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ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

THE MACHINIST

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THE SHOW MUST
GO ON



How the auto industry is holding
its own against all odds

E-mobility
Chicken-egg story

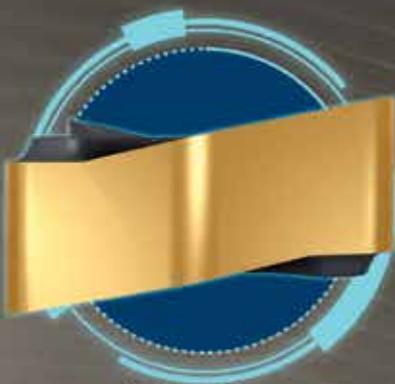
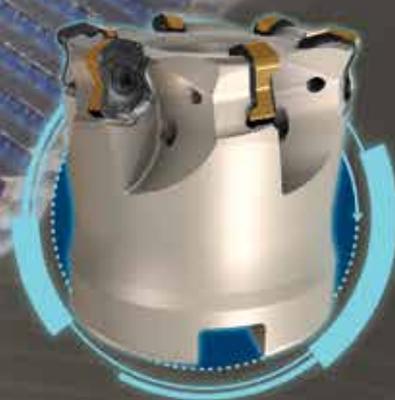
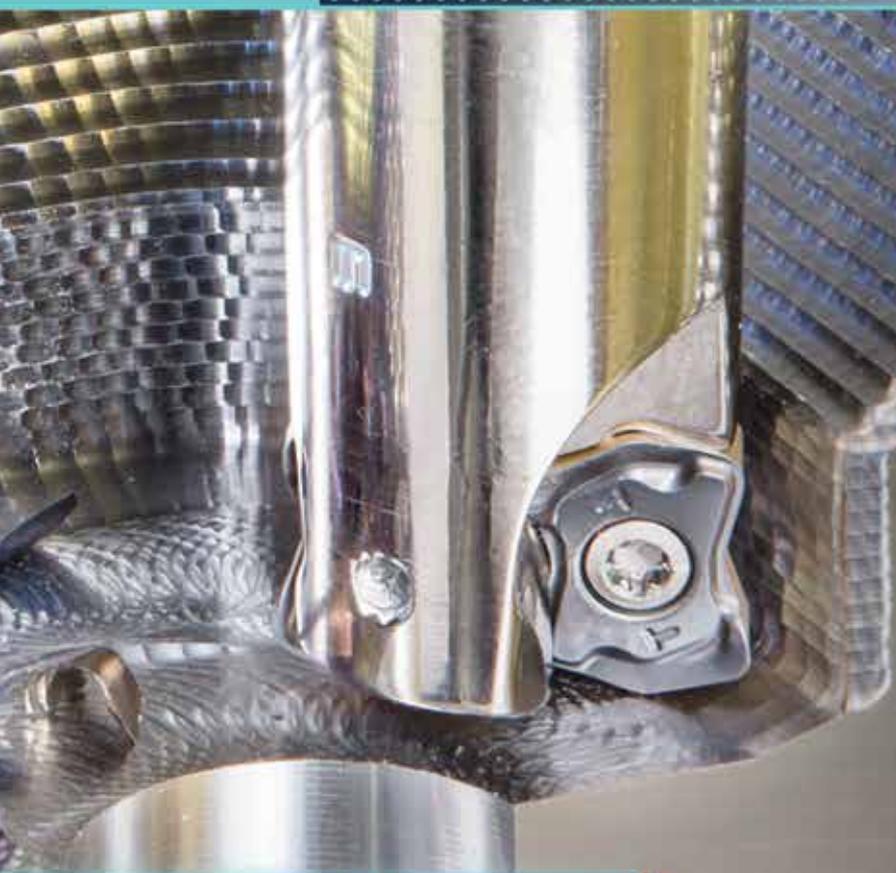
Trends
Top 5 mega trends

Market
Growth is back!

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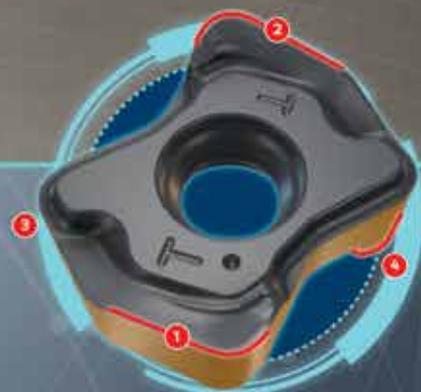
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noun

is a hypothetical particle that always moves faster than light. Conceptualized by a team of scientists which includes Indian scientists Mr. V.K. Deshpande and Mr. E.C.G.Sudarshan in 1962.

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IT'S VIRAL!

There is something about human-beings that never stops to amaze me! The ability to share and multiply something at unimaginable speed even before anyone can understand what it is. But that's not the problem. The problem happens when this thing, which is spreading, refuses to go away. It stays, feeds on human fear and grows substantially. I am actually referring to the infectiousness of the human sentiments. And it can be scarier than any viral infection known to the human race if it assumes a negativity about it. After all, no one is immune to fear! Sometime at the beginning of the last year, a sentiment called 'market slowdown' emerged due to certain situational factors. Unfortunately, it stayed on for a period longer than anyone had expected it to. From 'things are bad', to 'they are getting worse' and from 'let's wait for some more time' to 'we are heading for the perfect storm', it has acquired wicked proportions.

“AND IT INVOLVES A SIMPLE FORMULA: SELF-BELIEF, AFFIRMATIVE ACTION AND POSITIVE COLLABORATION.”

But it's not too late. As yet! There is still a way to deal with it. And it involves a simple formula: self-belief, affirmative action and positive collaboration. Look at the way the Indian automotive industry is fighting back. It proves that hope is bigger and stronger than any fear. It proves that nightmares of negativity cannot overwhelm the dreams of optimism. And this feeling needs to go viral. I am infected. Are you?

Editor & Chief Community Officer

THE ULTIMATE GUIDE TO PROFITABLE MANUFACTURING
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CONTENTS



COVER STORY

The show must go on! **38**



BUDGET 2020

On the mark! **16**

Budget 2020: more power to manufacturing **28**

Editorial	4
News	8
Event Calendar	12
People	14
E-Mobility: The chicken-egg story	24
Market: Growth is back.....	34
Facility Updates	36
Products	52
Cutting Tools: High-performance and reliability in aerospace.....	59
Machining: Maximum robustness and performance.....	62



Automotive

Updates **22**

Glimpses from the grand show **48**

Great Opportunities..... **56**



Insight

Ringing in a new age **42**

Top 5 mega trends for 2020..... **46**



Feature

Standardisation to trim costs, buoy growth **50**



Plant Visit

ACE on the shopfloor **53**

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PM calls DefExpo 2020 important for indigenising defence manufacturing



PRIME MINISTER called the DefExpo 2020 in Lucknow as important for pushing indigenising defence manufac-

turing. He also referred to what former PM Atal Bihari Vajpayee had dreamt of. "We accelerated the manufacturing of many defence products and have issued 217 defence licenses in 2014 itself. The number has grown to 460 in the last five years. India is manufacturing everything from Artillery guns, Aircraft carrier to Frigate Submarines today. India's share in global Defence Exports has also increased. In the last two years, the country has exported about 17 thousand crores of defence products. Now, our aim is to increase defence exports to five billion dollars", Prime Minister said. "In the last five-six years, government has made R&D a

major part of our nation's policy. Necessary infrastructure is being prepared in the country for defence R&D and manufacturing. Joint ventures are being worked out with other countries. An attempt has also been made to eliminate all silos with a focused approach. It has led to an environment that is ready for investment and innovation", he stated. "Defence manufacturing should not be limited to only government institutions, but should also have equal participation and partnership with the private sector", he said. He also said that the sub theme of DefExpo 'Digital Transformation of Defence' reflects the worries and challenges of tomorrow.

Escorts Ltd. Q3 net profit up by 9.2%

ESCORTS LIMITED reported a profit of Rs. 153.1 crore in the quarter ending December 31, 2019 up by 9.2 percent as against a profit of Rs. 140.1 crore in the corresponding period last fiscal. Revenue from operations at Rs. 1,633.4 crore in quarter ended December 2019 as against Rs. 1,655.1 crore in the corresponding period last fiscal. Net profit for the nine months ending December 2019 at Rs. 345.1 as against a profit of Rs. 363.6 crore in the corresponding period last fiscal. Revenue from operations at Rs. 4,380.3 crore in nine months ended December 2019 as against Rs. 4,564.7 crore in the corresponding period last fiscal.

Speaking on the results, Chairman and managing Director Nikhil Nanda said, "We are continuing our journey of providing unique and innovative technology solutions for maximizing agriculture yield, bring in efficiency in the construction equipment space and make rail transport safer. Our investment in new product development, R&D and wider distribution is in line with the enhanced customer experience that we commit to offer to create value for our customers across domestic and export geographies."

HAL, IAI and DTL form strategic collaboration for UAVs

HINDUSTAN AERONAUTICS LIMITED (HAL), Israel Aerospace Industries Limited (IAI) and Dynamic Technologies Limited (DTL) signed a Memorandum of Understanding (MoU) for marketing, manufacturing and selling of IAI's Unmanned Ariel Vehicles (UAVs) to Indian potential customers such as Indian Defence Forces,



Paramilitary Forces and Central Armed Police Forces at DefExpo 2020. R Madhavan, CMD, HAL, said that "The collaboration will provide excellent opportunity to HAL to expand its product offerings to Defence Customers, absorb critical technologies and strengthen the Aerospace Ecosystem in the country, especially for UAVs".

Nimrod Sheffer, President and CEO, IAI said "We are delighted to sign the strategic agreement with our partners, HAL and DTL. India is an important strategic market for UAVs and I am confident of IAI's extensive experience and the technological capabilities of HAL and DTL will lead to significant advancements in the field." Presently, UAVs are playing significant role in wars and other tactical missions.

India-Brazil trade target set at US\$ 15 billion by 2022

THE VISIT OF THE PRESIDENT OF THE FEDERATIVE REPUBLIC OF BRAZIL, Jair Bolsonaro, is a sign of the growing importance of the India – Brazil bilateral partnership said Union Minister of Commerce and Industry & Railways, Piyush Goyal, at the India-Brazil Business Forum. He hoped that as Brazil is one of the most important trading partners of India in the entire LAC (Latin America and Caribbean) region trade

between the two countries will grow to US\$ 15 billion by 2022. He hoped that investments will also grow in the sectors of clean energy, startups, railways and creation of value chains between India and Brazil where goods may be semi assembled in one country and finished in another. The Minister of Commerce and Industry & Railways welcomed the announcement made during the visit of President of Brazil for visa free travel between the two countries. He also urged that the India – Brazil Business Leader's Forum may be activated and reconstituted to make it more relevant and contemporary to businesses in both countries.





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TURRET



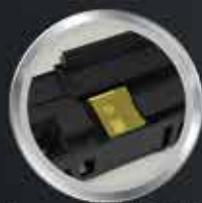
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OPENING



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Mahindra Ecole Centrale launches its first AU Vehicle

MAHINDRA ECOLE CENTRALE (MEC) has announced the launch of its first Autonomous Underwater Vehicle (AUV) named Black Pearl. Created by MEC students and mentored by their professors, the Black Pearl is a self-propelled, unmanned, untethered underwater vehicle capable of carrying out simple activities with little or no human supervision. Simply put, it is a computer-controlled system (or a Robot) operating underwater.

The AUV project is one of the most complicated in-house projects to take shape at Mahindra Ecole Centrale, with its inherent innovative integration of computer science, mechanical, electrical and electronics engineering, the



AUV is currently capable of carrying out navigational and other tasks pre-fed into its memory with good precision and near-zero error. Weighing 19.6 Kgs, MEC's Black Pearl is a fully autonomous operation and carries power onboard through a Lithium Polymer Battery.

Tata Altroz scores 5-star adult safety rating



TATA MOTORS has announced that its premium hatchback - the Altroz has become the latest recipient of the 5-star adult safety rating from Global NCAP, the foremost global car assessment programme. This makes Altroz not only the second vehicle from Tata Motors to achieve this, but also makes it the second

passenger car in the Indian automotive industry to make it to this level, after the Nexon, which was awarded this distinction in December 2018.

Mayank Pareek, President, Passenger Vehicles Business Unit (PVBU), Tata Motors, said, "We are proud to have delivered yet another product that will be regarded as the safest passenger vehicle on Indian roads. In alignment with our philosophy of Connected Electrified Shared and Safe (CESS) mobility solutions, we have successfully provided the Indian automotive industry with yet another product that is a certified example of stringent safety.

Ashok Leyland delivers first batch of BS-VI Trucks

ASHOK LEYLAND delivered its first batch of BS-VI trucks to its customers, ahead of the implementation date of 01st April, 2020. This first batch of BS VI vehicles were delivered in Delhi-NCR region aligning to the BS VI fuel availability in the country. For meeting the BS-VI emission standard, the company developed an innovative iGen6 technology that will ensure higher operating profits for customers.

Anuj Kathuria, Chief Operating Officer, Ashok Leyland, said "We at Ashok Leyland have believed in indigenously developing innovative engine technology and after treatment solutions that suit Indian conditions. Our new BS VI iGen6 technology developed in-house, is suited for Indian operating conditions. In addition, we are also introducing our new range of modular trucks that will deliver superior customized solutions to customers."

Supreme Nonwovens acquires NVH biz of Futuris

SUPREME NONWOVENS GROUP, through its majority owned Thailand subsidiary Supreme Feltol Thailand Co. Ltd. (Company), recently announced the acquisition of automotive interior trims and NVH business of Futuris Automotive (Futuris). Futuris is a subsidiary of Adient Plc, USA. Supreme Feltol Thailand Co. Ltd. is a JV between Supreme Treon Pvt. Ltd. and Feltol Thailand Manufacturing Company Ltd. Supreme Feltol began JIT deliveries from its green field plant located at Eastern Seaboard to



Ford Motors and Auto Alliance Thailand in September 2019. Post-acquisition of Futuris' business, the Company will have a second plant in Eastern Seaboard and employ 230 staff and workmen across its two manufacturing plants in Thailand. Amit Kavrie, Managing Director, Supreme, said: "This acquisition further reaffirms Supreme Group's commitment to our Global Automotive OEM customers. We continue to focus in our core business areas and with the investments in Thailand; the company is on course for a geographical expansion. The timing is perfect as the automotive industry is going through a major technological shift. We expect the Thailand subsidiary alone to generate annual sales revenue of US\$ 50million within the next five years."



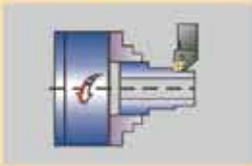
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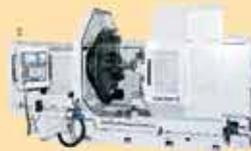
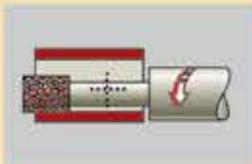


FIG-200 SPL CNC
BIG BORE GRINDER

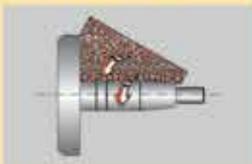


FIG-300 CNC
FOUR STATION TURRET



FIGE-150 CNC
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CNC Cylindrical Grinding



AWH-1500 CNC
LONG SHAFT GRINDER



AWH-2000 CNC
HEAVY DUTY GRINDER



SWH-400 CNC
AUTO LOADING

Surface Grinding



SG-106 CNC
CREEP FEED GRINDER



SGR-60
ROTARY GRINDER



SG-63
HYDRAULIC / PLC

Automats



A15/25

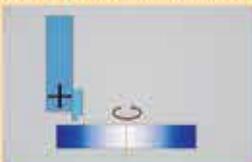


T036
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Vertical Turning Lathe



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1.5 M



VC-75C
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• MARK YOUR DIARY •

A list of key events happening between February 2020 to November 2020, both nationally and internationally.

