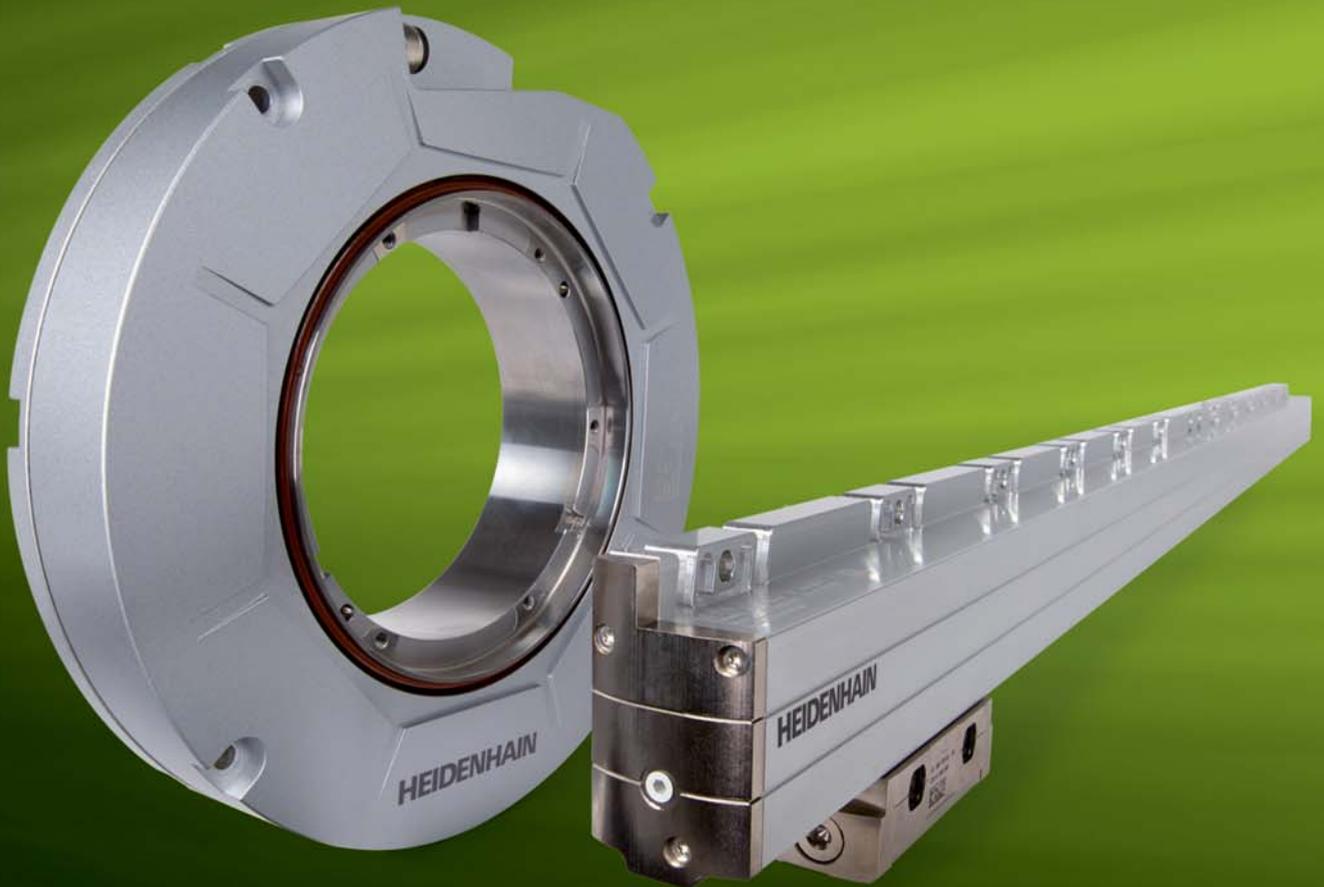
A background in mechanical, electrical and electronic engineering or mechatronics, materials (for example, composites) and system integration knowledge is only the start. Engineering talent needs to be trained on the global best practices that will make them competent to meet international stand-



“We also work on developing technologies and capabilities that are futuristic in nature. For example, there is work being done to develop rubber and composites for special applications. However, such pure R&D efforts are a small portion of what we do for developing technologies for projects that are engineered-to-order.”



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There are various ways in which this knowledge is acquired or created. Our people work with scientists from ISRO and DRDO or specialists from our customer organisations or interact with academia or subject matter experts, when executing projects; and acquire additional experience & knowledge, skills and capabilities during the course of the project. This group then seeds the knowledge to the new members of the team.

Manufacturing for Hi-Tech industry is very regimented; hence there is a sharp focus on translating the knowledge into work instructions. So, we have detailed work instructions for the millions of tasks / operations that are performed on our shop floors for the various projects.

Aided by this evolutionary process, we have been successful in creating a team of highly competent, motivated and enthusiastic operators and engineers. Amongst all types of investments needed – land, building, machinery, capabilities, customer and people – the last three are slow organic processes, and hence, most challenging.

Q Tell us about your R&D activities.

As mentioned earlier, Godrej has acquired / developed the body of knowledge by painstakingly working on projects with a large cross-section of subject matter experts.

Our R&D has been project-led and application-oriented. One may call it sponsored R&D. We at Godrej have developed hundreds of processes in all fields of manufacturing – forming, fabrication & welding, machining, surface treatments, heat treatments and assembly & testing – for multiple projects, materials, service conditions etc.

Over and above, we also work on developing technologies and capabilities that are futuristic in nature. For example, there is work being done to develop rubber and composites for special applications. However, such pure R&D efforts are

“As the system of manufacturing and programme management matures, we can expect to see a massive uptick in the rate of growth. Given the small size of business, the current CAGR looks awesome. Once the roadblocks are removed, one can experience explosive growth.”

a small portion of what we do for developing technologies for projects that are engineered-to-order.

Q Do you have any kind of technical collaborations or partnerships with international companies? Tell us about the same.

We do not have any technical collaboration. However, Godrej has executed several projects for global majors under the offsets policy. With successful demonstration of manufacturing and

project execution capabilities, we have created a business case for being considered to be a part of their regular supply chain and have already embarked on that path.

This is a scalable model, and hence, we will continue to look forward to partner with foreign OEMs, help them meet their obligation under offsets – and in doing so, build a business case for being part of their supply chain to grow our business exponentially.

Q It is understood that G&B is targeting a turnover of Rs10,000 crore for this fiscal. How much is the defence segment likely to contribute to this?

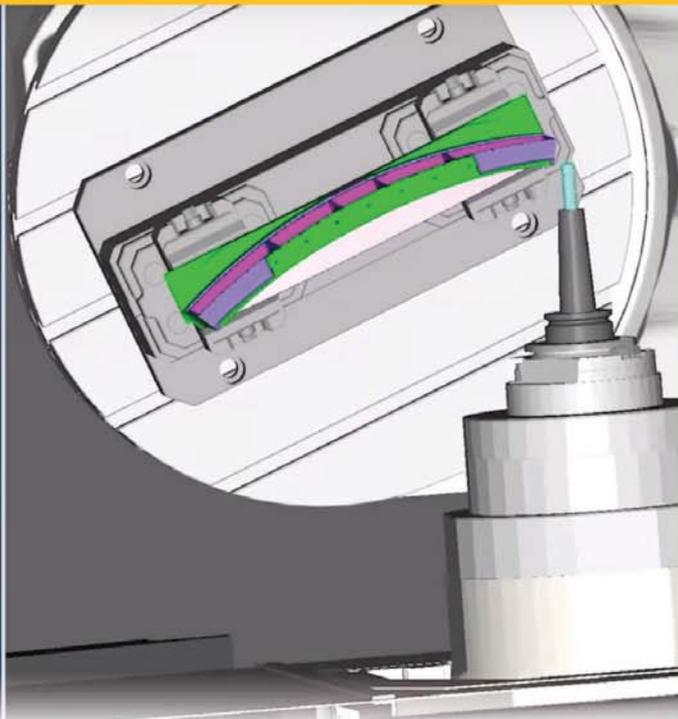
For reasons of confidentiality, we cannot share the turnover from defence sector. However, it should suffice to say that it is small.

Presently, business volumes in sectors like defence, nuclear power & aerospace are largely dependent on demand from government and on the pace of work / output or the efficacy of the entire ecosystem – from raw material supply, production, QA & QC, assembly, testing, documentation, to commissioning.

As the system of manufacturing and programme management matures, we can expect to see a massive uptick in the rate of growth. Given the small size of business, the current CAGR looks awesome. Once the roadblocks are removed, one can experience explosive growth. 

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COVER STORY

Class Apart

Mercedes-Benz India has regained the number one position in its segment, but **Roland S. Folger**, its MD & CEO, wants to go much beyond



By Niranjan Mudholkar

He's been quite busy since the morning due to the launch of the Edition E at the Chakan Plant. That's followed by quick interactions with the electronic media and the photo ops. Then there's the general media round table at around 2 pm. Well, he hasn't even had his lunch so far. Yet when Roland S. Folger, MD & CEO, Mercedes-Benz India, joins your Editor for an exclusive interaction with The Machinist magazine, he's still as energised and fresh as he was in the morning!

It has been only about six months since he took charge at Mercedes-Benz India. But this small

span of time has been quite exciting for him. He describes it as an unforgettable journey so far. His predecessor Eberhard Kern had told him to 'prepare for the ride of your life' and Folger agrees that Kern was right. "India is very intense; it is a very intense experience whether it is food, culture, religion, politics, country-side, and so on. Everything is filled with challenges, and rewards at the same time."

Folger finds meeting people highly rewarding and he's in awe of the immense promise that this country and its market have to offer. "If you look at just the mere potential that the country has, as far as growth and individual development is con-



The Chakan Plant

Set up in 2009, Mercedes-Benz India's world class production facility is spread over 100 acres in Chakan near Pune. The production facility is among the fastest green-field operations ever to be created and is rated among the topmost assembly plants of Mercedes-Benz, globally. Since June 2015, Mercedes-Benz India also commenced production from its new expanded production facility located in the same premises. The production facility now carries an investment of Rs1000+ crore and has the largest installed production capacity for any luxury car maker in India. Mercedes-Benz India product portfolio comprises the locally produced Mercedes Maybach S 500, S-Class, E-Class, C-Class, CLA sedans and the GLA, GLE and the GL-Class SUVs. Of course, Mercedes-Benz India also sells a portfolio of completely built imported cars. Recently, the Company celebrated 20 years of making the E-Class in India at this plant by launching the next-generation of this model called Edition E. Incidentally, E-Class is the company's largest sold model in India.

cerned, it is staggering. For me, what I am trying to get used to is the sheer size of everything – whether it is the country in itself, the travelling distances or whether it is the people. I am still trying to wrap my arms around everything and trying to understand everything that is happening,” he says candidly.

Remarkable 2015

The year 2015 and in fact even the few years before that, the economy hasn't been doing so well. However, despite the overall challenging market conditions, the year 2015 has been quite good for the Indian luxury auto segment in general and for Mercedes-Benz India in particular. Mercedes-Benz India registered a historic 32 percent year-on-year growth by selling 13,502 units in the January–December 2015 period and became the No. 1 luxury car brand in terms of sales volumes, as well. In fact, for the third consecutive year, Mercedes-Benz India has witnessed a double digit growth. So what has worked for this organisation?

Folger says that it is the result of a well-thought out strategy. “Roughly about 3-4 years ago we started with a very clear strategy and we also put a clear motto for each year. What

we tried to improve on were the issues that we were trying to conquer. And I believe the year 2015 describes it perfectly. It was the year when everything came together. There was slight upswing in the overall sentiments and we had fifteen new vehicles launched. And again, it's not 15 vehicles that we launched per se; it's the 15 individual contact points that we created with our customers to interact with our dealers. Plus, we added 15 new dealers and reached out to customers in areas where we were not properly represented so far.”

“If you look at just the mere potential that the country has, as far as growth and individual development is concerned, it is staggering.”

Folger believes that all of this combined gave Mercedes-Benz India a very, encouraging 32 percent growth, which is much higher than most of its competitors. “It also put us back in the number one position in the Indian market in the luxury segment. That in itself was not the target but it's a nice result that

we really enjoy because it means that customers cherish our product including services and everything more than they do from anybody else in the luxury segment. And I think, that is a good feedback that we have enjoyed very much. But it also encourages us to go further in that direction and continue along that path.” So what's next? “What we need to do next is



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to stay on the technological forefront of these developments and that's why we are so positive and supportive in moving the technology in India forward - whether that is about safety or about emissions. All of these things need to come together basically to bring India to where we think it is supposed to be. That's the potential that we see in the market basically."

Adding to the manufacturing portfolio

Last year, Mercedes-Benz India added three new products — GLA, CLA and even the Mercedes-Maybach S 500 — to its Chakan manufacturing portfolio. That shows the growing faith that the Company has in this market. Folger also doesn't rule out more additions going ahead. "But that depends on the numbers to make it viable," he adds. True, it is a business case logic that has to apply because it means that Mercedes-Benz will have to train people, add something to the manufacturing capabilities over here and, importantly, it needs to be sustainable. "Any kind of number needs to be a lifecycle number over several years. We need to be able to hold that number and that then is the defining factor to do that locally. An exception may be the S-Class Maybach because the numbers are rather small but in that case the viability comes through the overall profit margin. It also comes from the fact that the vehicle by producing locally is so much more affordable and that you see the difference between the S 600 and the S 500 Maybach. Thus, that vehicle became a very interesting proposition. Ever since we have introduced it, it has proven itself by having a much higher demand than anticipated," he shares without hiding the excitement.

While refusing to provide model specific information, Folger shares that the overall local content in Mercedes Benz India cars is around 60 percent. "We obviously wish to increase that number as we could transfer that into more monetarily accessible cars that give us higher volumes and that basically funds the overall profit making machine as well. Additionally, what is positive in terms of our purpose is that with the 'Make in India' campaign we expect that there will be more attention to India. At present most of our German suppliers say 'why go to India'.

Folger believes that it is necessary to get the Company's German suppliers interested in India in the first place. "Secondly, we need to increase our volumes so that it will make



About Roland S Folger

Born in Stuttgart, Germany on December 29, 1959, Roland S Folger joined Daimler-Benz in 1979 as a trainee. Post training, he started working with the organisation in 1984 and since then has been successfully climbing the ladder while taking care of different responsibilities at various functions and levels across geographies. Prior to his appointment as the Managing Director & Chief Executive Officer of Mercedes-Benz India (with effect from October 1, 2015), Folger was the President and CEO of Mercedes-Benz Malaysia.

May be luxury car makers can do it first and help in the transition from Bharat Stage IV to Bharat Stage VI. We have the technology readily available and we would be able to do it full-fledged by 2018. Industry can use the two years between 2018 and 2020 as the sliding-in years."

sense to these suppliers. Then, instead of delivering to us in Germany, they could come to India and start supplying to us locally. And then maybe, they could also deliver to Germany. In fact there are some companies which export hundred percent of their local production – amongst others, also to Mercedes. So we already have such examples. We just need more. Again, this whole issue of numbers is important not because of the short-sighted 'oh we are number one' but it is important because it gives us a good business case and we can use that business case to convince the headquarters that we get more budget and that we can make more investments and therefore contribute more jobs and investments here, which is the

key objective of 'Make in India,' he explains.

Expectations from government

His first and foremost expectation is straight-forward. "We need better infrastructures. The way most roads are presently, it makes driving more of a nuisance than a pleasure. As a company that is producing vehicles that are at the peak of driving capabilities, safety and comfort, we cannot showcase the full



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potential of what our vehicles can do. I am not saying that you have to be able to drive them at 250 kmph speed but even a 120-140 kmph average driving speed would be nice. Besides road infrastructure, investments in local mass transit systems would certainly be a big relief," he says.

On introduction of Bharat Stage VI vehicles

Folger says that Mercedes-Benz India is trying to communicate that it is part of the solution and not part of the problem by offering to bring Bharat Stage VI at an earlier date. "We believe that to push customers into vehicles under 2 litres or to push us manufacturers into petrol is an extremely short-sighted view. Because petrol would mean that we are increasing our CO2 levels, which is not in line with what India promised at Paris. So that's an extremely short-term solution. Also, the odd-even numbers programme is not providing real relief as far as the overall air quality is concerned. We hope that we can bring some kind of logical approach to this issue."

Folger says that Mercedes-Benz India is talking to various ministries and is hoping that it can get as many people and as many manufacturers into starting Bharat Stage VI at an earlier date. "But before that we need the Ministry to convince the Oil & Gas countries to provide the Bharat Stage VI fuel." Of course, the government is happy

that there are some companies who can bring Bharat Stage VI vehicles earlier.

"We also tried to explain it to the government that it won't be logical to expect companies to make the switch from one stage to another just like that. It won't be possible even for the fuel companies. You have to have a step-by-step approach to the issue. So, let's start small. We are a small producer and give us the gas stations that can provide us the Bharat Stage VI fuels and we can provide the landmark. And then the government can financially, by tax reduction and support, give some relief for the higher cost due to the technical changes. Then there will be even a stronger incentive for people to propound the introduction of Bharat Stage

VI. So, in 2020 the government need not provide any tax incentives as by that time we would have enough companies to provide the critical mass to make this financially feasible for the Oil & Gas companies. But you need to do it step-by-step. You cannot make the change overnight. It is simply logistically too challenging to make a sudden shift. It won't work. Because once we shift to Bharat Stage VI, you cannot go back," he says. Strong argument that!

Producing cars which are Bharat Stage VI ready will require a big change at the manufacturing level as well. And is Mercedes Benz India is ready for that? "Yes. We have checked that. That's why we have already said that at the end of 2018, give us the fuel and give us the coverage. Covering India in parts is not good because then there will be mixing and that will not be good. So give us coverage and we will be ready in



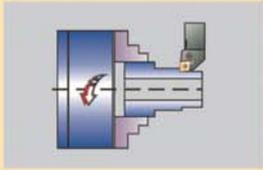
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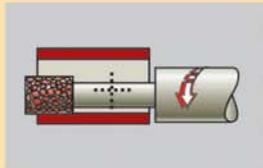


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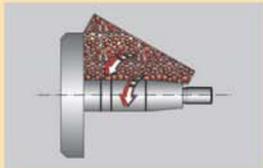


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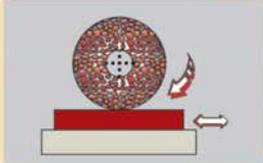


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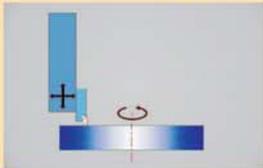


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2018,” he states.

There was also some talk about retrofitting the vehicles. Folger summarily dismisses the idea. “It is a misconception that you can retrofit and upgrade Bharat Stage IV vehicles into Bharat Stage VI vehicles. That is even more expensive! I don’t think that anybody will be able to do that. The assumption is that on April 1, 2020, there would be only Bharat Stage VI vehicles available in the country. That won’t work. It did not work in Europe, and I don’t see any logical reason why it will work in India. I understand that it will be a significant challenge for the mass car market and I can sympathise with that. May be luxury car makers can do it first and help in that transition. We have the technology readily available and we would be able to do it full-fledged by 2018. Industry can use the two years between 2018 and 2020 as the sliding in years. The focus must be on customers.”

On exports

A key aspect of the ‘Make in India’ campaign is making India an exports hub. How does Mercedes-Benz India look at this aspect? “Again, it is about the volume game because at the moment we are about 15,000 locally produced units. So we are not competitive in terms of volumes! A Mercedes vehicle from India would be significantly more expensive than a Mercedes vehicle from Germany for Singapore. Why? Because, here we are producing 15,000 and in Germany we are producing 1.2 million! It is about the economies of scale.”

Of course, a car that locally produced in India is much cheaper than a car produced in Germany in terms of the Indian market because the tax structure makes it a good business

case. “Because parts that are locally sourced and locally manufactured go under different duty structures. Therefore in India, a car that is produced locally is cheaper than a car produced in Germany. Very simple! But when you look at it again from a Singapore perspective, a car from India is more expensive. So when does the car export start from India? Once there is a Free Trade Agreement between Indian and Singapore and we have better relations with Singapore than Germany has and their taxation will make our vehicles cheaper than the German vehicles. That will give us the basis for any export,” he explains patiently.

‘Green’ vision

What is Folger’s vision for Mercedes-Benz India? Well, he wants to push the envelope further in terms of the environmental contributions. “We already have all the other things in place; everybody accepts us as the top-end luxury car maker. Even keeping a premium is acceptable to customers because what they get in return is fully worth the money they pay for it. Whether it is the image, the resale value, or the support they get on the service side, the whole package makes it really viable for them. What we need to do is that convince other stakeholders in the government and the other areas that we are also a company to reckon with in protecting the environment. Why? Because we have the technology and we are able and willing to invest,” he says.

Folger also adds that Mercedes-Benz India is able and willing to support the government with its consultations and with its view on things as it is already doing it around the globe. “Hopefully they would understand that we do it not only for our own benefit but also for the benefit of the overall population. We could be the front-rider, we could open the flood-gates

and we could basically make this work and everybody else will ultimately have to follow. Because once it is working and once everybody else does it, even the stragglers will be forced to go the same way and the arguments that it can’t be done will be wiped away very quickly. Then it becomes an issue of market acceptance working to the expectations of customers and being at the forefront of technological developments,” he says with authority but without disguising the passion.

And what car does he himself drive? “For driving in India, it is certainly the S-Class. It is the perfect vehicle for driving comfortably, safely and in style. But personally, my favourite is the AMG GT S,” he says. So it’s performance that this man is after, actually. But, well, he also does understand the local conditions! 

“Mercedes-Benz India registered a historic 32 percent year-on-year growth by selling 13,502 units in the January–December 2015 period and became the No. 1 luxury car brand in terms of sales volumes, as well.”



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The 'Right' Product

The value of a product in the eyes of the end customer is also determined by its availability at the right place, which means the manufacturer must design products specifically for the region it is intended.

By Arben Koliqi

Value is the (key) word when it comes to product development. Conventional wisdom tends to link value intrinsically to cost, which could mean everything from production cost to the final showroom price. Historically, manufacturers have almost always believed in the general principle that whoever is able to take a product to market faster invariably wins the day. Typically, this dictum of “better to be first in the market” is also thought to have the effect of lowering cost and driving returns.