FEBRUARY
26-28, 2020

Asiamold
Guangzhou, China
asiamold-china.
cn.messefrankfurt.com

FEBRUARY 28
-MARCH 1, 2020

IFEX 2020
Chennai
<http://www.ifexindia.com/>

MARCH 31
- APRIL 4, 2020

SIMTOS
Seoul, South Korea
www.simtos.org

APRIL 20-24,
2020

Hannover Messe
Hannover, Germany
<https://www.hannovermesse.de/en/>

MAY 20-22,
2020

Transport India 2020
New Delhi
<http://www.transportindiaexpo.com/>

AUGUST 26-28,
2020

Coat India 2020
New Delhi, India
<http://www.coatindia.in/>

AUGUST
27-29, 2020

Bus World India
Bengaluru
india.busworld.org

AUGUST 27-29,
2020

IMEX 2020
New Delhi, India
<https://imexonline.com/Home>

SEPTEMBER
14 -19, 2020

IMTS
Chicago, USA
www.imts.com

OCTOBER
8-10, 2020

India Chem 2020
Mumbai
www.indiachem.in

APRIL 22-25, 2020

Die & Mould India
Mumbai, India
<https://www.diemouldindia.org/>

NOVEMBER
23-25, 2020

Wire & Cable India
2020
Mumbai, India
<https://www.wire-india.com/>

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May 2020



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Ashish Bhandari to succeed Unnikrishnan at Thermax



Thermax announces the appointment of Ashish Bhandari as the Joint MD of the Thermax Group, effective April 20, 2020. M.S. Unnikrishnan, Managing Director and CEO Thermax will retire on June 30, 2020 following which Bhandari will move into the role of Managing Director and CEO. Ashish will be joining Thermax from Baker Hughes, where he is currently the Vice President – India & South Asia region. Ashish is an engineering graduate from the Indian Institute of Technology, Mumbai, and received his Master's degree in Business Administration from Duke University. "I look forward to leading the company through the next phase of its growth journey," says Ashish.

Yves Bonte to be DOMO Chemicals CEO



DOMO Chemicals has recently announced its transition plan for the function of Chief Executive Officer. The Board of Directors of DOMO has appointed Yves Bonte to succeed current CEO Alex Segers during February 2020. Alex Segers commented, "I feel privileged to have been given the opportunity to work with the DOMO team over the past twenty-six years, which has really been an incredible journey. We are now entering the next level for the company by integrating very soon the European Performance Polyamides Business from Solvay. In Yves we have found the ideal person to pass the baton to. We look forward to a seamless transition." Yves Bonte joins DOMO from Yara, the leading fertiliser company and a provider of environmental solutions where he held the role of Executive Vice President Industrial recently named New Business since January 2010.

Vikram Solar appoints Saibaba Vutukuri as new CEO



Vikram Solar has announced the appointment of renewable energy sector veteran, Saibaba Vutukuri as the new Chief Executive Officer (CEO) of the company. This announcement comes in at an important juncture, marking the next phase of growth at Vikram Solar. Gyanesh Chaudhary will retain his position as the Managing Director of the company. With Vutukuri's appointment, Chaudhary will take on a more strategic role involving portfolio diversification, key strategic initiatives and future ventures.

Airbus Defence and Space appoints new UK MD



Airbus has appointed Richard Franklin as the new Managing Director of Airbus Defence and Space in the UK. He will replace Colin Paynter who is retiring later in 2020. Richard who is Head of Secure Communications for the Defence and Space business, took on this additional role from 1 January 2020. Prior to joining Airbus in November 2015, Richard was the Commercial and Strategy Director at G4S.

Amitabh Bhatt is the new CEO (Bangalore Complex) at HAL

Amitabh Bhatt has taken over as CEO of HAL's Bangalore Complex. Earlier, he was heading the LUH project in HAL as Executive Director. Bhatt is a Post Graduate in Management and earlier served in SKF India Limited for 15 years before joining HAL. With his 32 years of professional experience in HAL, he spear-headed marketing, planning and projects. He led the team as Chief of Projects (LUH), played a key role in setting-up an integrated new Helicopter Factory, a Rs 3,000-crore greenfield project. He is a Director on Board of HAL's Joint Venture, 'Indo Russian Helicopters Limited', formed to build Kamov KA-226T Helicopters for Defence Services. During his stint at Helicopter Division, helicopters were delivered to ONGC, Geological Survey of India and Government of Jharkhand and exported to Nepal, Surinam, Mauritius and Ecuador.

Synegra EMS Ltd. appoints Natarajan S as CEO

Synegra EMS Ltd., a subsidiary of Smartlink Holdings Ltd. and a leading manufacturer of IT, Networking and Telecom products appoints Natarajan S as Whole Time Director and CEO. In this role, he will be responsible for leading and managing the business strategy and execution, as also heading the overall operational responsibilities. Natarajan S, Director and CEO said, "I am looking forward to further fuelling the company growth, setting new industry benchmark by driving innovation."

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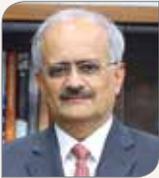
ON THE MARK!

The Union Budget 2020-21 definitely delivered with regard to providing a boost to the economy. We present a quick overview of what different leaders say about it.



Prime Minister Narendra Modi

"New reforms announced will not only give a boost to the economy but also aim at the economic empowerment of every citizen. This budget works towards further strengthening the economy in the new decade. We have taken several policy initiatives with regard to Smart Cities, Electronic Manufacturing, Data Centre Parks, among others. With this, India would become an integral part of the global value chain."



Vipin Sondhi, MD & CEO, Ashok Leyland

"The allocation of Rs. 2.83 lakh crore for agriculture, irrigation and rural development will assist the rural economy and will be good for the CV industry in the long run. Overall, economic activity and job creation will increase demand for goods and consumption and increase freight movement on trucks."



Rajeev Joisar, Country Leader – India, Bombardier Transportation

"We appreciate the efforts of Indian Railways to explore the possibility of private train operation on their network. We share government's vision to decongest India by rail investments with higher involvement of private sector in train operations as an initial project."



Diego Graffi, CEO & MD, Piaggio Vehicles Pvt. Ltd

"Over the last few years, government has been looking to make India a hub for manufacturing industry and with the abolition of Dividend Distribution Tax (DDT), we will further see an increase in investments from foreign players."

Dr Sangita Reddy, President, FICCI

"The Budget has been a significant balancing act between the need for growth and fiscal prudence. The government has done a commendable job and the measures announced will strengthen India, individuals and the industry."



Suresh KV- President, ZF India

"The Budget shows a positive path for our country's economy. While the DDT will help India become a more attractive investment destination, the scheme to boost mobile, electronic manufacturing and semi-conductors packaging will further support the manufacturing of electric vehicles in the country."



Udit Sheth, Vice Chairman, Setco Automotive Ltd.

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Nagesh Basavanhalli, MD & CEO, Greaves Cotton Limited

"Revision in Direct Taxation and amendment in the Companies Act to decriminalise civil offenses, can lower litigation risks and costs. The overall orientation of the Budget seems to be to energise rural economy, revive consumption, build taxpayer trust in banking system."

Jitendra Chaddah, Chairman, IESA

"The scheme to boost the intelligent electronics and semiconductor ecosystem assures more investment. We foresee that sustained incentives by the government to promote local manufacturing will fulfil local demand, and also enable India to become an export hub for electronics."



Gautam Seth, Joint-MD, HPL & Electric Power Ltd.

"Allocating Rs. 22,000 crore for renewable and power sector is going to push for faster development and growth across sector. The announcements to replace energy meters with pre-paid smart meters will further help in complete digitisation of the whole system."



Prashanth Doreswamy, MD of Continental Automotive India & Country Head of Continental Group India

"Union Budget 2020-21 is extremely forward-looking. Several of the initiatives announced will have long-term gains. Focus on digitising India and the implementation of technology in various sectors, were also much needed and will help create more opportunities."



Puneet Dalmia, MD, Dalmia Bharat Group

"A lot hinges on the National Infrastructure Pipeline programme that aims to attract investments of over Rs100 lakh crore in the next five years. If the 6,500 identified projects are executed well, the programme can significantly alter the Indian landscape."

Sumant Sinha, CMD – ReNew Power

"The government has chosen to walk a middle path allowing for an acceptable increase in fiscal deficit, while putting some extra money in the hands of tax payers."



Ranganath N. K., Area MD, INDO Region, Grundfos

"Given that the Budget also aims to empower farmers by increasing their dependence on off-grid solutions with solarised grid-connected pumps through the PM Kusum Scheme, I think that this will act as a catalyst to sustainable irrigation solutions across the country."



Sulajja Firodia Motwani, Founder and CEO of Kinetic Green and Vice Chairperson, Kinetic Group

"It is a practical budget, with directional announcements towards improved ease of business, and ideas such as amendments to the Companies Act, simplified GST returns, etc. However, we look forward to speedy and efficient implementation."

Mandeep Singh, CEO and Executive Director, JSL Lifestyle Ltd.

"The current fiscal measures to revive manufacturing and production will certainly enable us to achieve 6-6.5% GDP by 2021. Increased focus on entrepreneurship, job creation and technology will also act as a catalyst to spur growth in India's economy."



Rajeep Kapur, MD, Steelbird Helmets

"For the lower class and upper lower-class, we must reduce GST TO 5% for motor-cycle, scooters less than Rs.40, 000 and the same way for cars less than Rs.2,00,000 and double GST for cars priced at over Rs.2,00,000. This will increase consumption."



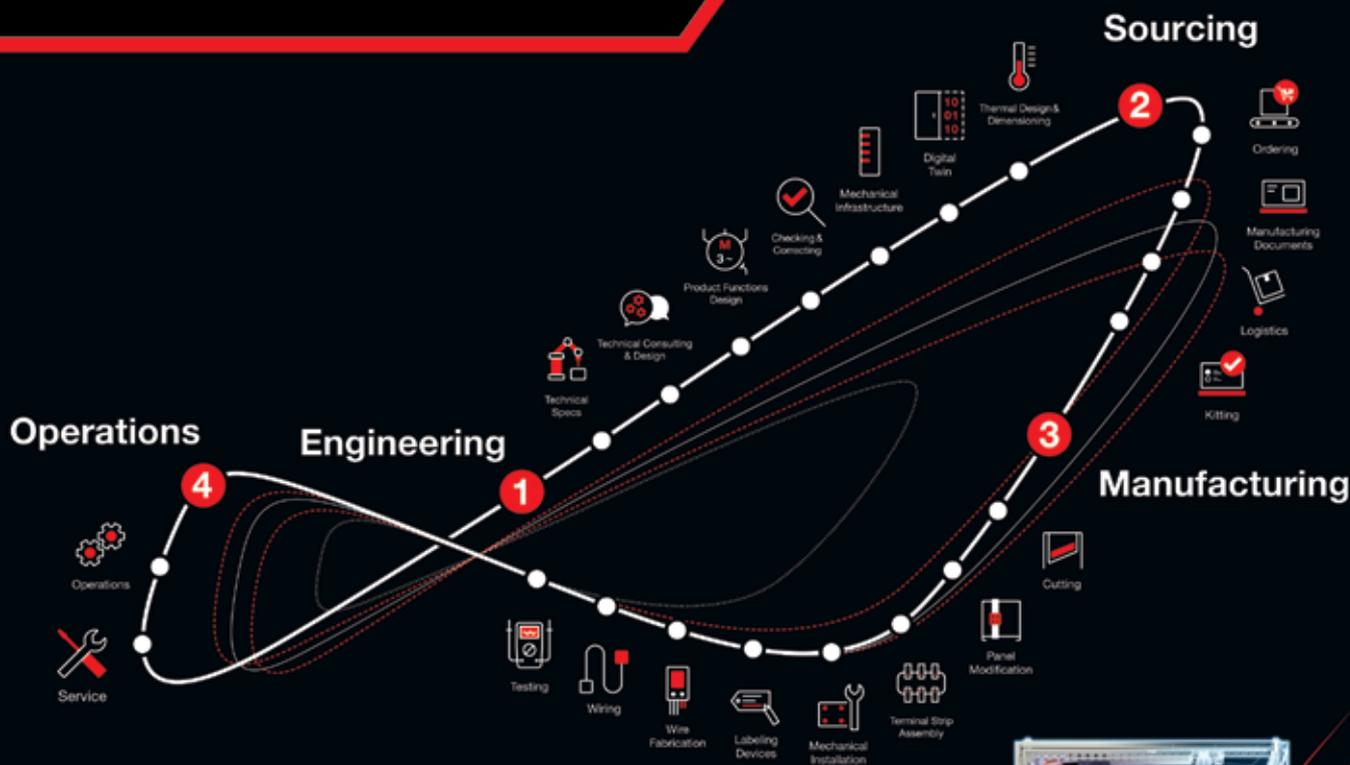
Ayush Lohia, CEO, Lohia Auto Industries

"The government will now allow NBFCs to extend invoice financing to MSMEs. MSME ministry's allocation stood at Rs.7,011 crore - a 71-percent rise over and above the budgetary allocation made last year."

Naveen Soni, Senior VP, Sales & Services, Toyota Kirloskar Motor

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Harsha Kadam, CEO & President - Industrial Business, Schaeffler India

"With the Union Budget 2020, the government proved that it is committed to revitalize consumer spending. The focus on the personal tax regime will create the much-needed boost creating an increase in demand and supply hence improving the overall market sentiment. The government's proposal on skill development will ensure job opportunities and we at Schaeffler India are also aligned with the same thought process."

Anil Chaudhry, Zone President & MD, Schneider Electric India.

"The Budget for FY2021 has affirmed its commitment to clean energy with a proposal to allocate Rs 22,000 crore for the renewable sector. The plan to provide standalone solar powered pumps to 20 lakh farmers, allows farmers to generate solar power and set up large solar power capacity along the rail tracks will encourage the use of clean and renewable energy."



Yash Rane, Founder, Chizel

"Budget 2020 looks promising from startup point of view. Also, reducing taxes will really help spending power of common man thereby increasing cash flow in the market. However, it does not address the slowdown in the market. We have not seen any aggressive measures that could promise US\$ 5T dream of Indian Economy."



Anand Srinivasan, MD, Covestro India

"Since electronics is critical to several industries, policies that promote domestic manufacturing of electronics, mobile phones and semi-conductors will have a direct impact on import reduction, and will give a fillip to many related industries as well, while creating jobs at the same time. Overall, the Budget has created a good balance between the immediate priorities as well as the future needs of the country."

Dr. U S Awasthi, MD, IFFCO

"A welcome initiative by our FM to make use of efficient and balanced use of fertilizers in our soils to enhance the soil health and it's productivity. IFFCO is already working on this by its #SaveTheSoil project. On behalf of IFFCO & it's more than 36,000 cooperative societies, I welcome the proposal of exempting cooperative societies from minimum alternate tax & also bringing tax rate for cooperative societies to 22% from 30%."



Rahul Garg, CEO & Founder - Moglix

"The budget seeks to strike the right note with the themes of aspiration, economic development, and caring society. MSMEs are the mainstay of a vibrant economy and it is good to see the budget improving credit access and increasing cash in hand for these businesses. We hope for the momentum to continue in implementation as well."



Ichiro Oshima, CEO-DMICDC Logistics Data Services Limited

"With the Budget 2020-21, the government has announced spending Rs. 103 lakh crore over the next five years on National Infrastructure including logistics. The emphasis on proposing a National Logistics Policy to create a single-window e-logistics market is a positive and encouraging step for the industry. We welcome the governments push for infrastructure and economic activities with a proposal of setting up a 9,000-km economic corridor and 2,000-km of coastal roads."



Uttam Malani, Executive Director, Centuary Mattresses

"Continuation of housing structure reforms and promotion of affordable housing is a positive step; and so is the decision to bring in a new education policy. Expenditure on infrastructure upgradation received mention, although it would have been nice to see a more specific roadmap."



Ravichandran Purushothaman, President, Danfoss India

"The budget restores our confidence for agriculture and allied industries to increase their contribution to GDP in coming days. With the expansion of NABARD refinance scheme and extension of Agri-credit to Rs 15 lakh crores, there definitely is a greater scope to address the industry's challenges at a grassroots level."



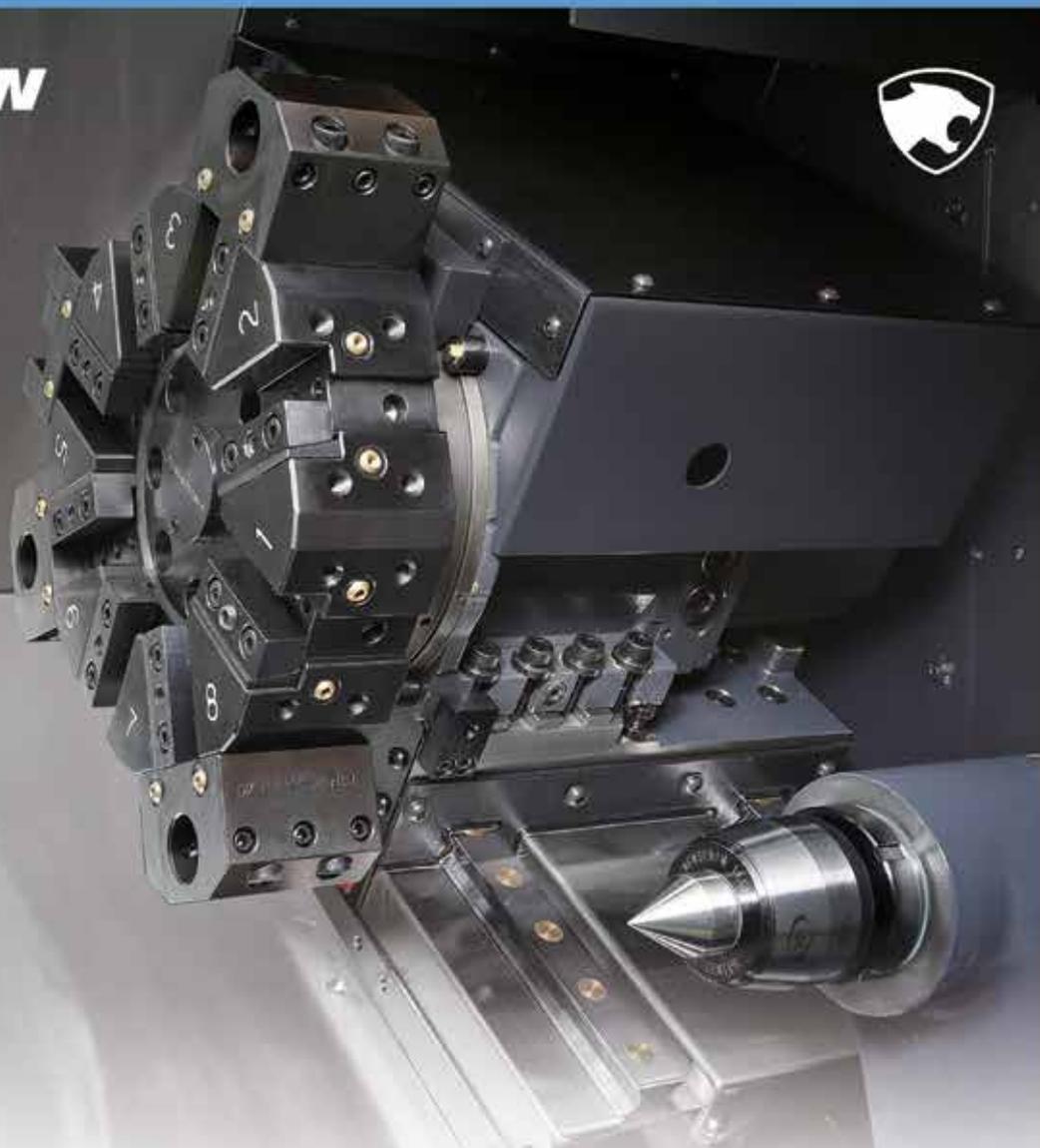
Dr. Vivek G. Mendonsa (Director-Sales | LYNX_Lawrence & Mayo)

"The budget 2020 is a holistic and integrated budget, focused on promoting the 'ease of living' for a common man and 'ease of doing business' for SMEs, MSMEs and corporate. With a clear thrust on projects that work keeping sustainability and optimum use of resources in mind, the budget outlines plans to strengthen infrastructure relevant for renewable energy, transport, IT and agriculture, and allied industries."

Sushant Raorane, Co-Founder_Director Adroit Biomed

"A holistic effort by the government to facilitate ease of living and ease of doing business, the 2020 budget comes as a hope for the stagnant economy. With an allocation of Rs.69,000 crore for the healthcare sector and Rs.35,600 crore for nutrition-related programs, health and wellness have received due attention in the budget."

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EESL signs MoU with BHEL for public charging at highways and cities

Energy Efficiency Services Limited (EESL) has signed a Memorandum of Understanding (MoU) with Bharat Heavy Electricals Limited (BHEL), to set up a network of Public Charging Infrastructure for electric mobility at various highways across India.

EESL and BHEL will jointly explore opportunities in the field of e-mobility and fast-track the adoption of EVs in the country under Government's National E-Mobility Programme.

As part of the MoU, BHEL will offer complete EPC solutions from concept to commissioning while EESL will make the entire upfront investment on services, along with the operation and maintenance of the public charging infrastructure. The MoU covers collaboration for identifying, planning, development and installation of charging stations at suitable locations.

Saurabh Kumar, Managing Director, EESL said, "Mobility is changing rapidly, and India is powering ahead to a sustainability-driven future by adopting electric vehicles. Availability of



adequate charging infrastructure is one of the key requirements for further accelerating EV adoption in India. Setting up various charging stations at highways will boost the interest of public commuting from one city to another enabling a smooth and sustainable transition to a future-oriented mobility solution."

Hyundai Motor India rolls-out fastest 3 Millionth 'Made-in-India' Export Car

Hyundai Motor India Ltd has rolled out 3 Millionth Made-in-India Export car – A 'Hyundai AURA' (Export name - GRAND i10) for Colombian market from its state-of-the-art plant in Sriperumbudur near Chennai.



S S Kim, Managing Director & CEO, HMIL said, "Drawing strength from Hyundai's vision of 'Progress for Humanity' we will continue to offer all-around premium experience to our customers through our quality products, both in the Indian and global markets."

HMIL began exporting cars in 1999 with first batch of 20 Santros to Nepal and reached to first milestone of exporting 100,000 cars in four years and ten months in October 2004.

Hyundai has already launched the BS6 Petrol engines with GRAND i10 NIOS and the New ELANTRA in 2019. Further, Hyundai has upgraded the product line-up - SANTRO, GRAND i10 and ELITE i20 with the BS6 Petrol Engines. All these products are now available in our global markets conforms to the highest standards of emission regulations at a very competitive cost enhancing Customer Benefits.

Hyundai Cars with BS 6 Engine are compatible with both BS 6 and BS 4 Fuel (petrol & diesel). Being a global car manufacturer, Hyundai has global BS6 technology available for various models. Hyundai R&D teams in Namyang (South Korea) and Hyderabad (India) have worked collaboratively worked to optimise and tune this technology as per Indian driving conditions for maximum efficiency offering cost effective solution to Indian customers.

Land Rover introduces New Range Rover Evoque In India

Jaguar Land Rover India has announced the launch of New Generation Range Rover Evoque. Available in the highly specced S and the sportier R-Dynamic SE derivative, the New Range Rover Evoque is offered with BS-VI compliant 132 kW Ingenium Turbocharged Diesel powertrain and a 184 kW Ingenium Turbocharged Petrol powertrain with a 48-volt mild hybrid system option.

Rohit Suri, President & Managing Director, Jaguar Land Rover India Ltd (JLRIL), said, "Our latest offering with its sophisticated design and high technology quotient will build strong appeal amongst all Land Rover fans."



The off-roading capability of the compact SUV is enabled through the Terrain Response 2 that automatically detects the surface being driven on and adjusts the set-up accordingly. The best-in-class wading capacity of 600 mm further accentuates the Range Rover Evoque's off-road capabilities. The New Evoque also sports the segment-first 'ClearSight rear-view mirror' that transforms into an HD video screen.

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By Nishant Arya

THE CHICKEN-EGG STORY

Is there inadequate charging infrastructure to validate sales of more number of these cars? Or, is it a case of insufficient cars not warranting more infrastructure?



India is moving towards a future when e-mobility would make up a major chunk of the vehicles on the road. The government and industry have been working in tandem doing their best to increase the adoption of electric vehicles (EVs). However, there have been a few bumps slowing down the process of adoption as it's yet to be gauged if the development of charging infrastructure should happen for people to adopt the vehicles or vice versa!

AN EXISTENTIAL QUESTION

Electric vehicles and charging stations have not entered the discourse for the first time. The infrastructure has to be in place to ensure the greater adoption of the EV technology. In the end, the market will work the problem out by itself. Incidentally, both the “chicken” and



Private entrepreneurs, large Chinese companies, private equity funds and companies with excess cash are all looking to get involved.

the “egg” need to continue with their journey on the ascending growth curve. One thing is for sure, while on the one hand it can't be delayed, on the other, it has to fall into place. Hence, both need to develop parallelly. According to the statistics provided by the European Alternative Fuels Observatory, there are only around 120,000 charging points across the EU, with over three-quarters of them located in Germany, France, the Netherlands, and the United Kingdom. According to the European Commission's 2017 Action Plan on Alternative Fuels Infrastructure, that number would have to top 440,000 by 2020 and 2 million by 2025 to support a seven percent EV market share.

India's Niti Aayog had proposed to push for full conversion to EVs, from internal combustion engine (ICE) three-wheelers by 2023, and two-wheelers (for engines with or below 150 cc capacity) by 2025. Under FAME, the Indian government is spending INR 10,000 crore in Phase II, while INR 1,000 crore has been earmarked for charging infrastructure under FAME II from 2019 to 2022. In its



“Lack of charging infrastructure is a real issue for vehicles that run a greater distance than they can cover on a single charge.”

suggestion for CO2 limits for cars and vans, the Commission went even further and recommended that the EV market share should hit 15 percent between 2025 and 2029, topping 30 percent after 2030.

The lack of charging infrastructure is a real issue for vehicles that run a greater distance than they can cover on a single charge because almost all-electric vehicles, especially the ones for personal use, are charged at night when they are parked. Hence, every morning you have a fully-charged vehicle unlike petrol or diesel cars, which are refilled only at designated stations and at a

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lower frequency. The point of major debate between industrialists and e-mobility promoters is very much a chicken and egg condition: Is there inadequate charging infrastructure to validate sales of more number of these cars? Or, is it a case of insufficient cars not warranting more infrastructure? Some auto players contend that the lack of suitable charging infrastructure is the reason why customers are dissuaded from switching to electric cars, which they explain, do not offer much choice of EV models in their line-ups.

With electronic vehicles (EVs) comes the enormous task of increasing the number of stations for charging and India is gradually going on board on the journey towards obtaining public land to build such charging booths. Automakers, battery producers, deal-

//

Major players need to spearhead the move towards electric mobility to ensure adoption is significant.

ers and power beneficiaries are presently in talks to create an ecological environment for charging stations in the country.

Some significant concepts like creating a promising governing setting, suitable guidance and encouragements for ownership and operation, and potentially a set of pilot projects to learn how best to build charging and battery swapping network. Major players need to spearhead the move towards electric mobility to ensure adoption is significant. Going back to the history of electric carmaker Tesla, it focused on EV charging infrastructure right after Tesla's electric car launch in 2012, it started installing charging stations with 'Superchargers' across North America for its consumers.

The answer can be grouped into three buckets. One, that the cost of the vehicle is much higher compared to a gasoline vehicle mainly on account of the cost of batteries. Two, the variety of concerns and apprehensions that people have with regard to the usage of electric vehicles. The third concern is the time it takes to recharge the vehicle. Five to eight hours of consistent

//

We need to realise that aspects like high initial cost and charging time of electric vehicles are temporary, the benefits of which can be reaped over a long run.

charging or even one hour in the case of fast charging. A person now is used to less than a few minutes while refilling and anything which is more feels like a very long time. Much like with e-commerce, food delivery and uncountable other businesses before it, the original electric mobility ecosystem just cannot be copy-pasted from abroad.

India must flash its pathway given the exclusive urban infrastructural conditions and the wildly miscellaneous set of consumer associates on the ground. In May 2014, China began allowing private companies to invest in electric charging and replacement stations when China's State Grid announced that it would support the development of privately-owned distributed energy resources. Private entrepreneurs, large Chinese companies, private equity funds and companies with excess cash are all looking to get involved. Investments are being made in companies that manufacture charging systems; companies that construct and operate charging stations; and companies that provide a wide range of ancillary services to EV customers.

We have a long journey to ensure zero emission public transport solutions and electric buses would be a catalyst. Today countries across the globe are embarking on creating sustainable EV policies and if India achieves the FAME-II targets it will be amongst the top 3 countries in the world terms of number of e-vehicles. This will also generate around 10 million jobs and open many avenues for direct and indirect employment in the e-mobility space and allied sectors.

In India, as consumers, we need to realize that aspects like high initial cost and charging time of electric vehicles are temporary, the benefits of which can be reaped over a long run. Other positives such as reduction in pollution and reduction in oil dependency, are permanent. That is exactly the opposite of petrol vehicles whose disadvantages like pollution and petrol dependency are permanent and their advantages like slightly lower costs and higher range on single refueling vis-a-vis electric ones are temporary and already on their way to obsolescence. 

The author is Executive Director, JBM Group



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By Arpita Saxena

BUDGET 2020: MORE POWER TO MANUFACTURING

Given the bent towards personal tax regime, reforms for manufacturing, defence, among other sectors, Budget 2020-21 is in sync with government's framework for a USD 5 trillion economy by 2024-25.



Manufacturing industry seems to have warmed up to the measures unveiled in the Budget 2020-21. Finance Minister Nirmala Sitharaman spoke about a slew of far-reaching reforms, that are expected to fuel the economy's growth engine through a combination of short-term, medium-term, and long-term measures. Higher spending on infrastructure creation and modernising railways is also being considered as a welcome step. Thrust on green energy as also personal tax regime in order to pump up demand and supply is also laudable. According to industry data, the economic growth of India for the fiscal year ending on March 31 will slip to 5 percent - its weakest pace since the global financial crisis of 2008-09. The Finance Minister brought a slew of measures to light for reviving domestic economic growth, boosting the income of Indians and their purchasing power.