As mature economies strengthen and show clear signs of recouping the losses they suffered in the recession of the late 2000s, there is a lot of eagerness about emerging markets like India. Here again, businesses are battling the idea, “If I can get my product out there faster, I’ll win the race.” So the brouhaha around emerging economies, in effect, ends up perpetuating the success of the faster-to-market postulation.

The faster-to-market theory, if I were to call it one, works for some time; there is no denying that. Even so, if you are a manufacturer seeking to make a deep impact in an emerging market, shortening time to market can never be the sole consideration. Where it errs is in mistakenly drawing connections between the value of a product on one hand and time metrics, financial inputs, and expected financial returns on the other. Value cannot be linked as a matter of fact to time to market, price point, or even the level of sophistication of the technology, product, or production activity. Beating the competition

to the market and doing so at the lowest prices does not guarantee end consumers will embrace your product and help you gobble up market share. In the burgeoning Indian market, the race to the finish line is as competitive and cutthroat now as the Chinese market has been over the past decade. The writing on the wall is clear: spoilers don’t go to the fastest.

Product value is far more of a moving target than one would imagine. Unless a product is priced attractively and is genuine and available at the right time, the market is unlikely to read any value into it. The value of a product in the eyes of the end customer is also determined by its availability at the right place, which means the manufacturer must design products specifically for the region it is intended. For a product to be “right” it must be tailor-made for the market and furthermore the market must be ready for it. More importantly, product value constantly changes within the same region.

Not every manufacturer is lucky enough to hit the bull’s-eye on the first try. In fact, some of the world’s largest global construction equipment manufacturers have shot completely out of range. The next thing to do is being honest about what it takes to figure out product value and sharing this thought with your team, clients, and every other stakeholder. Advances in product development can help players in manufacturing bring to market newer products with added features end users crave. The entire product development process and production activity that follows must be “framed” around a single question: What’s in it for the end user?

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True, there is general agreement that listening to the voice of the end user should be an important activity in any organization. Even so, at most enterprises, it turns out to be a one-time affair that happens at the outset of a product engagement. To get to the heart of what consumers want, businesses must combine sophisticated market analytics engines, grassroots customer surveys, and much more. It is important and a lot is at stake. For our end user knows the products we make or aspire to make and he and she understands his or her individual needs. And so it follows that listening to the end consumer is our sure shot way to stay on top of customer wants.

Getting product development right the first time round and bringing to market products that specific segments of buyers are interested calls for significant time investment by manufacturers, especially at the project onset. Well begun is half done, they say. But these efforts will come to nothing if they are made only at the project start. Rather, listening to the end customer and configuring products using that as a basis



Beating the competition to the market and doing so at the lowest prices does not guarantee end consumers will embrace your product."

Quality function deployment

Quality function deployment (QFD) represents the foremost edge of the modern-day manufacturing organization that comes into contact with the customer. Essentially, it is a framework for decoding customer needs and tailoring plans to make products that answer those needs. QFD plays a key role in systems engineering, which brings a broad range of disciplines under its umbrella, to help manufacturers interpret qualitative user demands, converting them into quantitative parameters. This approach involves gathering metrics around product development, product feasibility and product and process validation. Besides, it takes care of design requirements development, design requirements management, risk mitigation, as well as risk management. In short, systems engineering methodology translates the full breadth of market requirements into system specifications. In turn, this will enable the manufacturing business to put a figure on the seemingly elusive "value" of any product, limited only by the skills of people adopting this method. This is much like saying that all credit for creating a masterpiece lies in the vision of the composer and her masterstroke, not in the notes themselves.

House of Quality, for instance, is a basic QFD tool used to:

- Capture a list of customer requirements (voice of the customer)
- Estimate their relative importance
- Connect the dots between customer requirements and product characteristics
- Reckon how competitor products fare in relation to these customer requirements

Expert execution of House of Quality or, for that matter, any similar market analytics tool, relies on the abilities of those carrying out the exercise to include such learning into a product.

must become second nature to companies, a basic instinct that weaves its way through the fabric of every single project. It must rise to become the most important "play" in the repertoire of every actor in the manufacturing theater - from designers and engineers to suppliers and relevant third-parties to the executive wing. This must extend all the way from kickoff to production line. The sage advice, "Measure twice and cut once" (check one's measurements for a second time before you cut something) is not so easy to follow in any product development circuit, including the construction equipment industry. Devoting significant energy and resources to market analytics, typically the first phase of product development, slowing down the development cycle, and challenging a long-held status quo, poses challenges.

In an overwhelming number of cases, our end users know definitively what they want in the products we deliver. And for this reason, there should be little-to-no guesswork in the engineering and development of, say, heavy construction equipment (e.g., excavator). So it follows that we have our jobs cut out for us - clean and neat, simple and quite straightforward. But not all engineering and development is always as straight-laced as that. Consider the production of a passenger vehicle, an aspirational purchase for most consumers and much unlike a specific-purpose excavator. A good deal of gut feel, apart from hefty lifting by way of research, goes into shaping a vehicle, that will look, feel, and stay edgy as well in the three years, on average, it takes to produce that vehicle.

With the consumer being the key, meeting the needs of the market are important. In the race to win majority market share in emerging markets like India, the manufacturer who best meets the needs of the market will lift the trophy, no doubt. All we need to do to get there, is listen. 

The author is Senior Vice President-IHM, Tata Technologies

STATEMENT OF OWNERSHIP

Statement about the ownership and other particulars about newspaper entitled THE MACHINIST as required to be published in the first issue of every year after the last day of February.

FORM IV (See Rule 8)

1. Place of Publication: The Times of India Building
Dr. D. N. Road, Fort, Mumbai 400 001
2. Periodicity: Monthly
3. Printer's name: Mr. Joji Varghese for the Proprietors, Worldwide Media Private Limited
- Nationality: Indian
- Address: The Times of India Building, Dr. D. N. Road, Fort, Mumbai 400 001
4. Publisher's name: Mr. Joji Varghese for the Proprietors, Worldwide Media Private Limited
- Nationality: Indian
- Address: The Times of India Building, Dr. D. N. Road, Fort, Mumbai 400 001
5. Editor's name: Niranjan Mudholkar
- Nationality: Indian
- Address: The Times of India Building, Dr. D. N. Road, Fort, Mumbai 400 001
6. Names and addresses of individuals who own the newspaper and partners or shareholders holding more than one per cent of the total capital as on February 29, 2016 in the company-
- Worldwide Media Private Limited (Owner), The Times of India Building, Dr. D. N. Road, Mumbai 400 001
- Bennett, Coleman & Co. Limited (Shareholder holding more than 1% of total capital), The Times of India Building, Dr. D. N. Road, Mumbai 400 001
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Manufacturing 'Defence'

The Machinist presents a quick overview of important developments related to the field of defence manufacturing in the country

Defence deals worth Rs39,955.36 cr signed in 2015-16

During the year 2015-16, 44 contracts have been signed with value of Rs.39,955.36 crore for capital procurement of defence equipment including helicopters, Radar, Rockets and Simulators. An MOU has been signed in January, 2016 with Government of French Republic for purchase of 36 Rafale Aircraft.

Capital Procurement of defence equipment is carried out as per the current Defence Procurement Procedure (DPP-2013) which gives priority to indigenous design, development and manufacture of defence equipment by according higher preference to Indian vendors in procurement of defence equipment. The new DPP which will come into effect shortly will further promote indigenisation and self-reliance in defence through the public and private sector.

Rafale Fighter Plane Deal with France

As per the India-France Joint Statement issued by the two countries during the Prime Minister's visit to France, Government of India conveyed to the Government of France that in view of the critical operational necessity for Multirole Combat Aircraft for Indian Air Force (IAF), Government of India would like to acquire 36 Rafale jets in fly-away condition as quickly as possible. A Memorandum of Understanding (MoU) between Indian and French Government has also been signed on January 25, 2016 in this regard. Negotiations with the French side are currently on.

Defence Cooperation with France

The High Committee on Defence Cooperation (HCDC) last met (15th meeting) in Paris, France on 12th January, 2015 to discuss Strategic partnership, military cooperation, Procurement and Research & Technology. HCDC is led by Defence Secretary from the Indian side and is the highest level institutionalized forum between both the countries. Army, Air Force and Navy of both sides also meet annually to discuss and explore military cooperation.

Following Memorandums of Understanding (MoU) and Agreements have been signed between both the countries:

- MoU between the Government of the French Republic and the Government of India on supplies of Defence Equipment.
- Agreement between the Government of the Republic of India and the Government of the French Republic on Defence Cooperation.
- Technical Arrangement between the Minister of Defence of the Republic of India and the Minister of Defence of the French Republic concerning co-operation in the field of Guided Weapon Systems and Technology.
- Agreement between the Government of the Republic of India and the Government of the French Republic concerning to the Protection of Classified Information and material in the field of defence.
- MoU between the Government of the Republic of India and the Government of the French Republic on purchase of Rafale aircraft.

Disinvestment of DPSUs

- Government has approved disinvestment of the following defence sector CPSEs:
- Bharat Electronics Limited (BEL): 5% paid-up equity of BEL out of Government of India's shareholding of 75.02 per cent, through Offer for Sale (OFS);
- Hindustan Aeronautics Limited (HAL); 10% paid-up equity of HAL, through Initial Public Offer (IPO).
- Strategic sale of Defence Public Sector Undertakings (DPSUs) is not contemplated.

Defence Production Policy

The Defence Production Policy, aims at achieving substantive self-reliance in the design, development and production of equipment, weapon systems, platforms required for defence in as early a time frame possible; creating conditions conducive for the private industry to take an active role in this endeavour, enhancing potential of SMEs in indigenisation and broadening the defence R&D base of the country. Indigenous manufacturing of defence equipments is encouraged by the Government through several policy measures.

FDI & procurement

- Foreign Direct Investment (FDI) Policy under which Foreign Investment Cap upto 49% is allowed through automatic route and above 49% under Government route on case-to-case basis, wherever it is likely to result in access to modern and 'state-of-art' technology in the country. The foreign investment in defence sector is further subject to industrial license under the Industries (Development & Regulation) Act, 1951.
- Preference to 'Buy (Indian)', 'Buy and Make (Indian)' & 'Make' categories of capital acquisition over 'Buy & Make (Global)' or 'Buy (Global)' categories in Defence Procurement Procedure.

Industrial licensing

Industrial licensing regime for Indian manufacturers has been liberalised and most of the components/ parts/ sub-systems have been taken out from the list of defence products requiring Industrial Licence. This has reduced entry barriers for new entrants in this sector, particularly small and medium enterprises. The initial validity of Industrial Licence has been increased from three years to 15 years with a provision to further extend it by 3 years on a case to case basis.

Issues related to level-playing field between Indian vs. foreign manufacturers and public sector vs. private sector have also been addressed. These include Exchange Rate Variation (ERV) protection for Indian vendors, offset obligations in 'Buy (Global)' cases, Excise/ Custom duties on defence equipments, etc. In the current financial year 2015-16, Department of Industrial Policy & Promotion (DIPP) has issued 61 Industrial Licenses (ILs) for manufacture of various defence equipment under IDR Act 1951, till December 2015.

Offset implementation

Offset implementation process has been made flexible by allowing change of Indian Offset Partners (IOPs) and offset components, even in signed contracts. Foreign OEMs are now not required to indicate the details of IOPs and products at the time of signing of contracts.