REFORMS AROUND

According to Deepak Jain, President, Auto Component Manufacturers Association (ACMA), focus on electronics manufacturing including electronic equipment and semiconductor packaging will encourage manufacturing of auto-electronics and components of electric vehicles.

"Make in India is likely to get impetus from government measures to strengthen checks on imports due to the free trade agreement, review of rules of origin, enhancing safeguard duties and invoking quality control order on import sensitive items," he added.

Measures for renewable energy stations will aid in power generation as we transition to electric vehicles,

says Prashanth Doreswamy, Managing Director, Continental Automotive India & Country Head, Continental Group India. Given the impulse of connected technology - both in mobile phones and vehicles - a policy



Focus on electronic and semiconductor manufacturing will be a big boost for foreign direct investment (FDI) and the scheme will promote automotive electronics in a big way.

Prashanth Doreswamy, Managing Director, Continental Automotive India & Country Head, Continental Group India

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From an electric vehicles (EV) industry point of view, the Budget is quite neutral. FM has announced new scheme to promote automotive electronics and semi-conductors manufacturing, which in the long run, can aid EV component manufacturing.

Sulajja Firodia Motwani, Founder and CEO of Kinetic Green and Vice Chairperson, Kinetic Group

that enables the private sector to build data centre parks will help enhance connectivity and digitisation, which will also benefit our sector.

“Focus on electronic and semiconductor manufacturing will be a big boost for foreign direct investment (FDI) and the scheme will promote automotive electronics in a big way,” he said.

Rural auto demand, especially two-wheelers, tractor and small commercial vehicles, could witness upsurge, says Ashish Kale, President, Federation of Automobile Dealers Association. Reforms for agriculture, irrigation and rural development could drive rural demand in the next three-four months if all the measures are actioned immediately, he added.

Sulajja Firodia Motwani, Founder and CEO of Kinetic Green and Vice Chairperson, Kinetic Group calls it a “practical” budget, and hails the directional announcements towards improved ease of business. He hinges hopes on ideas such as amendments to Companies Act, simplified GST returns, reduced tax harassments etc., and various developmental schemes.

IMPLEMENTATION IS KEY

However, there is a need for speedy and efficient implementation. There are some measures to attract foreign investments as well and a new optional income tax regime, that give a pleasant feeling to the industry. DDT has been abolished but dividend taxed at the hands of the investor could gnaw at him or her.

“From an electric vehicles (EV) industry point of view, the budget is quite neutral. FM has announced new scheme to promote automotive electronics and semi-conductors manufacturing, which in the long run, can aid EV component manufacturing in the country,” Motwani says.

Budget also contains notifications on increased customs duty on EV imported in form of CBU/SKD/CKD, to encourage Make in India. In coming years, we feel that duty on EV component import should also be

increased to promote local component manufacturing.

Overall, while the budget lacks big impact announcements, we welcome this budget and appreciate the government’s steps towards development, ease of doing business and steps to increase EV manufacturing by the industry.

Suresh KV- President, ZF India says in order to augment India’s infrastructure and create jobs, the announcement of the launch of Rs 103 lakh crore infrastructure projects is a good move. Aim to accelerate the development of the highways along with 2,500-km access-controlled highways and 9,000 km of economic corridor, and in addition to create 2,000 km each of strategic highway and port connectivity projects, are great. The policy initiatives are likely to provide a major push to infrastructure, eventually resulting in employment generation.

“The policy initiatives are likely to bolster demand for commercial vehicles and the construction equipment industry. Additionally, the announcement of highway projects worth 6,000km being monetized before 2021 is a welcome move. The abolishment of the Dividend Distribution Tax (DDT) is a positive step towards helping India become a more attractive investment destination. The announcement of the scheme to boost mobile, electronic manufacturing and semi-conductors packaging will further support the manufacturing of electric vehicles in the country. This would indirectly propel the growth of the Indian automotive industry. Also, boost to rural infrastructure and agriculture (PPP in agriculture and transportation) will increase the demand for cars, tractors and utility vehicles in coming days.

MANUFACTURERS’ DELIGHT

Frontline players in the industry are of the view that



Policy initiatives are likely to bolster demand for commercial vehicles and the construction equipment industry. Abolishment of the DDT is a positive step towards helping India become a more attractive investment destination. Moreover, measures to strengthen mobile, electronic manufacturing and semi-conductors packaging could propel automotive growth.

Suresh KV – President, ZF India



Fiber Laser line-up

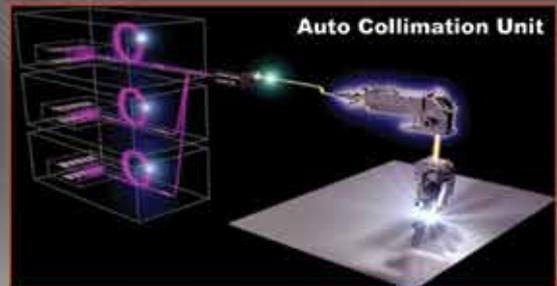


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This is a common man's budget. The projects promised by the government would encourage buying thereby improving market sentiments. In terms of electronics, we were expecting reduction in GST to 18 percent and extend the zero percent duty on open cell panel.

Avneet Singh Marwah, Director and CEO of Super Plastronics Pvt. Ltd

measures and reforms unveiled this year would benefit the manufacture providing impetus to growth. Experts are of the view that announcements in the Union Budget have come as a whiff of fresh and rather clean air. The reforms that are announced indicate a positive path for our economy.

According to "The financial support for the EV sector was already earlier addressed in FAME – 2 scheme, but allocation of Rs 4,400 crore towards promoting clean air in the cities with more than 1 million population and steps to close the thermal power stations surpassing the permissible emission limits, reaffirms government's commitment towards curbing the pollution. The allocation of Rs 1.7 lakh crore will help in better transport infrastructure offering a comfortable travel to the commuter across the country," N Nagasatyam, Executive Director - Olectra Greentech.

Reduction in the corporate tax rate is also going to benefit the companies with an additional availability of funds for more R&D including the electric vehicles companies, he said.

Diego Graffi, CEO & MD, Piaggio Vehicles Pvt. Ltd says that the incentives that have been introduced for the manufacturing sector will give it a boost and help promote new technologies such as connected platforms to help the Indian automotive industry besides attracting investment from FDI in the market. Over the last few years, the government has been looking to make India a hub for manufacturing industry and with the abolition of Dividend Distribution Tax (DDT), we will further see an increase in investments from foreign players. It will also help in covering the revenue losses partially for corporates. The new scheme would encourage the manufacture and assemble of automotive electronics and semi-conductors to attract foreign investment. It will also boost the development of EVs in the country. The "handholding support" that the government has announced for Indian automotive component industry for product improvements, research and development, and business strategy will

help the industry to improve by manifolds. The scheme is launched at a time when the Indian automobile industry is undergoing a major transformation. Linking of technology in vehicles is going to significantly assist the automotive sector in the coming years. I am confident that the government will continue to help the automotive sector and give it a push in 2020.

"This has been a historic budget - I would rate it 8/10. This is common man's budget. From education to infrastructure, govt has ensured promising new projects. This would encourage buying and would improve market sentiments. In terms of Electronics and TVs, we were expecting reduction in GST to 18 percent and extent the zero percent duty on open cell panel, says Avneet Singh Marwah, Director and CEO of Super Plastronics Pvt. Ltd.

All in all, buoyant sentiment prevails in the industry following the event, majorly owing to revisions in personal income tax slabs under the new tax scheme, which is likely to spur bounty in income driving consumption. With manufacturing sector gaining

Make in India is likely to get impetus from measures to strengthen checks on imports due to the free trade agreement, review of rules of origin, enhancing safeguard duties and invoking quality control order on import sensitive items.

Deepak Jain, President, Auto Component Manufacturers Association (ACMA)

strength, consumer sentiments will be revived. Major fund allocation for infrastructure, warehousing and logistics through rail, land and air is anticipated to fortify business footprint locally and will make India more competitive globally in the years to come.

Additionally, both automobile and auto components sectors are in for respite since consumers who had deferred their purchases now take the reins in their hands again. Government in this budget has also introduced steps that will alleviate the pain of manufacturers as well as customers.

The Indian economy may seem to have bottomed out in 2019-20 on the back of global headwinds and challenges in the domestic financial sector that moderated the economic growth last fiscal year. However, considering the government's plan for this financial year and the calculated path that Prime Minister Narendra Modi has etched out for the country, demand is likely to revive springing hopes for a robust economic rebound. 

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GROWTH IS BACK

India Manufacturing PMI® rose from 52.7 in December to 55.3 in January - its highest level in just under eight years.

The rate of expansion in India's manufacturing industry continued to gain strength in January as firms responded positively to a sharp improvement in demand. January saw growth of new business, output, exports, input buying and employment gather speed. At the same time, business sentiment strengthened and there were softer rises in both input costs and output charges.

The IHS Markit India Manufacturing PMI® rose from 52.7 in December to 55.3 in January, its highest level in just under eight years. The consumer goods sub-sector remained the brightest spot, although growth was sustained in intermediate goods and capital goods moved back into expansion.



other hand, holdings of raw materials and semi-finished items increased at the start of the year. The accumulation was the first in six months and the most pronounced since May 2017. Stock building efforts were linked to robust order inflows and the impending launch of new products.

Pollyanna de Lima, Principal Economist at IHS Markit, said, "Manufacturing sector growth in India continued to strengthen in January, with operating conditions improving at a pace not seen in close to eight years. "The PMI results show that a notable rebound in demand boosted growth of sales, input buying, production and employment as firms focused on rebuilding their inventories and expanding their capacities in anticipation of further increases in new business. "Companies also benefited from subdued cost pressures, which enabled them to restrict increases in their fees to some extent.

"There was also an uptick in business confidence as survey participants expect buoyant demand, new client wins, among other factors to boost output in the year ahead."

Expansion in buying levels was the strongest in a year. Hiring activity improved in January on the back of business growth and projects in the pipeline. With capacities being expanded by further hiring, companies were able to stay on top of their workloads. Unfinished business was broadly unchanged in January, ending a six-month sequence of accumulation.

On the price front, there were slower increases in both input costs and factory gate charges. While some firms reported higher prices for metals, textiles and food, others noted lower fees for copper, packaging materials and rubber. Indian manufacturers were more upbeat about the year-ahead outlook for production. Optimism stemmed from forecasts of better demand, new client wins, marketing efforts, capacity expansion and new product releases. 

Source: IHS Markit.

"There was also an uptick in business confidence as survey participants expect buoyant demand, new client wins, among other factors to boost output in the year ahead."

Pollyanna de Lima, Principal Economist at IHS Markit

Companies noted the strongest upturn in new business intakes for over five years, which they attributed to better underlying demand and greater client requirements. A number of firms also suggested that marketing efforts bore fruit. The rise in total sales was supported by strengthening demand from external markets, as noted by the fastest increase in new export orders since November 2018. Manufacturers particularly noted higher sales to clients in Asia, Europe and North America, with favourable exchange rates assisting the upturn. In response to the pick-up in demand, Indian goods producers scaled up production in January. Moreover, the rise was the strongest in over seven-and-a-half years, with the rate of expansion much higher than its long-run average. Such was the strength of the rise in sales that some firms had to use their stocks to fulfil order obligations. As a result, inventories of finished products declined sharply in January. On the

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HIL Limited introduces first connected shopfloor at its Chennai plant

CK Birla group-owned building material solutions company, HIL Ltd. recently introduced “Connected Shopfloor” in its Chennai plant that has capacity of 1.98 lakh CuM to manufacturer block and block jointing mortar. HIL’s first step towards IIOT, the new Connected Digital Shopfloor will connect all machines to single network enhancing the plant’s efficiency. The company is betting big on digitalization and industry 4.0 to bring traceability, reduce defects and improve asset efficiencies at its plants. As part of HIL’s digitalization journey, the company is also introducing disruptive technologies like Robotic Process Automation (RPA), Industrial Internet of Things (IIoT) and Predictive Analytics to bring in more efficiency. Dhirup Roy Choudhary, CEO & MD of HIL Limited, said, “We believe a connected factory at our Chennai plant is a string start and will significantly improve the production process by enabling end-to-end product visibility. Further, predictive analytics will aid decision making and promote responsiveness.” Real-time machine parameters are being captured through digital logbooks, Sensors, Programmable Log-



ic Controller (PLC), Supervisory Control and Data Acquisition (SCADA) systems and plant level dashboards have been created to monitor and review critical parameters.

Great Wall Motors to buy GM India Talegaon Plant in Maharashtra

Great Wall Motors (GWM) and General Motors (GM) reached an agreement for the sale of GM India’s Talegaon manufacturing facility, subject to requisite government and regulatory approvals. Under a binding term sheet signed yesterday, the GM India legal entity, which includes the Talegaon facility, will transfer to GWM. GWM global strategy vice president Liu Xiangshang said the transaction would underpin the company’s plan to enter and invest in India. “The Indian market has great potential, rapid economic growth and a good investment environment. Entering the Indian market is an important step for Great Wall Motors’ global strategy,” said Xiangshang. “It is also an important measure to respond positively to the Indian government’s national strategy of vigorously advocating Make In India, Digital India and a ‘strong focus on clean energy in India’ and building a new India vision.” “Great Wall Motors’ investment will create more jobs, including direct and indirect employment, further enhancing the skill level in the auto industry; promote the development of the local supply chain, R&D and related industries; and contribute more profits and taxes to the government of India and the government of Maharashtra.”

TKM Bidadi plant is now 100% BS-VI compliant

Toyota Kirloskar Motor (TKM) has announced that its manufacturing plant in Bidadi has transitioned to a 100% BS-VI compliant vehicle manufacturing facility. Supporting and encouraging the Government’s initiatives to go green with environment friendly BS-VI compliant vehicles, the company introduced its first BS-VI compliant petrol variant of Toyota Glanza in June 2019. This was followed by the start of production of BS-VI compliant petrol variant of Toyota Yaris in December 2019 and the BS-VI diesel variant of Innova Crysta earlier this month. The recent commencement of BS-VI diesel variant of Toyota Fortuner production marks TKM’s full and final transition into a 100% BS-VI manufacturing facility. Bookings for BS-VI vehicles have already commenced and deliveries of BS VI diesel vehicles to customers would be made in a phased manner, depending on diesel BS VI fuel availability.

Danfoss Power Solutions opens new facility in Pune, Maharashtra

Danfoss Power Solutions (DPS) inaugurated its new facility in Pune. The company is an Indian subsidiary of Denmark-based Danfoss Group and provides efficiency catering to the rising demand for innovation and development in India’s urbanisation & electrification journey. Speaking on the launch of the new facility in India, Domenico Traverso, President - Work Function, Danfoss Power Solutions & India Board Member said, “Our new Danfoss Power Solutions facility in Pune is testimonial to the growth of our business in India that has been driven solely by our customers. As a company focussed

on innovation and development, we believe that this facility will enable us to be a step-ahead to efficiently address the future needs of our customers and the industry in the next phase of India’s technological transformation journey.” In lines with the government’s vision towards ‘Make in India’, around 95 percent of all the products that are manufactured in the facility use materials and components that are made in India. The company aims to invest on increasing its product offerings in India within the next 24 months and remains firm on its mission to ensure a minimum of 50 percent localisation level.

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By Niranjan Mudholkar

THE SHOW MUST GO ON!

Having withstood the perfect storm in the last 12 months, the Indian automotive industry is looking all set to bounce back with renewed vigour and conviction.