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Has India arrived? Pic for representation only. Courtesy: PIB

Transforming India

With the IMF hailing India as a 'bright spot' amidst a slowing global economy and the World Economic Forum calling India's growth as 'extraordinarily high', the FM has tried to set the agenda for the FY 2016-17 as 'Transform India' with this year's budget.

While presenting the General Budget 2016-17 in Lok Sabha, the Union Finance Minister Arun Jaitley said that the growth of GDP has accelerated to 7.6 percent in the current Financial Year. This was possible notwithstanding the contraction of global exports by 4.4 percent compared to 7.7 percent growth in the world exports during the last three years of the previous Government. He said that the Global growth has slowed down from 3.4 percent in 2014 to 3.1 percent in 2015. Financial markets have been battered and the global trade had contracted. Amidst these global events, the Indian economy held its ground firmly, due to the inherent strengths and policies of the present Government.

The Finance Minister said that the IMF has hailed India as a 'bright spot', amidst a slowing global economy. The World Economic Forum has commented that India's growth is 'extraordinarily high'. He said that it could be achieved in spite of inheriting an economy of low growth, high inflation and zero investor confidence in Government's capability to govern.

The Finance Minister further said that CPI inflation which was 9.4 percent during the last three years of the previous Government had come down to 5.4 percent. This was accomplished despite monsoon shortfall of 13 percent for two consecutive years. Calling India's external situation as robust, Jaitley said that the Current Account Deficit had declined from 18.4 billion US dollars in the first half of last year to 14.4 billion this year, projected to be 1.4 percent of GDP by

Big Boost to 'Ease of Doing Business'

A Bill shall be introduced in the current Budget session of the Parliament in order to amend the Companies Act 2013. While presenting the General Budget 2016-17 in Lok Sabha, the Union Finance Minister Shri Arun Jaitley said that this will remove the difficulties and impediments to ease of doing business. The Bill would also improve the enabling environment for start-ups. The registration of companies will also be done in one day.

the end of this year. India's foreign exchange reserves are at the highest level of about 350 billion of US dollars.

Money belongs to people

The Finance Minister affirmed the principle that money with Government belongs to the people and the Government has the sacred responsibility to spend it prudently and wisely for the welfare of people, especially for the poor and the down-trodden. He said that the Plan expenditure at RE stage has been increased in 2015-16 in contrast to the usual practice of reducing it. Jaitley pointed-out three serious implications facing the Indian economy. "Firstly, we must strengthen our firewalls against the risks of further global slowdown and turbulence by ensuring macroeconomic stability and prudent fiscal management. Secondly, since foreign markets are weak, we must rely on domestic demand and Indian markets to ensure that India's growth does not slow down. And thirdly, we must continue with the pace of economic reforms and policy initia-



tives to change the lives of people for the better,” the FM said.

Corporate Tax proposals

Announcing Corporate Tax proposals in the Budget 2016-17, the FM said that new manufacturing companies incorporated on or after 1st March 2016 will be given an option to be taxed at 25 percent + Surcharge and Cess provided they do not claim profit-linked or investment-linked deductions and do not avail of investment allowance and accelerated depreciation. He further proposed to lower the Corporate Tax rate for the next financial year for relatively small enterprises i.e., companies with turnover not exceeding Rs.5 crore (in the FY ending March 15), to 29 percent + Surcharge and Cess.

Focus on overall development

With a focus on overall economic development of the country, Arun Jaitley’s Budget for 2016-2017 has surely given a few reasons to cheer for. The highlights include a major focus on agriculture and farmers’ welfare, massive mission to provide LPG connection to poor households, a new health protection scheme, increased outlay for infrastructure, Rs2.87 lakh crore Grant in Aid to Gram Panchayats and Municipalities, setting up of 1500 Multi Skill Training Institutes and incentives for jobs creation. Announcing a number of new schemes and increasing the allocation in various sectors, Jaitley underlined that the Government is firm on its course towards fiscal consolidation without compromising on its development agenda. He said 3.5% fiscal deficit is targeted for FY 2016- 17. 



“Firstly, we must strengthen our firewalls against the risks of further global slowdown and turbulence by ensuring macroeconomic stability and prudent fiscal management. Secondly, since foreign markets are weak, we must rely on domestic demand and Indian markets to ensure that India’s growth does not slow down. And thirdly, we must continue with the pace of economic reforms and policy initiatives to change the lives of people for the better.”

India’s Finance Minister **Arun Jaitley**

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The next chapter of the Audi e-gas story

Audi is expanding capacities for the production of its sustainably produced e-gas.

Audi is expanding capacities for the production of its sustainably produced e-gas. Effective immediately, the Viessmann Group is the first partner company to produce additional quantities of the synthetic fuel in a new type of biological process. The pilot plant in Allendorf in the German state of Hesse was officially opened recently.

Audi e-gas is generally produced in two key process steps – electrolysis and methanation. In the first step, renewably generated electricity is used to split water into hydrogen and oxygen. In the second step, the hydrogen is reacted with CO₂ to yield synthetic methane. In the Audi e-gas plant in Werlte in the German state of Lower Saxony, this is done using a chemical-catalytic process under high pressure and high temperature.

In the new Viessmann plant, methanation is now purely biological. Highly specialised microorganisms absorb the hydrogen that is dissolved in liquid and the carbon dioxide through their cell walls. From these molecules they then form the new molecule methane. The process is run under a moderate pressure of around five bar and at relatively low temperatures. “We are writing the next chapter of the Audi e-gas story here,” said Reiner Mangold, Head of Sustainable Product Development at AUDI AG, during the opening celebration. “Audi began to produce the sustainable fuel in Werlte around two years ago. Now we are also working with a partner who immediately contributed this new process.”

The pilot plant sets another technical milestone: It is the

first power-to-gas plant to utilize biological methanation across Germany. Its strength lies in the fact that it processes the carbon dioxide contained in the raw biogas directly. Unlike chemical methanation, the CO₂ does not need to be present in high concentration or purified form. This opens up new procurement paths. Smaller sewage treatment and biogas plants, in which no biogas purification is performed, can now come into consideration as CO₂ sources.

Thanks to the new partnership, Audi will be able to supply a growing number of customers with sustainably produced e-gas in the future. Simultaneously, the brand with the four rings is also extending its line-up of models with natural gas drive. At the end of 2016, sales of the new Audi A4 Avant g-tron begin in Europe. This is the second CNG model from Audi after the Audi A3 Sportback g-tron, which has been on the market since the beginning of 2014. Customers can run both g-tron

“Its strength lies in the fact that it processes the carbon dioxide contained in the raw biogas directly. Unlike chemical methanation, the CO₂ does not need to be present in high concentration or purified form.”

models on gasoline as well as on conventional natural gas, biomethane or the sustainably produced Audi e-gas.

The Viessmann Group started up its pilot plant in stages beginning in March 2015. Like the Audi e-gas plant in Werlte, it consumes tons of CO₂ in the production of the synthetic gas. Participating at the official opening of the plant in Allendorf along with Reiner Mangold, Head of Sustainable Product Development at Audi, were the Minister-President of Hesse, Volker Bouffier, and Prof. Martin Viessmann, CEO and partner of the Viessmann Group. 

Source: Audi AG

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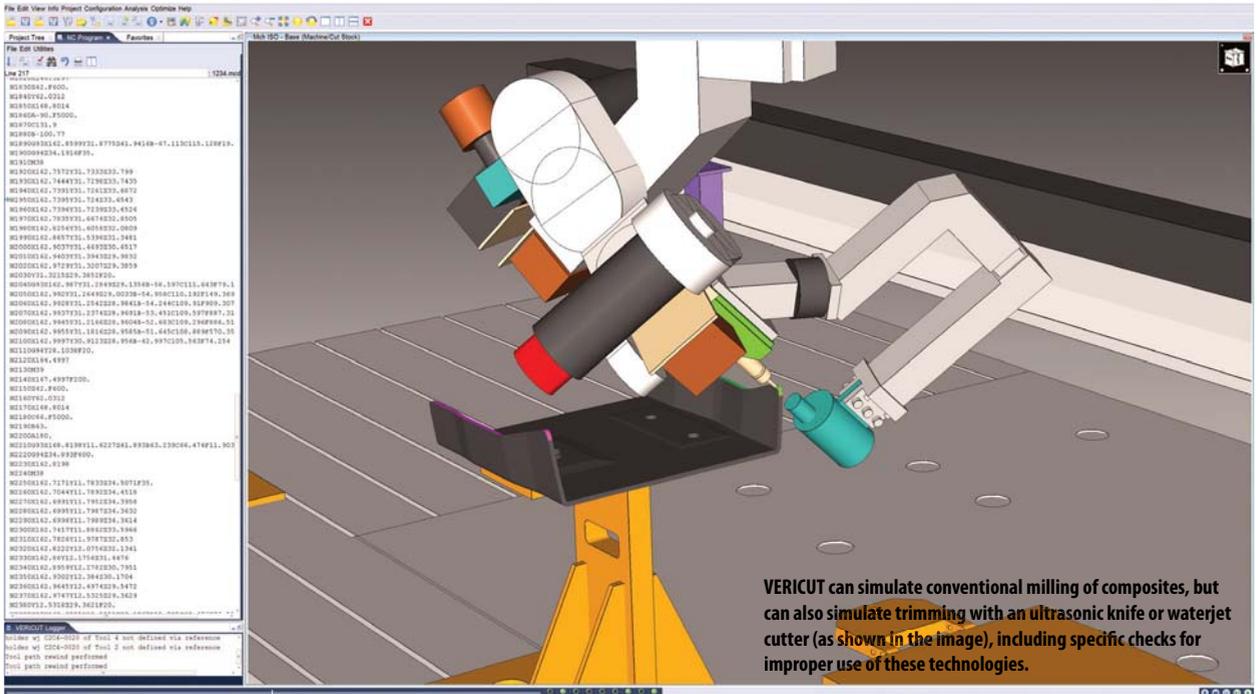
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Customer-driven enhancements!

Verification software can help alleviate a lot of stress for NC programmers, machine operators, and even management, says **Bryan Jacobs**, Marketing Communications Manager, CGTech

Q Let's start with the basics. Why are Tool path verification and optimization important in manufacturing operations?

VERICUT verification software reduces scrap loss, rework, and helps manufacturers eliminate the process of manually proving-out new NC programs. The program also optimizes NC programs in order to save time, reduce tool breakage, and produce higher quality surface finish. Our customers have summarized it best: "VERICUT lets the programmer go home and sleep." Manufacturers spend a lot of time and energy avoiding mistakes. Since verification software catches mistakes upfront before a real problem occurs at the CNC, it can help alleviate a lot of stress for NC programmers, machine operators, and even management. Nobody wants to miss a shipment



There are a number of factors driving our growth, but probably the biggest driver is that we are finally at a tipping point with the accessibility and reliance on 3D geometry."

deadline because of a CNC machine crash.

Q CGTech demonstrated the new version of VERICUT® CNC machine simulation and optimization software at the EMO Milano show in October, 2015. What is 'new' about this version?