When Skoda Auto Volkswagen India showcased five brand new models of five different brands at its first ever media night in New Delhi recently, the atmosphere was

absolutely electric (no pun intended because no electric car was unveiled)! And why not? Today, Škoda Auto Volkswagen India already has close to 30 models from five different brands catering to a wide range from compact models to SUVs and high-performance sports cars. These brands include Škoda, Volkswagen, Audi, Porsche and Lamborghini. The positivity of each brand representative at the media night reflected both the

confidence in their products as well as their long-term trust in the Indian automotive market. It's not that they are not aware of the challenges in the industry. Neither are they trying to shy away from the facts. But rather,



"We have complete faith in the future of Indian automotive market and will accelerate our efforts for electrification of powertrains, with a technology agnostic approach. Our endeavor will be to offer realistic solutions for mass acceptance by

customers."

Kenichi Ayukawa, MD & CEO, Maruti Suzuki India Limited

Škoda Auto's first made in India and made for India production car - Škoda Vision IN





The Tata HBX Concept showcased at Auto Expo 2020

they chose to focus more on the positive possibilities and that's what truly defines the attitude of the Indian automotive manufacturing industry today. The clear and present challenges in terms of taxation structures, transition from the BS IV emission norms to BS VI emission norms, the push and pressure on the electric vehicles and the customer shift towards shared mobility are disruptions that came all at the same time. But the Indian automotive industry has faced these challenges remarkably well and continues to do so.

We all know that the automotive industry has taken a beating at different levels over the last twelve months or so. But it is neither down nor out. It is actually rising despite all the challenges. And I am not just referring



Bernhard Maier, CEO Škoda Auto

"India is one of the most exciting and most promising growth markets for Volkswagen Group. Together with the Volkswagen brand, we are seeking a combined market share of five per cent by 2025, depending on market and segment development. For Škoda, India would thus become one of the five largest markets in the world."

to the overwhelming response received by the products of new companies like Kia and MG. In fact, these two companies have started off amazingly well despite the difficult market conditions and have very well demonstrated that the right kind of products can do wonders

even during a slowdown! It is true that the concept of mobility itself is getting redefined due to various disruptions. But the need of the hour is to adapt to the changes and go to the market with products that cater to the changing needs of the customers. Fortunately, the industry is walking on that path. Look at the dazzling and distinct products that have been displayed at the Auto Expo 2020. Prasan Firodia, Managing Director, Force Motors said, "The customer expectations and aspirations are rapidly changing, we have tried to develop in house



Maruti Suzuki has set an ambitious target of selling one million green cars over the next few years



Prasan Firodia with the all-new Force Gurkha

grounds up next generation platforms in all the segments that we operate in." This clearly shows the maturity of the industry in understanding the market dynamics.

The industry has also responded very well to the upward trend towards green mobility and e-mobility. For example, Indian automotive market's undisputed leader Maruti Suzuki India Limited has recently announced an aggressive plan to sell one million green cars over the next few years under its 'Mission Green Million'. To attain this goal, the Company will offer a bouquet of options for customers comprising CNG, hybrids and electric cars. Kenichi Ayukawa, Managing Director & CEO, Maruti Suzuki India Limited said, "Mission Green Million is our commitment to bring advanced powertrain technologies for the Indian customers. In this mission, 'Make in India' will be our core philosophy. We have complete faith in the future of Indian automotive market and will accelerate our efforts for electrification of powertrains, with a technology agnostic approach. Our endeavor will be to offer realistic solutions for mass acceptance by customers." It is very reassuring to hear the MD of Maruti say that he has 'complete faith in the future of Indian automotive market'.

Rather than getting bogged down by adverse conditions, the Indian automotive industry has actually utilised the downturn quite effectively in terms of creating products that are in sync with the changing regulatory norms. Safety, for example, was always considered as the Achilles Heel of the Indian automotive industry. But that was the past. The story is changing substantially today. And the two home-grown automotive OEMs – Tata Motors and Mahindra & Mahindra (M&M) – are shining bright and leading the way. Tata already has two five-star rated passenger vehicles with Nexon and Altroz while M&M recently had their first with the XUV300. And of course, besides topping the



"The customer expectations and aspirations are rapidly changing, we have tried to develop in house grounds up next generation platforms in all the segments that we operate in."

Prasan Firodia, MD, Force Motors

safety charts, these are wonderfully made vehicles otherwise as well. Clear indication that the Indian automotive industry is coming off age with well designed, well engineered and well manufactured vehicles. While industry leaders usually have healthy respect for their competition, this respect is confined to the four walls of the board rooms or some corner of the shopfloor. It is very rare to see it openly expressed in the public. It was indeed heartening to see Pawan Goenka, MD, M&M showering generous praises for Tata Motors products at the recent Auto Expo. In fact, Goenka also highlighted the fact that how both these Indian OEMs are doing pioneering work in many segments including safety. Incidentally, these two brands are also progressing well with their electric vehicles programmes with excellent models already getting sold in the market.

To conclude, I will go back to the Skoda Auto Volkswagen India media night where besides the other top management and senior management members of the Volkswagen Group, Bernhard Maier, CEO Škoda Auto, also expressed his well-defined confidence in the Indian market: "India is one of the most exciting and most promising growth markets for Volkswagen Group. A year and a half ago, we set the course to help write this story of growth with our India 2.0 project. Together with the Volkswagen brand, we are seeking a combined market share of five per cent by 2025, depending on market and segment development. For Škoda, India would thus become one of the five largest markets in the world." 

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By Niranjan Mudholkar

RINGING IN A NEW AGE

Will 2020 be the year of disruption? The Machinist speaks to a couple of experts to understand how the current calendar year will pan out.



The last decade (2010-2019) has been quite an eventual year in many ways. From digital transformations to market transitions and from economic upheavals to political shifts, the world has seen a lot in these ten years. Will all these dynamics culminate into a truly disruptive period in 2020? Ashok Kumar Prusty, Executive Vice President, Bry-Air (Asia) Pvt. Ltd., doesn't think so. He says, "2020 marks the start of a decade. Last decade India emerged as one of the world's largest and the youngest economy where a slew of start-ups opened up and became unicorns, and where India leapfrogged into a digital future. The year 2020, more than the year of disruption, will be the year of acceleration for many industries."

Of course, there are others like Sunita Sapra, COO, Karam Industries, who believe that we are in

for a major disruption. She says: Yes, 2020 will be the year of disruption and the first year before more significant disruptions permeate manufacturing. In 2020, we expect more manufacturers to incorporate robots in production lines. There is good reason for this. Robots have become very sophisticated, while they cannot do everything people can, they are getting better every year. By the end of the next decade, robots will be widespread in manufacturing. And 2020 will be looked back as the year when robots became intelligent enough to do more jobs believed only people could. An important reason for this is that AI is on the cusp of making a significant leap. This leap will make it easier than ever for people to interact with machines. When this happens, non-specialists may be able to program equipment more easily, something today only specialists do.

Prusty goes on to offer a logical explanation to his perspective. He believes that disruption is an ongoing phenomenon. It cannot be limited to just one year, because it is evolving in nature and it is a part of life. "The focus on making greener India with EV – that is a disruptive technology in itself and can be taken as a good example of how disruption can be explained for this decade. The growth of the EV industry in India is opening multiple horizons in automotive segment. EV industry will accelerate the growth of India in many ways than the others," he says. Interestingly, he also shares how his organisation is ready to leverage on the market trends. The manufacturing in the Li-ion batteries requires controlled environment where there is no moisture. Such rooms are known as Dry Rooms and Prusty's organisation has expertise in this area.



"We believe that the most ordinary people, given the right knowledge, learning and empowerment, can give extraordinary results."

Ashok Kumar Prusty, Executive Vice President, Bry-Air (Asia) Pvt. Ltd.



The year 2020, more than the year of disruption, will be the year of acceleration for many industries.

“Manufacturers will narrow their expertise in 2020. They will do so because the market is rewarding specialist businesses over diversified ones. Technologies like AI and robotics will make specialisation easier,” Sapra adds.

PREPARING AT THE STRATEGIC LEVEL

Sapra believes that as Karam is a global company, events in every major region impact it either directly or indirectly. “We have sound strategies in place, one of which is ensuring our products remain competitively priced in overseas markets. We also expect to enter into partnerships with global players adding to our expertise and competitiveness.

“We believe that while there are challenges today, opportunity is abundant as well. Technology is improving, making it possible to manufacture products of unsurpassable quality. The scope for international cooperation is also more significant than ever. For instance, we are now the associate partner of Myanmar’s Ministry of Labour. “We will mitigate today’s challenges by minimising the impact of global pressures and taking advantage of new opportunities,” she explains.



“While there are challenges today, opportunity is abundant as well. We will mitigate today’s challenges by minimising the impact of global pressures and taking advantage of new opportunities.”

Sunita Sapra, COO, Karam Industries

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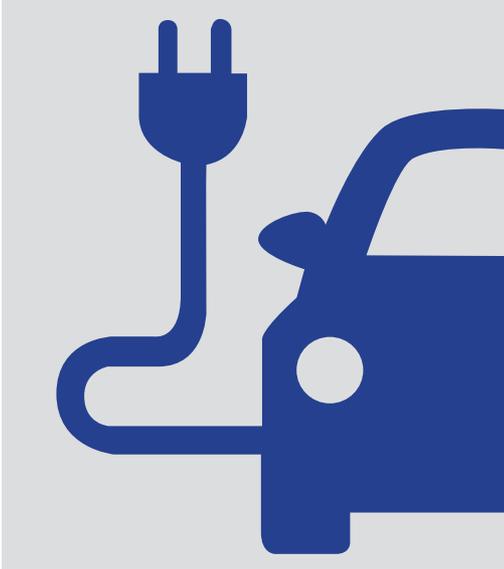
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The growth of the EV industry in India is opening multiple horizons in automotive segment.

“We have sound strategies in place, one of which is ensuring our products remain competitively priced in overseas markets. We also expect to enter into partnerships with global players adding to our expertise and competitiveness.”

Sunita Sapra

LEVERAGE ON MANUFACTURING CAPABILITIES

Prusty believes that his organisation’s manufacturing capabilities are multiple times ahead than its counterparts. “Right from CNC fabrication, to fully integrated rotor manufacturing capabilities, we have all the critical elements available in-house that provides us this competitive edge and out do the time lag by delivering faster and better. Similarly, to better leverage on the capacities and to better serve our customers with their fast-evolving needs and growing requirements of shorter lead time and quicker turnaround, the Group has recently added over 100 thousand square feet of manufacturing facility, now having a total of 610 thousand square feet manufacturing space,” he shares.

Sapra says that Karam endeavours to improve its manufacturing processes using the newest technology and best workforce. “Our manufacturing facilities meet ISO 9001; we discover ways of improving processes such that our products continue meeting and exceeding the highest global standards. We also recognise that a productive workforce is vital to our success. For this reason, we have a rigorous recruitment criterion.

“Last decade India emerged as one of the world’s largest and the youngest economy where a slew of start-ups opened up and became unicorns, and where India leap-frogged into a digital future.”

Ashok Kumar Prusty

We hire only those workers whom we believe will excel in their roles. Once they are hired, they are further trained, so they work productively and safely. In addition to hiring the best labour, Karam Industries will automate processes wherever doing so will improve productivity and quality.”

ROLE OF PEOPLE

Obviously, the important piece of ‘people’ will play a key role in this puzzle called disruption. Prusty says employees are the core strength and the key to success of any new technology development, we undertake at our organization. “We value individuals who have a sense of pride and ownership in what they do and are committed to their goals. The conducive work environment at Bry-Air, helps employees innovate and excel in all we do. We at the Group, imbibe and live the culture “Innovation is Life”.

Over 50 percent of Bry-Air employees are engineers/ technically qualified and these Airgineers undergo continuous training in application knowledge to provide the ideal solution to the new day customer needs. Their capabilities are enhanced through continuous collaboration with international experts as well as bench-marking of their skill set with the most concurrent technologies worldwide. “We believe that the most ordinary people, given the right knowledge, learning and empowerment can give extraordinary results.”

Sapra also looks at this issue comprehensively starting right from the management. She says: “We have a reliable management team. Our top leadership has been educated at the world’s leading institutes, including the IITs. We retain our competitive edge by hiring from the best institutes in the country. In addition to recruiting from world-class institutes, we realise the importance of a diverse workforce. A significant number of our employees are women. We are the only enterprise in a mostly male-dominated industry that places women in roles traditionally occupied by men. People are our biggest strength. Our talented leadership team and employees will help us take advantage of disruptive technologies, navigate and thrive in an uncertain global environment, and improve manufacturing processes.” 

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By Yash Rane

TOP 5 MEGA TRENDS FOR 2020

It is imperative for manufacturers to understand what they will need to grow over time and how their businesses will impact customers and competitors within the industry.



In the manufacturing industry, the only constant factor is the way it keeps changing and adjusting in order to try out new things and the change has been mostly related to digital transformation, something which the world is largely exposed to now. Starting from Internet of Things (IoT), to blockchain and Artificial Intelligence (AI), there is a huge impact of new ever evolving and cutting-edge technologies on the manufacturing industry and this influence will only grow in 2020 and transcend beyond.

The manufacturing companies embracing digital tech transformation witnessed a growth of over 55 percent in three years, whereas during the same period companies that did not follow suit saw a comparatively lesser growth of 37 percent, says industry data.

Hence, it is imperative for manufacturers to understand what they will need to grow over time and how their business will impact customers and competitors within the industry. Having said that, take a look into five top digital manufacturing mega trends for 2020:

ONLINE ON-DEMAND MANUFACTURING

Digitisation has helped companies in doing proper experimentation with business models for quite some time. Companies are vastly using digital platforms in

facilitating the entire supply chain for manufacturers through a network of distributed partners. After a company creates a network of manufacturers using the digital platform, all that sourcing managers would need to do is to upload their designs / dwgs and mention their requirements such as the material to be used, the surface finish, lead time etc., on the platform. The platform then uses its proprietary engine to identify the most optimum supplier, cost of manufacturing and turnaround time almost instantly and reflect it. Over 100s of suppliers can be connected to the platform and based on several parameters like complexity, quality expectations, turnaround time, responsiveness etc., the ideal manufacturer gets identified and takes over the project. But digital platforms have the capability of reducing these barriers and allowing engineers to perform without compromise as also get cost benefit of up to 20 percent by streamlining the a supply chain.

RISING FOCUS ON AUTOMATION

Manufacturers are perennially facing a skill gap at workplace. Research reports indicate that millions of jobs will remain vacant this decade as the ageing workforce will retire and attracting skilled graduates is proving difficult. Additionally, most manufacturing staff still lacks digital skills required for the digital transformation of manufacturing business. Hence, the focus will remain on automation. It is not just robots being talked about here but also the entire work process automation. Therefore, it further gives the company an opportunity to train, re-train and upskill its existing personnel and reassign new roles to them with the intention of meeting digital production and supply chain needs.



“Manufacturing companies embracing digital tech transformation saw a growth of over 55 percent in three years,” says industry data.



Experts are of the opinion that the usage of Artificial Intelligence, predictive analytics and data will prevent planned downtime or outages by 50 percent.

THE ADVENT OF 5G

We have definitely arrived at a stage now where 5G will play a dominant role. Through 5G, companies will get access to high bandwidth thereby leading to easy cloud computing. With the emergence of 5G, manufacturers can start using it in 2020 and beyond to increase their use of sensor, cloud, quality inspection, centralised tracking etc. It is imperative to note that close connectivity to consumer demands will play a very significant role in changing the manufacturing business in the time to come. IoT and 5G will help companies serve their customers, whether they are close in proximity or far, more efficiently clubbed together with accountability. Besides 5G, 3D printing and Augmented Reality and Virtual Reality will continue to allow companies to produce prototypes faster and with limited monetary investments.