In addition to new features designed to make NC programmers' jobs easier, nearly 500 customer-driven enhancements and software change requests have been completed in version 7.4. These updates utilize the latest technologies to enable faster processing speeds, longer tool life and increased part quality. Added features to the user interface simplify the most common user actions and significant developer hours have been invested to increase simulation speed by more thoroughly

taking advantage of multiple processors and background processing.

VERICUT's Tool Manager user interface is redesigned to enable easier user interaction. A new Tool Bar located at the top of the Tool Manager window consists of a combination of icons and pull-down menus providing easy access to all features needed to create and maintain tool libraries, create/modify tool assemblies, import tool assemblies and create or import OptiPath records. Also, in the Tool List, tool components now have a Parent/Child hierarchy allowing for better tool assembly management and modification. All Tool Definition windows have been redesigned to make tool definition easier. VERICUT 7.4 ships with a library of common tools, making it quick and simple to add new tools to a simulation session.

"Nobody wants to miss a shipment deadline because of a CNC machine crash."

tured in several different ways, but almost all the methods to create the part's shape involve a moulding or forming process. The moulded composite parts are sometimes moulded to net shape, but more commonly they are "near net shape," and

consequently require additional removal processes such as trimming, some light machining, and maybe drilling. By the time the part is at this stage, many hours have been invested and scrapping the part can be disastrous. Thus, to ensure the machining is correct, VERICUT simulation is used to simulate the NC programs. VERICUT can simulate conventional milling of composites, but can also simulate trimming with an ultrasonic knife or waterjet cutter, including specific checks for improper use of these technologies. CGTech has been supporting these kinds of machining operations with VERICUT for nearly 25 years.

Q Is this latest version available for Indian customers?

Yes, VERICUT releases are available for download in India immediately after any release.

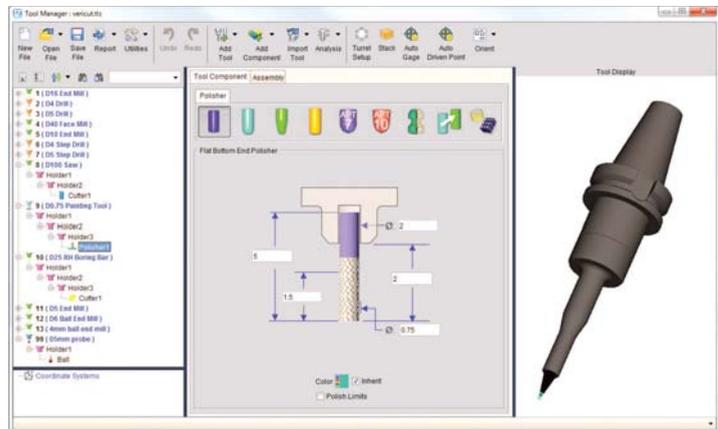
Q CGTech and MachiningCloud have jointly announced a VERICUT enhancement in the MachiningCloud. How will this help your customers?

Setting up virtual simulation is much like setting up a job on the real machine. You need a stock model, a posted g-code program, fixtures, and tooling. VERICUT is now connected to the Machining Cloud, providing access to cutting tool models supplied by tool manufacturers world-wide. The manufacturing industry is currently very interested in connected machines and leveraging the Industrial Internet of Things (IIoT). As more of the world's manufacturing resources become available via internet connectivity, CGTech will provide connections to these resources for our VERICUT users.

Q To address various market demands, composites are being used by a wide range of industries. However, machining of composites is quite a challenging process. At the 2016 JEC Composites show, CGTech is demonstrating VERICUT Composite Applications. Tell us more about this.

VERICUT Composite Applications is a term we use to describe our suite of machine-independent off-line programming and simulation software for automated fibre-placement and tape-laying machines. It consists of three separate products that can be used individually or together: VERICUT Composite Paths for Engineering (VCPe), VERICUT Composite Programming (VCP), and VERICUT Composite Simulation (VCS).

You bring up an excellent point about the *machining* of composites. Composite parts, which are typically made from Carbon Fibre Reinforced Plastic (CFRP), can be manufac-



VERICUT's Tool Manager user interface is redesigned to enable easier user interaction.

Q In CIMdata's annual NC Software Market Analysis Report, CGTech is positioned as the ninth-largest CAM software vendor and one of the only top ten vendors expected to increase market share in 2015. What has been driving this growth for CGTech? How has it been in the Indian market?

There are a number of factors driving our growth, but probably the biggest driver is that we are finally at a tipping point with the accessibility and reliance on 3D geometry. Getting models of tooling, fixtures, and other features used to be a barrier to quickly implementing VERICUT. As your question about MachiningCloud illustrates, 3D models are becoming readily available and vendors are becoming more open to sharing this information. Most CAD/CAM systems are using 3D models, and these same models can be used downstream in the simulation as well. We opened our office in India to provide direct sales and support to VERICUT users and it's been doing very well. In 2015 alone we saw a 30 percent revenue increase over 2014, and expect double-digit growth again in 2016. 



Merc celebrates 20 years of making E-Class in India

The country's largest luxury car maker, Mercedes-Benz India has launched a refreshed version of its highest selling luxury sedan in its portfolio, the E-Class. Christened as the 'Edition E', this luxury sedan marks the 20 years of the start of production of the famed E-Class, which has the unique distinction of being the first luxury car to be 'Made in India'. The E-Class also carries the accomplishment of being the highest selling luxury sedan in the country, with more than 32,000 units on Indian roads. The luxury sedan was launched by Roland Folger, MD and CEO, Mercedes Benz India and Piyush Arora, Executive Director, Operations, Mercedes-Benz India at the company's Chakan plant. Folger commented, "The E-Class which was the first luxury sedan to be produced by Mercedes-Benz for the Indian market, also kick started our journey in India. 20 years of E-Class in India, also reiterates the influence



of brand Mercedes-Benz on customers and its contribution towards the evolution of luxury motoring in India. We are commemorating this stupendous production accomplishment with the launch of a special 'Edition E'. The launch of the 'Edition E' strongly underlines our strategy of periodically refreshing our existing best-selling products, enabling to win customer confidence and offer them value driven products."

Ford to invest US \$145 at its Cleveland Engine Plant



Ford is investing \$145 million to upgrade its Cleveland Engine Plant – creating or retaining 150 jobs to support strong demand for an all-new second-generation 3.5-liter EcoBoost® engine family for the 2017 Ford F-150 lineup. The investment in second-generation EcoBoost engine technology is part of the \$9 billion commitment the company made in the 2015 Ford-UAW collective bargaining agreement to invest in its U.S. plants. Since 2011, Ford has invested more than \$10.2 billion in its plants across the United States. Cleveland Engine Plant produces the current version of the 3.5-liter EcoBoost engine, which powers 2016 Ford F-150, Explorer, Expedition, Transit, Flex and Taurus. Cleveland Engine Plant opened in 1951 and employs more than 1,500 people. It has produced more than 1 million EcoBoost engines since 2009.

Honda's fourth 2-wheeler plant in India inaugurated

Honda Motorcycle & Scooter India Pvt. Ltd. (HMSI) has invested Rs1,100 crore directly at its 4th plant in Vithalapur, Gujarat. Honda will manufacture 1.2 million units of only automatic scooters at this plant, where the commercial production of initial 600,000 units has started in February 2016. The 2nd line will add another 600,000 units and will start operations in mid of 2016. As a result, Honda's total motorcycle production capacity in India will increase by 26% to 5.8 million units by 2016 end. Keita Muramatsu – President & CEO, Honda Motorcycle & Scooter India Pvt. Ltd., said: "Increasing Scooterization, a trend seen earlier in developed markets of the world, is the key driver for Indian motorcycle industry today. Leading this change from the front is Honda - the undisputed market leader in this segment in India with a market-share of 56% and growing. Gujarat is an extremely productive market for Honda. As we gear up to take up this challenge of meeting the customer demand, Gujarat is an ideal home and a springboard to achieve greater heights."



Renault develops and manufactures New Model for Nissan, NV 300, which will boost Sandouville production by 100,000 Units between 2016 and 2026.

Credits: Renault Communication

Nissan NV300 van to be produced at Renault's Sandouville plant in France

Groupe Renault has announced that its Sandouville plant in northwest France will build the next-generation light commercial vehicle for Nissan. Nissan NV300 production shall increase the factory's output by 100,000 units between 2016 and 2026. A three-year work and €230 million investment have transformed Sandouville, near Le Havre, into a center of excellence for van production. The Nissan NV300 will be made on the same line as the new Renault Traffic.

"The production of the Nissan NV300 at the Sandouville plant is a win-win for Renault and for Nissan. We maximize Renault manufacturing expertise and Nissan gets a top quality production site in the heart of the European market," said Carlos Ghosn, Renault Chief Executive Officer.

Sandouville also produces a version of Vivaro for Opel and Vauxhaul. The plant will soon begin production of the next-generation Fiat mid-size van. Nissan and Renault are also developing a one-tonne pickup for Renault that will share select architectural features of the Nissan NP300.

Mazda begins production of all-new Mazda CX-9 at Ujina plant in Hiroshima

Mazda Motor Corporation has commenced production of the all-new CX-9 three-row mid-size crossover SUV at Ujina Plant No. 1 in Hiroshima. The first units produced are bound for the U.S. and Canada. The all-new CX-9 has been tailored for the North American market, which is expected to account for 80 percent of global sales forecast at 50,000 units annually. Sales of the new model start from North America in spring 2016.

The CX-9 is a high-end model of the new-generation line-up featuring the full range of SKYACTIV TECHNOLOGY and KODO-Soul of Motion design. Made in Japan to the highest quality standards, it offers customers indulgent comfort that goes beyond specs and functionality. To coincide with start of production of the new model, Mazda has begun manufacturing a new 2.5-liter direct injection turbocharged gasoline engine called SKYACTIV-G 2.5T at its Hiroshima Plant.



Machine tools major Haas reveals its F1 racecar, the VF-16

The VF-16, Haas F1 Team's first racecar, has arrived! The car was revealed on February 21st to the world motorsport press at the Circuit de Barcelona – Catalunya, where it began pre-season testing, February 22nd.

Of all Haas machines with VF nomenclature, this four-wheeled, Ferrari-powered model has been perhaps the most eagerly anticipated since Gene Haas stated his intentions to enter the world's greatest race series, less than 2-years ago. Haas Automation Inc., the company Mr. Haas founded in 1983, is Haas F1 Team's principal sponsor and the genesis of the F1 venture.

"From an international standpoint, Formula One is the highest echelon of racing, and Haas Automation builds the highest-quality machine tools," said Mr. Haas, who has grown Haas Automation Inc. into the largest machine tool builder in North America, with more than \$1 billion in annual sales.

"When you hear the words Formula One you know exactly what they stand for: a global racing series that invests in the latest technology and attracts the best talent in engineering and design. Haas Automation has an excellent reputation in the United States – for reliability, innovation, and value for money – and I want that reputation to continue to grow worldwide. Connecting Haas Automation with F1 in name and in practice is the best way to grow our business, and elevate Haas Automation to a premium, global brand."

The dark grey, light grey, and striking red-toned livery of the Haas VF-16 was derived from that of Haas Automation's CNC vertical and horizontal machining centers, turning centers, and CNC rotary tables and indexers: a 'complete' line of high-productivity CNC products.