SMART FACTORIES

Smart factories are becoming the basis for manufac-

turing in 2020. Internet of Things (IoT) and connected devices are being used in vast proportions in these factories to facilitate technologies such as automation, artificial intelligence and many more. Manufacturers are dependent on these connected devices to increase productivity from operations as they are adept in sensing the surrounding environment and interacting with each other. Factories of the future will heavily rely on sensor technology and they will have connected tools which will utilize vast data to guide the workforce.

PREDICTIVE ANALYTICS

Experts are of the opinion that the usage of Artificial Intelligence, predictive analytics and data will prevent planned downtime or outages by 50 per cent. An outage is a period of time when a system fails to provide or perform its primary function. The epicentre of focus in 2020 will be on predictive analytics as it will help companies better understand the working of their machines and the reason behind their failures, eventually leading to mitigation of drawbacks. Predictive analytics will be useful in helping manufacturers make better, faster and smarter decisions about everything. 

The author is Founder, Chizel.

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*Customer Testimonial, November 2018

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GLIMPSES FROM THE GRAND SHOW

The Machinist presents some of the key launches from this year's Auto Expo held in New Delhi

IN FULL STRENGTH

At the AutoExpo 2020, Tata Motors showcased an all-new range of passenger, electric and commercial vehicles with a focus on Connected, Electric, Shared and Safe. With a fireworks of 4 global unveils, a pre-production preview and a commercial launch; Tata Motors raised the bar by bringing innovative products, engineered and made in India – for India. With a hall, spanning across 6000 sq m, the Tata Motors pavilion was divided into four thematic zones - Live, Play, Move and Build Zone. Each of these zones was designed to reimagine the scope of what Tata Motors can offer, complemented by digital engagements to excite visitors, from all age and choices.

Commenting at the launch, Tata Sons Group Chairman, N Chandrasekaran said, "The theme of our pavilion is a thoughtful representation of what India needs, how Tata Motors can contribute, and how we as the Tata Group are taking the lead in providing a transformative ecosystem solution in India. We are



proud to offer one of the largest range of BSVI portfolio and this shows our commitment towards a clean and green environment.

SUV OFFENSIVE



Volkswagen India unveiled its biggest SUV offensive at the Auto Expo 2020. The product line-up will participate in the growing SUV segments, which receive heightened customer interest. The brand introduced its new SUV family, which comprises of the Volkswagen Taigun, T-Roc, Tiguan and Tiguan Allspace. With the line-up of such vibrant & sporty cars catering to different customer groups. Volkswagen also launched its new brand design for the Indian market. Premiering in India, the brand marked the beginning of "New Volkswagen". The re-branding exercise was built on the theme 'Vibrant Power', with the aim of making the brand more human and lively.

Speaking at the Auto Expo 2020, Steffen Knapp, Director, Volkswagen Passenger Cars India said, "With the India premiere of Volkswagen's SUV family, the brand is showcasing its clear direction and focus for the Indian market."

REVOLUTIONIZING THE SHARED MOBILITY SPACE

Force Motors put on a formidable display with three ground-up new platforms. Also, on display was a 100 percent electric variant on their flagship Traveller platform. In addition to showcasing complete vehicles, Force Motors displayed the range of engines produced for leading world majors like Mercedes, BMW and Rolls-Royce Power Systems.

The star attraction of the stall was no doubt the next generation shared mobility platform Code named the



T1N. This new platform has been simultaneously designed and developed for both Internal Combustion Engines and 100 percent Electric Drive. Both the Diesel and the 100 percent electric variant were on display.

The T1N is the first vehicle in this category in the country offering crash compliance with air bags for driver and co-driver. With a score of segment first features the T1N will help reinforce the leadership position of Force Motors in the large van segment.

PREMIUM & BOLD STYLING



Hyundai Motor India Ltd. unveiled The New 2020 Tucson on first day of AUTO EXPO 2020. The New 2020 TUCSON unveil comes at an opportune time when the SUVs are largest selling and the most admired body type choice

among Indian buyers.

The New 2020 TUCSON is engineered to deliver Excellence with Premium & Bold Styling, Dominant Performance, Smart Technology & Comfort along with Enhanced Connectivity and Advanced Safety. With over 6.5 million customers worldwide, Tucson is one of the best-selling SUV's across the world. Tucson's strong success is apparent from the overwhelming response it has received from experts and from customers winning many prestigious awards in India since its launch in November 2016.

Speaking at the Unveil of The New 2020 Tucson, S S Kim, MD & CEO, Hyundai Motor India Ltd. said, "Tucson had re-defined the Premium SUV segment with its class-leading features and unmatched performance. Hyundai, being India's Most Preferred SUV Brand, constantly strives to upgrade its products and services with best-in-class technology that meet the evolving needs of today's customers and their rising aspirations.

FIRST CAR FROM THE INDIA 2.0 PROJECT

Škoda presented its Vision IN concept study at the Auto Expo 2020. The study gave a concrete preview of a new mid-size family SUV and is the first model ever to use the MQB-A0-IN variant of the MQB car platform, which has been specially adapted for the Indian market. As part of the India 2.0 project, Škoda has been responsible for heading Volkswagen Group's model campaign on the Indian market since June 2018. The consolidation of the three Volkswagen Group passenger-car companies previously



represented in India to form the new Škoda Auto Volkswagen India Private Limited (SAVWIPL) in October 2019 marked an important milestone for the project. It enables coordinated, faster decision-making and increases efficiency by exploiting existing synergies. In terms of models, Škoda also showcased the Karoq as a newcomer to the Indian market, the updated Superb flagship, the Monte Carlo and Matte Concept of the Rapid 1.0 TSI, as well as the Kodiaq and the sporty Octavia RS 245.

LOCALIZED E-BUS TO MEET THE FAME-II GUIDELINES

JBM Auto Ltd. launched its ECO-LIFE e9 electric bus at the Auto Expo 2020. JBM's focus is to be a one-stop solution provider in the Electric Vehicles segment by providing a complete ecosystem solution for E-mobility i.e. Electric Bus, Battery Technology, Charging Infrastructure based on the Operating Pattern within the city. ECO-LIFE comes with lithium batteries that are chargeable through a fast plug-in charging system. Offering a completely flexible solution, the electric bus technology is adaptable to the city bus operation depending on demographic and geographic conditions. Speaking on the occasion, Nishant Arya, Executive Director, JBM Group, said "We have a long journey to ensure zero emission public transport solutions and electric buses would be a catalyst. Today countries across the globe are embarking on creating sustainable EV policies and if India achieves the FAME-II targets it will be amongst the top 3 countries in the world terms of number of e-vehicles. This will also generate around 10 million jobs and open many avenues for direct and indirect employment in the e-mobility space and allied sectors".



By Arpita Saxena

STANDARDISATION TRIMS COSTS, BUOYS GROWTH

Smart automotive manufacturing entails standards for network, software and control, besides production, for enhanced interoperability of systems and being abreast of the digital revolution.



India has a strong auto component manufacturing base and globally, a lot of auto companies have been relying on the country for their manufacturing. This explains the nation being somewhat in line with its global counterparts in adopting global practices for growth. Although the Indian automotive industry is witnessing a slump at present, it is still one of the largest markets in the world.

Automotive manufacturers face a multitude of challenges - capacity glut, fuel consumption, global competition, production efficiency, sustainability – you name it. Consistent and repeatable production standards are called for that would help automakers better manage complexity, pare costs, optimise processes as also maximise the success of their new launches.

However, that does not discount the significance of standardisation and its upgradation as being content with the existing standards could stagnate growth. Industry experts are of the view that automotive players should continually evaluate and refine their standards to make sure that they stay relevant in an ever-changing and more complex – automotive industry.

WHY THE NEED FOR STANDARDISATION?

Today, standardisation is believed to be in tandem with

globalisation. Machines working on standards do not merely help automakers maintain consistency in building the same vehicles, but also deliver notable benefits, which require having networks, processes and software in place at every production facility. Further, reducing the number of suppliers that automakers work with, in addition to standardising components, can also help lower their acquisition costs that can simplify workforce training. Myriad aspects of vehicle launches can be synchronised when everything - from machine control specifications to process tooling and data naming conventions – are following standards. They can also lower the likelihood of unexpected change orders or costly delays.

According to Rüdiger Ammann - Head of System House Industry 4.0 - ZF Corporate Production, standardisation of processes and data is the key enabler for smart manufacturing, which is essential for the auto industry as well as for other industries, as it helps to drastically improve operations.

“Adopting innovative and high-performance software solutions will help achieve the overall aim of developing and establishing scalable solutions within the factories. Standard software solutions create room for new innovations, flexibility of production around the globe, ensuring same quality level and bundle the needed support,” Ammann said.

While a large number of automakers are keen on capturing the essence of Industry 4.0 by beginning to toil at the software layer, automation should be the area that should be addressed at the outset of any manufacturing project. For example, creating equipment standards around the use of intelligent motion machines can speed up cycle times and reduce maintenance. Next, automakers should create network standards to create a free flow of information across the enterprise. Finally, at the software level, OEMs can use building blocks of code to make sure that controllers, equipment and processes adhere to specific standards.



Adopting innovative and high-performance software solutions will help achieve the overall aim of developing and establishing scalable solutions within factories.

Rüdiger Ammann - Head of System House Industry 4.0 - ZF Corporate Production

THRUST ON INTEROPERABILITY

A seamless interoperability of technology needs clear standards on several different levels. If these standards are missing, the leading OEMs are applying their own standards while suppliers have to adopt multiple standards in order to follow customers' requirements. This is one crucial factor impeding technology from being interoperable.

For the long haul, maintaining and improving standards is pertinent, which explains the significance of manufacturers taking steps towards the same after standards are deployed. Automotive manufacturers should plan to keep a control standard for at least two or three years. This will allow them to learn from it and

improve it before they make any technology changes. And when they do make a technology change, they should phase it in with small steps so their workforce, processes, and regional and global specifications can adapt to it.

"In-vehicle networking enables data interchange of all vehicle components. So, the vehicle can be controlled during the whole driving process in an optimal way," Ammann continues.

The digital revolution has undoubtedly impacted every aspect of manufacturing. Digital manufacturing presents an opportunity to increase efficiency and reduce costs, and leads to more productivity for manufacturers. Today, the auto industry is significantly adopting robust automotive manufacturing solutions into their processes. Digital factory comprising a digitalisation of processes and data is the basis to achieve smart automotive manufacturing.

Indian automotive industry has been an adopter of technological advancements, making strides towards adopting international standards and practices in the process. Although still not close to international benchmarks, the industry is rapidly catching pace in its run up to matching the global yardstick for standardisation. 

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ENSIS CUTTING TECHNOLOGY

The ENSIS has expanded the thickness range of materials to be cut while retaining the characteristic capability of fiber lasers to cut the thin materials.

Advanced ENSIS technology realizes the ultimate stable wide range processing. Achieves high speed cutting in thin material, a key capability of fiber technology, and the ability to process thick plate efficiently. AMADA's ENSIS technology continuously changes the laser mode to process thin-to-thick materials without additional setup.

Fiber lasers were claimed to be advantageous in cutting thin materials. The ENSIS has expanded the thickness range of materials to be cut while retaining the characteristic capability of fiber lasers to cut the thin materials. The conventional wisdom about fiber lasers is overturned by Amada's original and latest beam control technology installed on the ENSIS.

Due to sharp beam mode Fiber laser has the ability to cut thin material at very high speed when comparing it with CO2 Laser, however CO2 lasers broad beam mode makes it suitable for cutting higher thickness material with best cutting finish & quality.

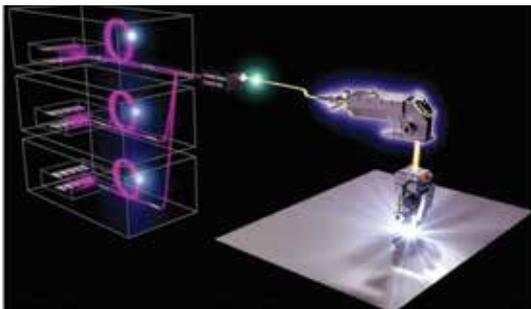
ENSIS technology has the ability to vary beam mode from sharp to broad by regulating its beam mode output which makes possible to cut thin material at very high speed and thick material with best cutting finish similar to a CO2 laser.

ENSIS Cutting Technology

While processing thin plates, high-speed processing is possible with the beam shape that is originally possessed of high condensing properties. Conversely, in thick plate processing, the peak is changed to a nearly flat shape. Oxygen cutting using an oxidation reaction is often used for mild steel plates.

In this case, if a beam with an extremely narrow fiber diameter is used on a thick plate, the cutting path becomes too narrow, and the melt generated by the laser beam cannot be removed by the assist gas, and stable processing cannot be performed.

By making the beam peak nearly flat, the cutting path can be widened and a gap can be created to remove



Variable beam control unit and auto collimation function



ENSIS3015AJ - Energy saving, Variable lot, Variable mix production, wide range fiber laser machine

the melt generated by oxygen cutting.

This technology enables a wide range of processing from thin plates to thick mild steel plates.

Amada has further innovated this technology by integrating an Auto Collimation unit which makes it possible to do very high speed piercing of thick material (1sec for 25mm thick) which improves cutting speeds & cut finish drastically.

In addition to the new beam control technology, Amada fiber laser cutting machine employs Clean Fast Cut (CFC) technology and Easy Fast Cut (EZFC) technology to dramatically reduce the consumption of assist gas during nitrogen cutting, which is used mainly to cut stainless steel. It applies an original non-contact nozzle developed by AMADA that supplies assist gas at a low pressure to reduce processing costs, while maintaining cutting quality.

High Production Efficiency

- The Automatic 8 station nozzle changer helps for Continuous cutting and production planning which reduces the preparation time of nozzles for various material and thickness. With

this we can achieve flexible response to urgent parts.

- Oil shot sprays oils on the material before piercing to prevent spatter build-up which improves the processing quality and achieve stable processing.
- The latest fiber laser processing technology advancements offer a drastic reduction of assist gas consumption and high-speed processing with cutting speeds 2 times faster than conventional lasers. – a result of AMADA's 40 years of laser knowledge, research, and development.
- Deep Etching - Deeper depth marking is possible which is visible even after the powder coating process.

Easy Operation

- The latest NC unit AMNC3i can be operated quickly and intuitively like a smartphone. A large screen provides good visibility and can display many functions and information items. Operability is improved substantially, setup time reduced drastically, and many quality and equipment management support functions are provided.

By Niranjan Mudholkar

ACE ON THE SHOPFLOOR

The Machinist magazine recently visited the sprawling manufacturing facility of Forbes & Company in Waluj (Aurangabad), Maharashtra where the company manufactures a wide range of engineering precision tools as well as automation solutions.



we have utilised this lean period to develop solutions for the aerospace industry. It has given us the opportunity to think out of the box and look at expanding our portfolio to cater to the needs of industries beyond automotive. So, you will see our portfolio growing gradually and substantially in the coming times," he explains. Totem's offerings are defined in three categories: tailor-made solutions, application specific solutions and customer-specific solutions. The expansion of the portfolio will happen across these three segments.

THE SHOPFLOOR

The word Totem, which comes from the ancient Native American culture, means a sacred object that symbolises a community or clan. It is this sacredness that Ravi Prem, the COO of Forbes & Company, associates with the business of precision engineering tools that the company manufactures under the brand Totem at its different manufacturing locations including Waluj in Aurangabad situated in the state of Maharashtra in western India. Totem, which provides tools for wide ranging industrial applications like threading, milling, drilling, and deburring, serves different industry sectors like automotive, oil & gas, general engineering, aerospace and so on.