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| 8.15 pm to 8.40 pm | Awards Ceremony – Part 1 |
| 8.40 pm to 8.45 pm | Vote of Thanks |
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Mahadev. B

M: +91 9448483475
mahadev.b@wwm.co.in

Ranjan Haldar

M: +91 9167267474
ranjan.haldar@wwm.co.in



The 'Grinding' Games!

At its annual 'Motion Meeting' event, grinding machinery major Fritz Studer AG demonstrated its ongoing developments in internal cylindrical grinding machines.



The Studer management and in part Schaudt Mikrosa (from left to right): Fred Gaegauf, Dr. Gereon Heinemann, Gerd König, Jens Bleher

It was a kind of an 'Olympics of Grinding' in the picturesque town of Thun in Switzerland. The Motion Meeting 2016 brought together international journalists and three brands Studer, Schaudt and Mikrosa in friendly competition under the symbol of the three rings and the motto 'The Flame of Passion'. Men (women as well) and machines were pitted against each other in a friendly competition and also to demonstrate the latest developments in the field of grinding.

With regular new developments every six months, Fritz Studer AG has surprised users of internal cylindrical grinding machines in the last two years. What still appeared as a separate machine with the S141 universal machine (component length up to 1300 mm) in May 2014 has evolved into a complete machine platform with the universal machines in the S141 and S151 series in autumn 2014, the S131 universal machine and the S122 production machine in spring 2015 as well as the S121 universal machine in autumn 2015. Studer is now completing this platform with a final coup: The Thun grinding machine specialist is bringing three new radius internal cylindrical grinding machines to market, to replace the successful CT700 and CT900 models.

The main fields of application of the new S121, S131 and S141 radius grinding machines are the manufacture of dies – especially in the packaging industry –, where tungsten carbide and ceramic are primarily processed, and the production of hydraulic components such as axial pump pistons, guide

plates and housings made of hardened steel, cast iron and copper. Other fields are the production of complex workpieces with several tapers greater than 20° to 90° in a single clamping, where the main applications are in watch and medical technology with extra-hard materials such as industrial ceramic, sapphire and tungsten carbide, as well as the manufacture of human implants for shoulders, knees and hips from ceramic and titanium.

New market segment opened up

In the past, this range of parts was successfully covered by Studer universal internal cylindrical grinding machines CT750 and CT960. With its market entry, the new S121 radius grinding machine will now take over the range of applications of the CT750, while the S131 has been designed for the previous component range of the CT960. New with the S141 radius grinding machine is, that the machining of larger workpieces is also now possible. For the user, this means in figures: The swing diameter above table is 250 mm for the S121, 300 mm for the S131 and 400 mm for the S141. External diameters up to 160 mm can now be machined with an external grinding wheel 250 mm in diameter. The maximum length of parts including clamping device is 300 mm for all three radius grinding machines, and the maximum workpiece weight including clamping device is 100 kg.

There are good reasons why Studer is replacing the successful CT models, which translate into increased customer



benefit. First and foremost, a higher level of technology has been achieved with the new radius grinding machines. This is evident in the machine bed, which now comprises of Granitan® and thus offers higher dampening levels, thermal stability and guidance accuracy. It is also reflected in the StuderGuide® guideway and drive system with linear motors, which features high wear resistance, a long working life and high dynamics (interpolation possibility). The main benefit which customers can derive from the new machines is the extended range of parts possible due to the larger size of the machine, and the new dressing concept which, thanks to the new arrangement on the B-axis (simultaneously swiveling workpiece table) is not only simpler, but also offers greater thermal stability and mechanical rigidity. The fact that the new S121, S131 and S141 are now also manufactured according to the Thun modular principle also means non-variable parts in maintenance and service and consequently a higher availability of service technicians. It also means harmonization of the components and, with the new design and improved ergonomics, an increase in the machine's value.

Powerful software

Special mention should be made of the StuderSIM software in regard to the new radius grinding machines. With this software, STUDER answers the question of what an operator needs in order to be able to machine complex parts – often in a single clamping. The answer: An assistant, with which workpieces – derived from a drawing – can be completely defined, all necessary geometric data for the grinding cycles can be generated and with which the grinding process can be checked and visualized by means of simulation on a PC or on the

machine. StuderSIM is this powerful assistant. It is complemented by hardware which features the previously mentioned Granitan® machine bed and the StuderGuide® guideway and drive system with linear motors. It also includes X and Z-axes in a cross-slide arrangement as well as a cross slide, which in the case of the S121 can either take one spindle, two spindles in parallel or two spindles on a hydraulic turret, and in the case of the S131 and S141 comes with a 4-position turret with direct drive. The machines are also equipped with a workhead on a simultaneously swiveling B-axis, a dressing spindle or a fixed dresser on the B-axis and a measuring probe on the grinding head. Other new features are, finally, the enclosure and the control console in the Studer design.

The S121, S131 and S141 radius grinding machines differ from the universal cylindrical grinding machines of the same name in a number of technical details. The B-axes of the radius grinding machines are set up simultaneously and offer interpolation (from -60° to +90°), while the universal cylindrical grinding machines have a swiveling table, which can be positioned from -10° to +20°. In addition, the spindles on the radius grinding machines are arranged at the rear of the turret, while this is the other way round on the cylindrical grinding machines: they are at the front. There are also differences in the dressing concept. The radius grinding machines have the dresser on the B-axis, while the cylindrical grinding machines are equipped with two swivelling dressers. Last but not least, the S121 to S151 cylindrical grinding machines use the Studer operating system StuderWIN, while the new radius grinding machines use the StuderSIM operating system.

Platform is complete and rounded

With the market entry of the S121, S131 and S141 radius grinding machines, the platform of Studer internal cylindrical grinding machines is now complete and rounded. In addition to the new radius grinding machines, the platform includes the simple S110 and S120 machines, the S121 to S151 universal internal grinding machines and the S122 production internal grinding machine. Five machines have been replaced (S120, S145, S151, CT700, CT900), enabling four new market segments to be opened up. The S121 universal internal grinding machines are small machines for a large application range, the S122 production internal grinding machine is a machine for large component output and high availability, and the S141 and S151 universal internal grinding machines (700 and 1300 mm) are machines for long workpieces. Finally, a fourth market segment is opened up with the new S141 radius grinding machine for parts up to 400 mm in diameter. 



The S141 radius internal cylindrical grinding machine for larger workpieces has a swing diameter of 400 mm and grinds workpieces up to 300 mm.



Three key innovations for the future of metalworking fluids

While meeting new goals for quality and productivity, manufacturers are, at the same time, under pressure to lower total operating costs and the impact on the environment. That's a tall order, but the right fluid can help. That's why the demand for highly innovative metalworking fluids is stronger than ever.

In today's competitive manufacturing environment, metalworking companies are continually searching for that next competitive advantage that will give them the edge—using new materials, adopting advanced manufacturing processes, attaining higher speed/feed rates, and more. While meeting new goals for quality and productivity, manufacturers are, at the same time, under pressure to lower total operating costs and the impact on the

environment. That's a tall order, but the right fluid can help. That's why the demand for highly innovative metalworking fluids is stronger than ever.

Forward-thinking formulators are helping manufacturers meet the challenges by discovering the right chemical components and blending them in the optimal formulation, to find the best product fit to the customer needs. They must know the key drivers of their customers' businesses and deliver. Not just on one or two, but on all of them - high productivity, low environmental impact, reduced cost and bio-stability, just to name a few.

Cold Temperatures, Frozen Product...No Problem!

As the winter season approaches and temperatures fall below 32°F (0°C), fluid products can be susceptible to freezing while in transit from our manufacturing location to your facility. Expediting freight and using a heated truck if at all available, are both expensive options. Shipment deliveries can also be delayed due to cold temperatures since some trucking companies will refuse to accept a shipment if the container has a "DO NOT FREEZE" label on it.

If this is a primary concern during the harsh winter months, consider one of many metal removal fluids Quaker offers that will withstand being frozen. Designed to retain its consistency, a portfolio of products can be thawed and ready to use with no impact on product performance.

1 Developing a Less Hazardous Metalworking Fluid.

Environmental Drivers: Government and corporate restrictions | Consumption and waste reduction

Quaker formulators have the expertise to reshape processes and formulations to meet or exceed today's environmental and safety standards and to help customers reduce wastewater and emissions. In addition, innovation in processes and formulations can extend the life of fluids and reduce consumption.

For example, by applying mineral oil-free, unique lubrication concepts to fluid design, we've been able to reduce system concentrations while at the same time providing superior machining performance. These innovative emulsion characteristics and properties can have a direct impact on the amount of



Build Your Skills...

Dump, Clean and, Recharge (DCR) applies to single sumps or central systems in which the time has come to replace the fluid whether it is a coolant, cleaner, stamping fluid, or another water soluble product. A DCR needs to be conducted properly and in a timely fashion so that resources are not wasted.

A DCR is performed so that a stable situation can be achieved with the fluid being dumped. The reasons could stem from the following:

- The fluid is too dirty with fines, tramp oil, or other debris
- The system has a leak or mechanical issues
- The microbiological level has reached a critical level that cannot be handled by the post addition of the necessary biocides
- A change to a different product type is required to improve the operation

fluid used per part produced. The amount of fluid used can typically be reduced 15-20 percent as compared to traditional metalworking fluids.

The reduction in fluid used per part produced also reduces the total water consumption of plant operations. This is a significant benefit in areas where water consumption is of great concern. Besides improving the lubrication at the machine tool/part interface, these new, novel emulsion packages have been proven to be very effective in defending against tramp oils and are very compatible with waste minimization technologies such as coolant recycling programs that reduce the total cost of ownership.

2 Developing Extremely Versatile Multifunctional Fluids.

Versatility Drivers: Inventory | Logistics | Training | Environmental reporting

A manufacturer's ideal would be to have one fluid for their entire facility. Reducing the number of products on the plant floor reduces inventory costs, logistics costs, operator training and environmental reporting. The invention of new technologies allows for unique emulsion and lubrication combinations to effectively machine a number of alloys in various manufacturing processes. Results have shown very tangible reductions in tooling costs, up to 20-40 percent tool life improvement, as well as enhanced part quality. These mineral oil-free technologies are extremely versatile and can be utilised in heavy-duty

applications such as tapping and reaming.

These new combinations have been tested on various materials from titanium and aluminum as well as machining ferrous applications. These product platforms are extremely versatile fluids and an excellent choice for large central systems to individual sumps and total machine shop applications.

3 Going Beyond Bio-Stability. Biostability Drivers: Bacteria | pH | Contaminants

Since the invention of emulsifying oil in water to create water-soluble coolants, controlling the biological growth of bacteria and fungus has always been a concern. The challenge with controlling biological growth is to create an effective bio-resistant control system that remains effective over the life of the fluid with normal maintenance procedures.

Controlling the pH of a coolant system has always been the primary method for controlling bacteria and fungus because elevated pH creates an inhospitable environment for bacteria and fungus to grow and multiply. Although maintaining pH is a very effective first defense in bio-control, other outside plant factors, such as dirt, air, and system carry-over, may inoculate the system with bacteria and fungus that require the use of bio-control material to eliminate the biological contamination and growth.

Typical industry bio-resistant testing for validation of coolant technology is a test in which the coolant is inoculated with bacteria and is tested for growth over an eight-week period. Quaker has gone beyond standard bio testing by extending the bio evaluation. We have utilised actual plant bacterium as inoculant in Quaker bio resistant tests. These improved and versatile bio-resistant packages have resulted in products that have passed these more stringent microbiological challenge tests. Quaker's unique bio-resistant package is designed to resist degradation from tramp oil and other plant coolant contaminants. 