DIVERSIFICATION-BASED EXPANSION

While Prem himself admits that the focus of Totem has been a bit skewed towards the automotive industry for many years but that is now changing fast. "That is a thing of the past. We are now consciously and thoughtfully looking at developing more solutions for the aerospace sector as well as other industries," he says. "We all know that the automotive industry has been going through a slowdown for the last few months and

As Prem takes me around the 14-acre campus of the Waluj manufacturing plant for a guided tour, he doesn't hide his passion or excitement about the work happening on the well-equipped shopfloor, which is primarily divided into three cells for production. These include the high-performance tool cell equipped with Anca machines, small precision tools cell with Rollomatic machines and customised tools cell with Walter machines. For certain applications, the shopfloor even has specialised machines developed in-house by Forbes. "This is something unique about our manufacturing setup. We are probably the only cutting tools company in India that has developed its own specialised machine tools. These are, of course, strictly for internal utilisation only," Prem informs. The shopfloor itself is buzzing with activities and it has no trace of a slowdown or a lean period that one could visibly see or sense. (Of course, there is a lot of pressure with regards to the work of the new expanded facility but that is something he doesn't complain about.) "We are a very positive organisation dedicated to our customers. And that is what drives us as an engineering company." Incidentally, the Waluj facility that employs close to 350 people has more than 80 percent staff from engineering



it,” Prem explains, as he takes me to the R&D department, which is well equipped to cater to the high-end requirements of the highly qualified IITians who manage it. “Apart from new product development, our R&D department engages in activities like design validation, modelling, simulations, digital validation, micro geometry and so on,” he adds.

COMING SOON

The Forbes Waluj facility is also quietly adding to its structural footprint to stay in sync with the market dynamics. “We are building an experience centre, a technology centre and a new administration building besides the new expanded facility,” shares Prem. The new expanded facility will primarily produce HSS taps and it will have dedicated infrastructure for activities like heat treatment, vacuum treatment, coating and so on. Of the four sections in the new facility, one each will be dedicated for taps, drills and automation and machine building while one section will be kept open.



“We initiated the Industry 4.0 concept long back across our production facilities. If we are to provide the latest technology to customers, we must start with ourselves.”

background. “This helps us understand customer needs with a better perspective and to address the same more effectively,” explains Prem.

MICRO GEOMETRY

Besides the shopfloor, the R&D setup of the Forbes Waluj facility is also working round the clock to ensure that not just the product portfolio is expanded but also the micro geometry of the tools is enhanced. “The micro geometry of a tool is extremely critical for its performance and that is why we are equally focussing on

AHEAD OF TIMES

According to Prem, what differentiates Forbes and Company from its competition is its ability to stay ahead of the market trends. “We have initiated the Industry 4.0 concept long back across our production facilities. We believe that if we are to provide the latest and the advance technology to our customers, we must start with our self. So, we have been implementing Industry 4.0 solutions accordingly. Also, to

Wide range of offerings from Totem (Forbes & Company)

Threading solutions	Milling solutions	Drilling solutions	Deburring solutions
1. High Speed Steel (HSS, HSSE & HSSE PM) Machine and Hand Taps- 1.6mm to 152.40mm	1. Solid carbide end mills to machine Hard-part material to economy range series- 0.1mm to 20mm	1. Solid carbide drills for the critical applications across industries- 1mm to 25mm	1. Tungsten carbide rotary burrs in different shapes and sizes in 3mm, 6mm and 8mm
2. Carbon steel hand taps- 1.6mm to 50.8mm	2. End mills for graphite and composite materials- 0.1mm to 20mm	2. HSS drills for general purpose applications- 1mm to 60mm	2. HSS rotary cutters in odd shapes to suit difficult-to-reach machining spots
3. HSS and Carbon Steel Round dies and Hexagonal dies- upto 4”			



serve our customers better, we are now also available on cloud where in the first phase, all our catalogues are available for our clients. In the second phase, we will soon be making the cutting parameters available,” Prem elaborates.

Importantly, for Prem, staying ahead of times does not imply only the technological aspects. It entails a sea change on the cultural level as well. And a simple walk across every section of the facility reflects this thought process. The considerable number of women employees is something that one cannot miss at the Waluj facility.

Bradma



Bradma, which became part of Forbes & Company in 2004-05 is a specialist in the manufacturing of marking tools and marking machines. Today, it has also diversified into the fields of laser marking as well as line automation. With regards to laser marking, it provides solutions like fibre laser (metal), Co2 laser (non-metal) and UV laser for delicate materials. In terms of automation, Bradma provides solutions for higher productivity in production, machine diagnostics and predictive maintenance, software architecture for the Smart Factory as well as RFID applications.

From shopfloor to administration and from engineering to the testing labs, women employees are making their presence felt substantially. Importantly, they have been employed not because they are women but they are competent enough to get the job done. “This is not a coincidence,” Prem states. “As an organisation, we are committed to inclusivity in every sense. For example, our aim is to have at least 25 percent female employees within the next three years and we are pushing for it quite aggressively,” he shares,

with certain pride and determination.

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“As an organisation, we are committed to inclusivity in every sense. For example, our aim is to have at least 25 percent female employees within the next three years and we are pushing for it quite aggressively,” he shares, with certain pride and determination.”

THE ACE UP HIS SLEEVE

While the stated vision of the organisation is ‘to be a market leader by empowering customers with innovation solutions in precision cutting tools and industrial automation through world class practices,’ Prem has a definite plan of ensuring that this vision materialises in its true sense for the organisation. “Accordingly, we have embarked on six year programme that is based on three pillars: Adapt, Change & Excel. Put together, it is what we call the ACE programme. This ACE programme is based on nine elements of which three are external factors, three internal factors while the remaining three speed, lean and agility,” Prem explains. “While we already have a market leading position, we want to be the top player by collaborating with our customers in their quest for business excellence and profitability. Every employee of ours is so much in sync with this vision that today it is actually a part of everybody’s KRA. That is what defines the Totem brand,” says Prem as he concludes with this positive note. 

By Niranjana Mudholkar

GREAT OPPORTUNITIES

Indian manufacturers have been very keen to embrace Industry 4.0 in their operations and to be equipped for reaping its benefits, says **K. Arunagiri**, Business Line Manager - Motor Vehicle Industry Division, Atlas Copco



unique and no player in the market can offer this advantage to help customers.

There's a lot of talk about slowdown in the industrial sectors for the last eight months or so. What has been your experience?

Yes, there has been a lot of slowdown in the industrial sectors for the last couple of quarters. If we look at the PV segment, our experience has been that the new players like MG, Kia and new variants in EV segments like Hyundai Kona has been accepted well in the market while the traditional players are finding it challenging to sustain in the current situation. The consumer is waiting for clear path of the industry to be visible to him especially the transition of BS IV to BSVI and

Tell us about this division at Motor Vehicle Industry Division, Atlas Copco

The division I belong to is MVI, i.e Motor Vehicle Industry Division. This division caters to providing solutions to transform assembly lines into a Smart Connected Assembly with our world class products.

Tell us about some of the technological advancements and innovations that you are offering to help you customers vis-à-vis other players in the market?

Key highlights of our technological advancement towards providing Smart Connected assembly is:

Our flexible offering: Here Atlas Copco controls different type of toolings tools with one system to support customers vision of Industry 4.0

Error proofing solutions: We provide Assembly Process Error proofing solutions integrated with our assembly solutions.

Quality assurance products: We provide QA 4.0 products which connects manufacturing quality process integrated with our software solutions.

We believe the solutions we offer as stated above are



"Blockchain technology is expected to create revolution and huge disruption in many areas. For example, it is expected to make impact on self-driven cars in the automotive sector in times to come."



the new variants that are getting launched this year in the SUV space. I believe it should take couple of quarters at least for the turn around to be visible. Budget expectations are also a factor traditionally weighing on people's minds.

If we take the CV segments, we have seen overall a down turn on all the players here, with the consumers having excess capacity / inventories to due axle payload norms change, Toll gate removals etc., and fleet opera-



There has been a great increase in utilization of robots in automotive body shops and selectively in assembly lines as well. This results in increased use of connected machines and the idea is getting bigger.

tors are not so keen to renew their purchases at least in the HCV segment. Apprehensions on BS IV continuance and BS VI arrivals have been a factor in consumer's mind. Hence, we have seen investments primarily owing to BS VI needs, and major players are relooking into the future in a positive way taking opportunity to re-invent in terms of technology. Overall, the industry is optimistic about the future in long term basis.

Do you see the situation changing in the near future? Why?

We see the future change in the long term for sure. In India, our potential to grow still remains very high. Current Government's focus on infrastructure needs, the financial sector revival, scrappage policy, EV policy and its implementation etc., will turn the situation positive.

Given the dynamic scenario, what kind of industrial trends do you foresee in the year 2020?

The key driver for the trends would be the emission norms of CO2 and its impact in the industry. Electric vehicles, Hybrid vehicles are the ones which will evolve. Connected cars are a bit early stages in India.

Do you see blockchain technology coming to the fore as far as manufacturing industry is concerned?

Blockchain technology is expected to create revolution and huge disruption in many areas. For example, it is expected to make impact on self-driven cars in the automotive sector in times to come.

With operations getting smarter each day, how do you see Industry 4.0 evolving in the context of Indian manufacturers?

Indian manufacturers with whom we deal with mostly in automotive industry have been very keen to embrace Industry 4.0 in their operations and to be equipped for reaping its benefits.

There has been a great increase in utilization of robots in automotive body shops and selectively in assembly lines as well. This results in increased use of connected machines and the idea is getting bigger. A big step is being taken in the industry as a whole for getting their bottom line equipment prepared for this evolution. Automotive industry overall has started to realize the benefits.

What kind of opportunities and challenges do you see in this transformation?

Our products today are designed keeping in mind customer's needs for Industry 4.0 in terms of flexibility, improved uptime, energy savings, new product introduction quickly etc. In addition to the same, customer's needs for data collection and analysis. All these are good opportunities for us.

How is this journey impacting the shop floor employees in terms of skilling, re-skilling and upskilling?

Human beings play still a very vital role in this evolution. The technologies like AI, Data Analytics, Robotics, Cloud computing would impact immensely the business models, human skill sets needed would be more creative thinking, problem solving skills, interpersonal communication skills etc., would gain more importance. 

SPECIALIST TOOLS TARGET TUBE PRODUCTION

A new insert, additional sizes and accessory tools have all been announced to support the removal of weld deposit created during tube production – a process known as scarfing.

Recognized as one of the leading manufacturers of tools for the tube and pipe processing industry, Dormer Pramet has expanded its scarfing assortment.

A new insert, additional sizes and accessory tools have all been announced to support the removal of weld deposit created during tube production – a process known as scarfing.

These latest additions include a series of positive, screw mounted, single-sided inserts for external scarfing. The SPUB 19 range features eight of the most commonly used radii in the production of thin wall electrical metallic tubing, also known as conduit. Its design provides a smooth chip flow from the point of cut to the chip winder, usually located above the tool.

In addition, Dormer Pramet has added new sizes to its family of negative, double-sided inserts with eight cutting edges for external scarfing.

The SNMX 1507-R features a concave top, while the SNMA 1506-R incorporates a flat top. Both inserts are available in 23 of the most commonly used radii for weld bed removal on the external diameter.

With inserts made of tough cemented carbide and



A new insert, additional sizes and accessory tools have all been announced to support the removal of weld deposit created during tube production – a process known as scarfing.

featuring a CVD coating, Dormer Pramet's scarfing range is capable of extreme heat resistance. The geometry of the cutting edge provides excellent tube surface quality, high durability and, therefore, longer tool life.

Meanwhile, a new range of

shims has been developed to allow the clamping of negative inserts SNMX 2512 and SNMX 1507, with concave top surface, into existing Dormer Pramet holders.

For more information, visit www.dormerpramet.com or contact your local sales office.

MAHINDRA XUV300 SCORES FIVE STARS FOR SAFETY

The recently launched Mahindra XUV300 scored a solid five stars for adult occupant protection and four stars for child occupant protection in the Global NCAP new #SaferCarsForIndia crash test result. With the XUV300, Mahindra achieves the highest combined result in Global NCAP's #SaferCarsForIndia crash tests to date with the highest score in both the adult and child protection categories. The XUV300 has also shown the lowest level of intrusion and best side impact crashworthiness performance of any model tested so far. David Ward, CEO and President, Global NCAP, said, "Mahindra

is the second Indian manufacturer to achieve Global NCAP's coveted five star status and the XUV300 scores the highest combined crash test result of all the cars we've tested in India to date. We are delighted with this hugely positive outcome in our #SaferCarsForIndia campaign. It's a vitally important win for Indian consumers and sets a safety challenge that every manufacturer must now be measured against." Saul Billingsley, Executive Director, FIA Foundation, said, "In the space of just a few years Global NCAP's #SaferCarsForIndia campaign has transformed both the public conversation and public policy on vehicle safety in India. Indian car makers are stepping up and taking responsibility for protecting their customers. This result from Mahindra proves that five star vehicle safety is possible and affordable, and we now expect all manufacturers to offer Indian consumers five star protection, as standard."

The XUV300 achieved a solid five stars for adult occupant protection and four stars for child occupant protection. The XUV300 offers 2 frontal airbags as standard, and it offers ESC and side impact airbags as optional. Its structure and its footwell area were rated as stable. Head and neck protection for adult occupants was good.



HIGH-PERFORMANCE AND RELIABILITY IN AEROSPACE

Expanding industry demands have led to manufacturers developing and integrating sometimes unconventional solutions into their products.

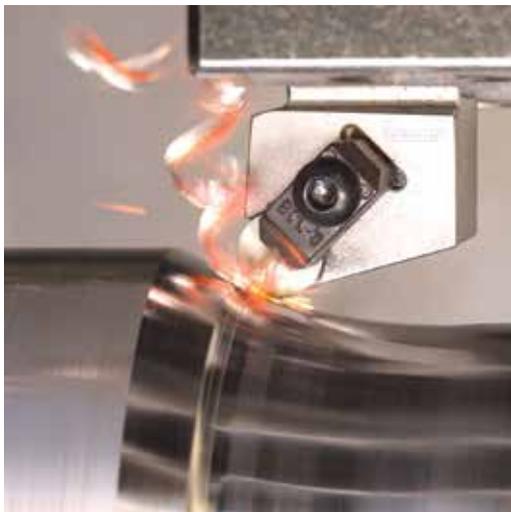


Figure 1

The aerospace industry is not only one of the largest consumers of cutting tools but also among the most important driving factors for cutting tool development. The aerospace industry features continuous efforts aimed at improving aircraft component manufacturing efficiency, increasing flight safety, and reducing potential environmental damage.

To achieve these goals, the aerospace industry must constantly improve the design of aircraft engines and airframe structural elements, to increase the protection of the aircraft from the damaging action of such dangerous factors as lightning and icing. This in turn has resulted in a series of industry demands, including the introduction of engineering materials that require new production technologies, developing appropriate machinery and cutting tools. The aircraft manufacturer has to deal with complex parts, which are produced from various materials with the use of different machining strategies. This is why the aerospace industry is

considered as a powerful and leading force for progress in cutting tool development.