Source: Quaker



Awards for exciting bearing applications

The three most exciting applications out of 73 Indian submissions received the 'local manus India' award at the occasion of Auto Expo 2016.

The global manus award ceremony was held for the seventh time at the Hannover Messe 2015. Developers from all over the world submitted 467 applications, demonstrating the creative potential when it comes to using polymer bearings. With 73 entries India was the leading country with the highest number of participants. The three most exciting applications out of 73 Indian submissions received the 'local manus India' award at the occasion of Auto Expo 2016. The golden manus with prize amount ₹1,00,000 was given to ATS ELGI. This company relies on lubrication-free polymer plain bearings from igus at its carwash underbody sprayer.

A diagnosis screening device for breast cancer from Tuscano Equipments private Ltd won the silver manus (₹75,000). The bronze manus award (₹50,000) went to SRG Machines Pvt Ltd for egg sorting machines.

Every two years, interesting applications using polymer plain bearings are chosen for the manus awards. These applications stand out due to their technical and economical efficiency as well as the creativity and boldness of the developer. The entries from all over the world demonstrate the diverse range of application possibilities for polymer plain bearings, from prototype to serial application. Most of the applications for the manus 2015 competition came from India. From these, the three most innovative applications were chosen in a local manus competition and the prizes were awarded during Auto Expo 2016 in New Delhi.



“Every two years, interesting applications using polymer plain bearings are chosen for the manus awards. These applications stand out due to their technical and economical efficiency as well as the creativity and boldness of the developer.”

From carwash to medical device – winners of the local manus India

The manufacturer ATS ELGI received the golden manus award. The company relies on robust iglidur bearings for the underbody washing system at its carwash. Since these polymer plain bearings do not corrode, downtimes at the carwash are reduced. Besides the self lubricating bearings eliminates the need to grease or maintain continually.

A screening device from Tuscano Equipment for diagnosing breast cancer secured a second place. In this application, the thermal radiation of the breast is recorded and a thermal map is created. Thanks to the installed iglidur PRT slewing ring bearings, linear slides SLW & ZLW, the machine runs smoothly with low noise. The bronze manus went to SRG Machines Pvt. Ltd. for egg sorting machines. These machines segregate eggs into four different weight classes. A lubrication-free and dirt-resistant drylin N system from igus was installed here, which is resistant to corrosion and thus perfect for use in the machines. With this application, that ensured high hygiene standards by eliminating lubrication SRG Machines Pvt. Ltd. won the third place. 



Boosting innovation

Machine tools major BFW has set up the 'Dr Kalam Center for Innovation' as a step forward towards increasing its global footprint while simultaneously retaining its position in India.

Bharat Fritz Werner (BFW), a leading manufacturer of machine tools for more than fifty years, has recently inaugurated the 'Dr Kalam Center for Innovation' at its premises in Bengaluru, India. This world class Research & Development center, which has been set up with an investment of Rs. 25 million, is a step forward towards increasing BFW's global footprint while simultaneously retaining its position in India. BFW expects to end FY 2016 with an annual turnover of Rs. 900 crore.

This Innovation Center named after Dr. APJ Abdul Kalam is a tribute to the great scientist, researcher, and innovator. This is BFW's first Innovation Center spread over 3000 sq ft. The Dr Kalam Center for Innovation was inaugurated by A S Kiran Kumar, Chairman, Indian Space Research Organization. Scientists at this Center will work on core research to improve and develop energy efficient

and alternative material machine tools. Also, present on the occasion were G K Moinudeen, Director & Head, Karnataka State Office, Confederation of Indian Industry and J Sheik Saleem, grandnephews of Dr. APJ Abdul Kalam.

Speaking at the function, Kiran Kumar said, "I am happy to be a part of this Center's inauguration. Research and Development is vital for India's manufacturing capabilities. At a time when we are looking at Indian manufacturing moving to the next level, BFW's approach is laudable. This Center is a tribute to Late Dr. APJ Abdul Kalam who was the guiding force for many scientific innovations. It is indeed a great initiative that BFW will collaborate with academic institutions for R&D."

Bharat Fritz Werner acquired the Turning business of Chennai-based engineering firm Proteck Machinery nine months ago. BFW is aggressively working towards import substitution and contributing towards the 'Make in India' mantra by introducing a plethora of machining options.

A K Kothari, Chairman BFW said, "Our Group compa-



"At BFW, we believe our customers deserve innovative machine tools and, we are committed to making the right investments to reinforce customers' trust in us."

A K Kothari,
Chairman BFW

nies, stress a lot on R&D irrespective of the industry to which they cater. Innovation is at the center stage of our corporate philosophy. At BFW, we believe our customers deserve innovative machine tools and, we are committed to making the right investments to reinforce customers' trust in us."

BFW has transitioned from being a traditional machine tool manufacturer to becoming a NextGen solutions provider. The company aspires to be one among global top 20 machine tool manufacturers by 2020.

Ravi Raghavan, MD & CEO, BFW said "Spends on R&D in India are well below the global standard across industries. As a nation, we need to pay greater attention to innovate and transform. At BFW, we recognise our responsibility as one of the leaders and being a pioneer in this industry, we are striving to drive

progress by singularly focusing on R&D. Our ambition is to be a strong global player, and research is the backbone of our plans. In the coming years, we will continue to invest in cutting-edge technology."

BFW has a leading share of the domestic milling market.

With a subsidiary in Germany,

the company today caters to the global needs of customers for high-end milling needs. With the acquisition of Proteck Machinery, BFW has made a commitment to be a leading player also in the Turning segment.

T Subramaniam, Head of the Innovation Center, BFW said, "While BFW's design capability is acknowledged worldwide, we need to complement this with inputs from core research. This is what the Innovation Center will help us achieve. Investments in manufacturing R&D are critical for a country's progress and employment generation." 

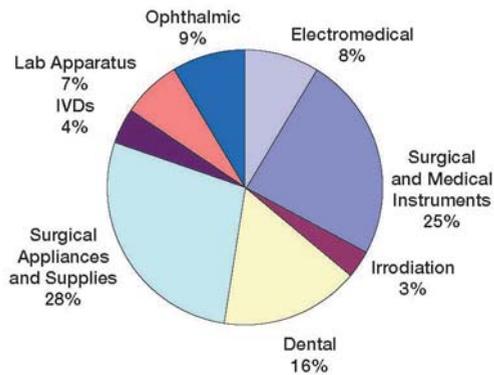
"Our ambition is to be a strong global player, and research is the backbone of our plans."

Ravi Raghavan,
MD & CEO, BFW



ISCAR innovations in the miniature and medical sector

The global medical manufacturing industry is one of the world's fastest growing industrial sectors. It has accounted for more than 10% of the gross volume of metalworking activities recorded in 2015.



New Grooving and Turning Tool with a Unique Side Clamping Mechanism



The demand for the production of smaller, more intricate and accurate Medical Industry parts that are often manufactured from difficult-to-machine materials continue to increase.

When referring to Medical Industry Machining, the term encompasses all machining related surgical implants, orthopaedic devices and medical instruments. The expression also includes small scale machining and micromachining, as today's implanted devices often consist of, or include minute components.

Amongst other difficult to machine advanced materials, titanium is often used in medical devices. This is due to its non-reactivity characteristics associated with the human body.

Small metalworking shops wishing to compete in the challenge of producing medical parts must develop a range of advanced capabilities to meet the specialized demands of the medical industry, especially when involved in small batches and prototype work.

Mindful of the specific requirements of this challenging sector, the creative work and exhaustive field trials undertaken by ISCAR's advanced R&D department has resulted in the significant expansion of the company's range of cutting tools associated with the medical industry. In addition to innovative new products, ISCAR's R&D staff has applied a series of ingenious modifications to existing popular tools to enable the efficient and economical machining of smaller parts.

ISCAR's expanded range of optimum machining solutions for highly efficient, small scale cutting tools has been made possible by technical progress in several important areas -

- The use of the most suitable base materials
- The application of advanced metallurgical coatings
- The development of unique tool geometries
- The upgrading of ultra-secure clamping systems,

ISCAR's new GEHSR/L-SL tool family, designed for Swiss-type and screw machines, are an improved version of the previous, popular GEHSR/L screw-clamped tools.

The newly developed, user-friendly insert clamping system enables the secure fastening of inserts by the use of a key from either side of the tool. Following the rapid clamping procedure the torx screw can be used from either side of the tool, while a specially designed plastic screw blocks the opposite side of the tool preventing chip entry. If indexing is required from the opposite side, the screw can be switched to the opposite side of the tool.

The GEHSR/L-SL tools are now available in 10, 12 and 16 mm shank sizes, which house GEPI and GEMI inserts bearing different chipformer geometries. The inserts range between 2.2 to 3.2 mm widths.

When turning small parts, light cutting parameters are applied. Rather than making use of large inserts, small sized economical inserts are much more appropriate for this kind of machining. The shorter head design of GEHSR/L tools provides higher rigidity and improved machining stability, which enables the application of higher cutting conditions and by doing so, assures enhanced surface finish results.

When using ISCAR's older generation tool-holders, or other currently available tool-holder types, the tool needs to be removed from the tool gang for insert indexing on small Swiss-type machines. A major advantage is that ISCAR's inventive new tools enable insert indexing without removing the tool from the turret.

In addition to the above, and available in the same size range, ISCAR also provides the GHSR/L-JHP-SL variant with high-pressure coolant capabilities. The new tools feature 3 independent coolant inlet ports providing suitable machining solutions for different machine configurations.



Gripping systems/linear modules Standardized RCC axes for high-speed assembly



The carbon axes of SCHUNK's LCx series enable high-speed assembly to have huge dynamics, shorter cycle times, and maximum productivity.

Lighter, more rigid, more dynamic: when complete Z or Y axes are to be moved in high-precision high-speed applications, the linear modules of SCHUNK's LCx series set a new benchmark. The profiles of the world's first standardized linear motor axes made of reinforced carbon composite weigh around 58% less than the profiles of comparable aluminum modules. They 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: for example, because of the high elasticity modulus of RCC, the axes also have superior bending and torsional stiffness. Their excellent internal damping 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.

Excellent dynamics and repeat accuracy

Light-weight modules in the LCx series use proven high-speed LDx high-speed modules from SCHUNK. They owe their high dynamics and repeat accuracy to a servo-electric linear motor drive. Without mechanical transmission elements, the driving force is transmitted by high-precision drive elements, free from play, directly to the slide. Precision-cut steel guide rails additionally increase accuracy. Standard equipped with absolute-value transducers, the modules provide excellent repeat accuracy of 0.01 mm per axis. They soon pay for themselves especially in highly dynamic joining and placing processes due to their extremely short cycle times, maximum precision, and consistently high process stability. Since the modules have almost no parts that wear, both the maintenance costs and the number of unplanned down-times drop to almost zero. The absolute-value transducer eliminates the need for expensive homing when the system boots and after emergency stops. In addition, the axes need neither end nor

reference sensors, reducing the investment costs, programming costs, and number of cables in the cable set.

Compact system design

The modules are impressive in terms of space as well: powerful servo motors achieve such high rated forces that smaller sizes usually suffice or, in vertical applications, greater masses can be moved. Since the motor, measuring system, and linear guidance are integrated directly into the axis profile or slide, the modules are extremely compact and require very little space. In addition, multiple freely programmable slides on a profile guide enable especially compact and low-priced concepts. For use as a Z-axis, a parking brake may optionally be added to the modules.

The standardized carbon axes come in two versions: one is the LCN version with a simple X profile, in which the axis reaches a rated force of 200 N and a maximum driving force of 500 N. The other is the LCM module, which is designed for moderate loads, is equipped with a wide double X profile, and achieves a rated force of 400 N and a maximum driving force of 1,000 N. In both versions, the maximum acceleration is 40 ms^{-2} , the maximum speed is 4 ms^{-1} , and the maximum useful stroke is 1,200 mm. The modules can be used both horizontally and vertically, optionally with a static profile, and moving slide or with a static motor and moving profile. The axes are controlled with Bosch Rexroth IndraDrive controllers as standard; a Siemens SINAMICS S120 drive is also possible as an option. Because SCHUNK offers all LDx modules with the standard interfaces Profibus, Sercos III, Profinet IO, EtherNet/IP and EtherCat, the modules can be quickly and easily integrated into higher-level system controllers.

For details, contact: Satish Sadasivan; Schunk Intec India Private Limited; Email: info@in.schunk.com; Web: www.in.schunk.com



Feeding the Positive Milling Champion

ChaseFeed High Positive SBMT 09 Insert Line for High Feed, High Productivity Machining

TaeguTec's ChaseFeed family of highly efficient SBMT inserts and relevant holders have been expanded to enable the same excellent performance for high feed rate conditions in smaller depth of cut applications. The SBMT 09 insert comes with a high positive helix cutting edge and is perfectly suited for smooth machining applications. Similar to its SBMT 13 counterpart, the SBMT 09 is a single-sided, four-cutting-edge insert specifically



sought to generate a lower cutting load during machining.

The SBMT 09 insert line includes end mills in diameters 25-40 millimeter, modular types in 25-42 mm and face mill types in diameters 32-80 mm. Also, all SBMT 09 line tool holders are coolant-capable due to their built-in through-hole design. Specifically made for high durability, these inserts can reach a feed rate of 1.5 mm/tooth at a maximum depth of cut of 1.2 mm. These strong and positive single-sided inserts come in a 4 mm thickness generating smooth machining in high feed milling on various workpiece materials. The SBMT 09 inserts

are available in three geometries: "M" for optimum machining in steel and general machining; "ML" for stainless steel, heat resistant alloy, low power machining in unstable and long overhang situations; and "MR" for high hardness machining and interrupted conditions.

The testing phase of the ChaseFeed SBMT 09 line recorded some remarkable improvements in tool life, productivity and metal removal rate compared to leading competitors'

similar tools. When pitted against two leading competitors, the SBMT 09 increased tool life by 88 percent and 100 percent while machining a workpiece made from X40CrMoV5-1. The increase in metal removal rates were equally impressive raking up 100 percent increase on materials made from mold steel. The most impressive improvement came in productivity, TaeguTec's ChaseFeed SBMT 09 increased productivity by as much as 180 percent over the competition on X40CrMoV5-1 workpieces.

For more info, visit: <http://www.taegutec-india.com/>

Radan Software For Punching

Radan software's Radpunch is the market leading solution for programming punching machines. Radpunch is machine independent and supports all major manufacturers such as Amada, Baykal, Durma, Ermaksan, Euromac, Finn-Power, LVD Shape, LVD Strippit, Murata, Nisshinbo, Prima-Power, Pullmax, Rainer, Shape, Strippit, Tailift, Trumpf, Whitney, Wiedemann, Yawei Nisshinbo and many more beside. Radpunch is designed to provide operators with the tools they require to reduce lead times and optimise punching machines.

Radnest extends Radpunch functionality to provide true shaped nests which produce high utilisation, manufacturable nests from sheets, off-cuts and remnants, delivering substantial savings in material. Radan3D is a high performance 3D modelling package designed to make sheet metal design accurate and simple, with the manufacturing process in mind. Radan understands sheet metal manufacturing requirements. Typical issues such as bend allowance and corner relief are all taken into account with Radan3D. 3D parts are automatically developed for onward processing into Radpunch, Radprofile or Radbend, ensuring a smooth and efficient workflow from design to manufacture. Radan3D works the same way sheet metal engineers think, providing an easy to use 3D modelling system for your current and future 3D requirements. Radraft provides users with a comprehensive draughting solution for drawing preparation and all 2D geometry manipulation. With many advanced features and an easy-to-use graphi-



cal interface, Radraft is flexible and cost effective. Designed to seamlessly integrate with Radprofile, the Radan punch/profile solution delivers optimisation for punch, profile and combination machine tools. This formidable combination will expand with a customer to program all their future punch, laser, plasma, router and combination machine tool investments from one system.

For more info, visit: <http://www.radcamtechnologies.com/>



27 times more reliable: the largest selection of Ethernet cables for moving applications

The entire product range with seven price points allows users to always select the perfect cable

igus has further expanded its range of Ethernet cables for use in energy chains and now offers 27 different cables at seven price points. With the largest global portfolio of Ethernet cables for moving applications, igus offers its customers the right selection for any application. All cables at igus are available from stock in 24 hours, with a 36-month guarantee for durability and no minimum order quantity surcharge.

Due to increasing automation in production processes, the volume of data that needs to be transmitted between individual functions is also increasing. Movement also plays an increasingly important role in modern production processes. For this reason, specially designed cables must be used. "Since requirements differ between applications, we are offering a complete product range of Ethernet cables specially designed for moving applications", explains Rainer Rössel, Manager of the chainflex business area at igus. "No matter what the required mechanical and electrical performance, users can count on reliable, tried-and-tested cables and select the most affordable cable from our product range that will work in their application. This includes anything from transmission standards CAT5 to CAT7 or from simple linear to complex three-dimensional movements. Even applications with particularly high torsion forces can be fulfilled, which means we have a suitable Ethernet cable for virtually any situation." The igus product range includes a total of 27 cables, from the affordable chainflex CF888 with a guaranteed service life of up to five million strokes, right up to the new chainflex CFROBOT8.052, the first robot cable that complies with



igus offers the largest product range of Ethernet cables for moving applications with 27 different types. (Source: igus GmbH)

the CAT7 standard. As is promised for the entire CFROBOT product range, igus guarantees a durability of five million torsional movements.

Special design for optimum service life

In situations where cables are fitted in static installations, commonly used Ethernet cables get the job done. But the service life of these cables is severely restricted when used in moving applications. The bus cables, developed by the motion plastics specialist igus, are always optimised for movement to provide the best possible transmission properties. The cables for linear movements are stranded with optimised strands and are available in six different jacket materials (from PVC to TPE), depending on the quality required. For cables from the CFROBOT product range, the components within the cable are guided loosely so that the cable can move safely when the wires and shielding twist together and apart. To dem-

onstrate that these special designs and materials prove themselves in real-world applications, igus inspects all cables at its 2,750 square metre in-house test laboratory by conducting more than two billion test cycles per year. Aside from electrical resistance values, which are determined using the specially designed AutΩMeS system from igus, these test sequences are also used to continuously monitor Ethernet-relevant values. The reason this is done is that the data transmission quality of the cables can cause significant problems over long periods of movement if the cables are poorly designed or manufactured. Thanks to the continuous tests that igus conducts, customers can be certain that chainflex cables will work for the duration of the guaranteed service life.

For details, contact:

igus (India) Private Limited, Sreejith Menon,
Product Manager - Chainflex®;
Email: sreejith@igus.in;
website: www.igus.in



eXtra performance – thanks to the new grade: Tiger•tec® Silver WSM45X

Extremely reliable substrate and high-performance CVD coating increase insert service life

High temperature resistance combined with high wear resistance, toughness and phenomenal hardness: These are the key features of the new inserts in the Tiger•tec® Silver WSM45X grade, which can boost performance by up to 67% more than other comparable tools. The special Tiger•tec® Silver surface treatment and the high-performance substrate ensure maximum process reliability when working with materials that have difficult cutting properties, such as titanium alloys.

The unique Al₂O₃ coating enables users to increase their productivity when machining – especially when using materials



The indexable inserts in the new Tiger•tec® Silver WSM45X grade boast high temperature resistance, effective wear resistance, outstanding toughness and exceptional hardness.

Image: Walter AG

that are difficult to cut. The surfaces are also extremely flat, which help to significantly reduce built up edge. Yet another benefit of the two-tone Tiger•tec® Silver coating is that it allows users to identify wear quickly and thus make sure that all cutting edges are used efficiently.

The indexable inserts in the Tiger•tec® Silver WSM45X grade are available for all popular Xtra•tec® and new M4000 face and shoulder mills, and the Walter F2334 copy milling cutter. WSM45X is also particularly well-suited to machining stainless steels (ISO M) and difficult-to-cut materials (ISO S). Typical components include exhaust-gas turbo chargers, turbine blades and titanium frames for use in the aerospace industry.

New RP7 geometry with Tiger•tec® technology

Maximum process reliability, longer tool life and lower costs

The new double-sided ISO indexable inserts from Walter with “RP7” geometry ensure maximum process reliability when rough turning by combining a ground contact surface with an optimised profile that has a tailored protective chamfer to guard against fracturing. Tiger•tec® Silver coating technology guarantees to extend tool life and thereby lower the cost of new tool investment. Costs are also significantly reduced by having double the standard number of cutting edges on each indexable insert in comparison to the usual single sided style insert promoted for roughing. These properties, in conjunction with the optimised geometry, make the new indexable inserts the ultimate “problem solvers” for users, especially those working under difficult machining conditions.

This geometry offers an alternative to the MP5/RP5 geometry when a more robust cutting edge is required. It is particularly suited to working on applications that include heavily interrupted cuts, forged parts with variable machining depths, and is also ideal for roughing steel materials with medium to heavy skins. The new geometry is available in the four basic shapes CNMG., SNMG., TNMG.. and WNMG., and in the grades WPP10S, WPP20S and WPP30S.



The new double-sided ISO indexable inserts from Walter with “RP7” geometry ensure maximum process reliability in rough turning processes thanks to their ground contact surface and optimised profile with tailored protective chamfer. Tiger•tec® Silver coating technology guarantees to extend tool life and thereby lower the cost of new tool investment. Image: Walter AG

For more information, visit: <http://www.walter-tools.com/en-gb/pages/default.aspx>



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Industry applications

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DRILL•RUSH



»»» NEW HEAD-CHANGEABLE DRILL

- Quick change system - Head indexing on the machine
- Flexibility - One drill body for a series of different sized heads
- Twisted coolant channel & polished chip gullet
 - Smooth & excellent chip evacuation
- Rigid Clamping system – Remarkable performance and enhanced number of head indexing
- New multi-layered coating grade (TT9080) - Prolonged tool life



TaeguTec India Pvt. Ltd.

Plot Nos.119 & 120, Bommasandra Industrial Area, Phase 4, Bengaluru 560 099, India
☎ +91-80-2783-9111 📧 +91-80-2783-9123 ✉ sales@taegutec-india.com 🌐 www.taegutec.com

TaeguTec
Member IMC Group