Many materials used for manufacturing aircraft components have poor machinability. Titanium with its impressive strength-to-weight ratio, high temperature superalloys (HTSA) that do not lose their strength under high thermal load, and composites are difficult-to-cut materials. In order to increase output rate and improve productivity, aerospace component manufacturers must use machine tools capable of implementing advanced machining operations. In such conditions, the role of cutting tools is significantly increased; however cutting tools can represent the weakest link in the whole manufacturing system due to their low durability as a system element, which can decrease productivity. Customers from the aerospace sector expect higher levels of performance and reliability from cutting tools and tool manufacturers have been both challenged and inspired, in terms of developing and integrating sometimes unconventional solutions into their products, to meet these expectations.

BASIC MATERIALS

Most cutting tools continue to be manufactured from cemented carbide. Over recent years, ISCAR has introduced several carbide grades designed specifically for aerospace materials, including IC 5820. The grade combines the advantages of a new submicron substrate, a progressive hard CVD coating, and a post-coating treatment to substantially increase impact strength and heat resistance. The inserts from this grade are intended mostly for milling titanium. Pinpointed wet cooling and especially high-pressure coolant (HPC) significantly improve grade performance.

Ceramics, another tool material, possess considerably higher hot hardness and chemical inertness than cemented carbides. This means that ceramics ensure much greater cutting speeds and eliminate diffusion wear. One of the last ISCAR's developments, a family



Figure 2

of solid ceramic endmills, is intended for machining HTSA. These endmills are made from SiAlON - a type of silicon-nitride-based ceramic comprising silicon (Si), aluminum (Al), oxygen (O) and nitrogen (N). When compared with solid carbide tools, the endmills enable an increase in cutting speed of up to 50 times, which can drastically save machining hours.

For turning applications, the company expanded its line of indexable SiAlON inserts for machining HTSA materials. The new products (Fig. 1) have already proved their effectiveness in turning aero engine

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The aerospace industry features continuous efforts aimed at improving aircraft component manufacturing efficiency, increasing flight safety, and reducing potential environmental damage. To achieve these goals, it must constantly improve the design of aircraft engines and airframe structural elements.

parts from super alloys such as Waspaloy and different Inconel and Rene grades. In contrast to other silicon nitride ceramics, SiAlON possesses higher oxidation resistance but less toughness. Therefore, a key of a SiAlON insert reliability is additional edge preparation. ISCAR's new "TE" edge geometry has been developed to increase tool life in heavy load conditions during rough operations and interrupted cuts.

ADVANCED GEOMETRY

Improving a cutting geometry is an important direction in the development of cutting tools. Cutting geometry is a subject of theoretical and experimental researches, and advances in science and technology have brought a new powerful instrument to aid in tool design: 3D computer modeling of chip formation. ISCAR's R&D

team actively uses modeling to find optimal cutting geometries and form the rake face of indexable inserts and exchangeable heads.

The F3S chipformer for the most popular ISO inserts, such as CNMG, WNMG and SNMG, was designed specifically for finish turning high temperature nickel-based alloys and exotic materials (Fig. 2). It ensures a smooth and easy cut with notable chip breaking results. The remarkable working capability of the designed cutting geometry is a direct result of chip flow modeling.

In hole making, applying modeling to the design process significantly contributed to creating a chip splitting geometry of SUMOCHAM exchangeable carbide heads for drilling holes with depth up to 12-hole diameters in hard-to-cut austenitic and duplex stainless steel.

FLEXIBLE CUSTOMISATION

Aerospace products can vary immensely in material, dimensions, shape, complexity, and more. To make such a diverse range of products, the product manufacturer needs dozens of machine tools and technological processes. Not every standard cutting tool is optimal for performing certain machining operations with maximum productivity and, consequently, the aerospace industry is a leading consumer of customised tools.

A customer producing titanium parts might be interested in solutions comprising indexable shell mills and arbors from the standard line; while another customer producing similar parts might prefer special milling cutters with an integral body, for direct mounting in a machine spindle.

ISCAR developed the MULTI-MASTER and SUMOCHAM families of rotating tools with exchangeable



Figure 3



Figure 4



ISCAR's cutting tool program for the aerospace sector is based on several principles: the complex needs of this industry, taking into consideration trends in metalworking, and the drive to strengthen partnerships with tool consumers. ISCAR believes that such a tri-pronged approach ensures the successful realisation of innovative ideas for efficient machining of the difficult-to-cut materials that characterise this challenging and dynamic field.

ble heads and different body configurations to ensure various tool assembly options that simplify customisation and decrease the need for costly tailor-made products.

A further example of simplified customisation can be found in ISCAR's recently-launched modular drills for multi-spindle and Swiss-type machines. The drills combine the SUMOCHAM design with a FLEXFIT threaded connection (Fig. 3). Multi-spindle and Swiss-type machines typically have a limited space for tooling, which means that the tools in operation need to be as short as possible to avoid collisions and facilitate easy

set up. A wide range of FLEXFIT threaded adaptors and flatted shanks has been designed precisely to fit the drills and maximally shorten an overhang.

Responding to demands from the aerospace sector, the company also expanded the MULTI-MASTER family by introducing a new thread connection to increase the diameter range for the exchangeable endmill heads to 32 mm (1.25").

ALUMINUM MACHINING

Although machining aluminum might appear to be an extremely simple process, effective cutting of aluminum actually represents a whole field of technology with its own laws and challenges.

The need to increase productivity and boost metal removal rates for milling aluminum workpieces, especially large parts of aerospace structural components, has led machine tool builders to develop milling machines with a powerful main drive - up to 150 kW - with high spindle speeds of up to 33000 rpm. To meet this demand, ISCAR has expanded its family of 90° indexable milling cutters by introducing new tools carrying large-size inserts that enable up to 22 mm (.870") depth of cut (Fig. 4). The tools have been designed to eliminate insert radial displacement, which might occur due to high centrifugal forces during very high rotational speed. This concept facilitates reliable milling in a rotational speed range of up to 31000 rpm.

In hole making, the company developed new inserts for drilling aluminum with indexable drills from the DR-TWIST drilling tool range. The inserts are peripherally ground and feature sharp cutting edges and polished rake face for light cut, preventing adhesion.

ISCAR's cutting tool program for the aerospace sector is based on several principles: the complex needs of this industry, taking into consideration trends in metalworking, and the drive to strengthen partnerships with tool consumers. ISCAR believes that such a tri-pronged approach ensures the successful realisation of innovative ideas for efficient machining of the difficult-to-cut materials that characterise this challenging and dynamic field. 

CONTINENTAL TO BUILD NEW PLANT FOR RADAR SENSORS

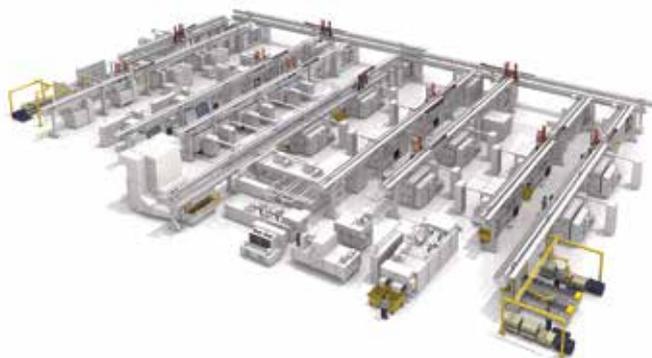
Continental will construct a new plant in New Braunfels in the US state of Texas. The aim is to expand its capacity for the production of radar sensors. "Advanced driver assistance systems save lives. Continental is one of the world's market leaders in this area. We are benefiting from steadily increasing fitment rates in new vehicles. And in the future, too, we are anticipating major growth opportunities," explains Frank Jourdan, member of the Continental Executive

Board responsible for the business area 'Autonomous Mobility and Safety'. "Over the next five years, we are planning further investments in the high triple-digit million Euro range in the areas of assisted and automated driving. The capacity expansion in New Braunfels is part of our growth strategy," he says. For the construction of the new plant in Braunfels, Texas Continental plans to invest about €100 million over the next three years.

By Dr. Manfred Berger & Andreas Schweizer

MAXIMUM ROBUSTNESS AND PERFORMANCE

Volume production of crankshafts and drive shafts with state-of-the-art technologies and virtual commissioning



Pic 1 - Production plant for four-cylinder crankshafts in "herringbone" layout planned and supplied by BOEHRINGER as a turnkey project

The demand for combustion engine will last for a few more years until the transformation of automotive companies and markets to alternative drive systems is completed. For quite some time now, we have been experiencing the consequences of the ambiguous strategies among manufacturers, technologies and, above all, politics have on mobility customers. In addition to significant developments in exhaust gas purification and synthetic fuels, the so called e-fuels, other functions of the engine are also considered. Until drive technology is completely replaced, the focus will continue to be on productivity, quality and costs, as well as state-of-the-art production technology for crankshafts.

The internal combustion engine will be indispensable in the coming years and, as a singular drive system, it will undergo further development as part of hybridization in vehicles. The disruption is in progress and the unknown variables include the timeline and the production volume to a possible compensation by the drive alternatives.

For production planning, this scenario initially means a maximum degree of flexibility with regard to product design and plant capacity. In the phase of uncertainty, new plant purchases are delayed (plant exam-

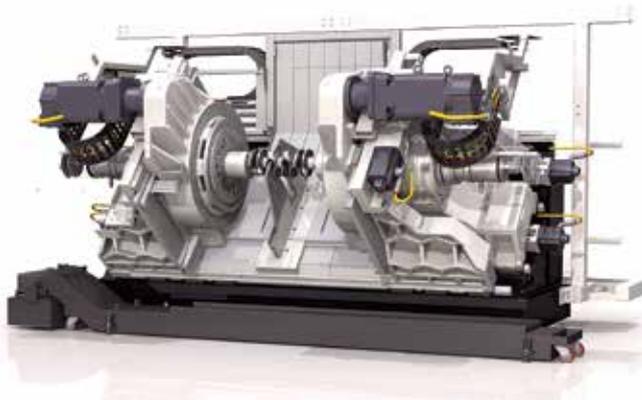
ple Pic. 1) and demands for reconfiguration of existing equipment increase whereas investments are available for individual process steps.

BOEHRINGER offers compatible solution and implementation for all upcoming project specifications including: procurement of new production lines, expansion or modification of existing plants, as well as reconfiguration of existing systems.

The new BOEHRINGER 221/226 series can be easily integrated into any layout and connected to automation. All conceivable parameters of the specification for crankshafts and shaft machining can be carried out through small installation footprint, higher performance of the components, higher machining accuracy and lower consumption data with high flexibility for the required technology. The new shaft machines are developed from a modular system of which lathes, end machining machines for shaft components and special crankshaft machines are configured. On a slanted mineral casting (polymer concrete) bed, all guideways and carriage drives are arranged in one level. This concept achieves maximum possible stability and damping, reduces thermal influences to a minimum and the

Prominent advantages of the machine concepts

- Slanted machine bed
- Arrangement of all components on this inclined bed level
- Optimal chip removal in the machine - especially with dry and MQL processing
- Wide opening housing allows free and ground level access to all modules
- Compact, space-saving machine layout with central electrical and fluid cabinets
- High energy efficiency and broad experience in environmentally conscious manufacturing technologies
- Workpiece flexibility due to large working area in X and Y direction.



Pic 2 - Turning/milling machine for axially parallel machining of main and pin bearings as well as the ends by pendulum stroke feed of the internal milling units BOEHRINGER VDF 221 CIM - Innovative gantry design.

compact size of the components avoids unfavourable cantilevers resulting in low-vibration machining. The modern vehicle engines are getting smaller yet higher performance with optimal smoothness. For crankshafts of passenger cars, this specification means lower friction due to smaller bearings, mass reduction and higher material stability. In terms of machining, this means higher cutting performance for small and thus unstable workpieces. The guideways and carriage drives as well as the modular system are designed for these parameters under higher drive power of the milling units.

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Until drive technology is completely replaced, the focus will continue to be on productivity, quality and costs, as well as state-of-the-art production technology for crankshafts.

Two alternatives are available for the paraxial mill-turn process: internal milling (tool ring with internal cutting edges) and external milling (tool disc with external cutting edges). The choice of technology in the peripheral areas can be determined analytically: external milling is ideal for small shafts whereas internal milling for large shafts. In between, there is a grey area which is a controversial subject discussed among process specialists. In order to serve the market completely - with the exception of machining on a stationary workpiece (whirling) - the product range was expanded by BOEHRINGER VDF 221/226 CIM (Pic. 2). Internal milling is traditionally used for roughing.

With the technology innovation of hard fine internal milling of crankshaft bearing positions, an alternative is available for the first time which replaces the costly roughing after hardening and offers significant savings in procurement. With the innovative portal design of the VDF BOEHRINGER VDF 221 CIM

for internal milling of crankshaft stroke and center bearings as well as for cheek machining, a very robust machine is available which enables vibration-free heavy-duty machining with maximum performance. External milling on VDF 221 CM has successfully implemented the fine machining of shafts after hardening with hard fine milling. The significant advantage of this technology lies in:

- Lower procurement costs for machine equipment (-25% compared to grinding)
- Can be dry-machined and therefore no maintenance and disposal of grinding abrasive (oil or emulsion) required
- Environmentally conscious with lower energy consumption
- Cost efficiency on the component

As a development partner for hard fine internal milling, Ingersoll supports us in technology optimization. The new and successful VDF 221 CIM features technical highlights in heavy and/or precise machining of difficult workpieces:

- Milling units mounted on portal slides with central headstocks and thus ensure maximum system rigidity compared to competitors
- Temperature-controlled spindle head with generous bearing dimensions as known by VDF BOEHRINGER
- Powerful milling drives with recirculating oil lubrication and temperature control
- Temperature compensation in the working area
- System support NC programming
- Excellent access to all assemblies due to wide opening housing on both sides
- Cutting force control for an optimum machining process

The new development of the CNC end processing machine BOEHRINGER VDF 221/226 CET is the consistent continuation of the process improvement to increase productivity by the specialist of crankshaft and shaft machining. The core components of this new 6-axis machining center are the two crown turrets, each with 8 tool interfaces, which work as 3-axis units at the both ends of the stationary (firmly clamped) workpiece. Alternatively, spindle and multi-spindle heads in special designs can be flanged to the carrier units for specific applications. The main technical features of the components used are as follows:

- Maximum robustness and performance, especially in milling applications
- Design with minimal lubrication technology (MMS) or wet machining possible



Pic 3 - Expansion of the shaft machining machines by a "MAG Cell" with automated workpiece measurement and material supply by pallets 10 Simulation and virtual commissioning of shaft machining with the software tools "NX CAM" and "Visual Components".

- Various tool holders available (standard HSK)
- Compact unit with less cantilever and stable spindle
- Direct drive with max. 15.000 1/min
- Chip-to-chip time < 1.5 s

Compared with other known units for end machining scores the crown turret with the direct power flow of the feed unit on the turret drive and the respective spindle in machining position with corresponding higher power (40 kW) and powerful feed (10 kN).

The machining unit is carried by stable portal slide (gantry carriage) in Z direction, on which the cross-slide positions the turret highly dynamically in X and Y direction (see chip-to-chip time). In the compact design of the VDF 221 CET, workpieces with a maximum length of 650 mm (up to 280 kg) can be loaded and the long version VDF 226 CET accommodates shafts up to 3,000 mm (1,400 kg) for machining. The machine can be loaded manually with a lifting device, fully automatically from the front by a robot or from the top by a loading gantry.

The modular VDF BOEHRINGER construction kit makes a decisive contribution to high quality and reduces the storage costs of spare and wear parts when installing a complete production line through the common parts strategy therefore provides attractive pricing.

All the machines of VDF series are highly ergonomically designed; it can be loaded manually and automatically. A wide opening of the working area supports the positioning of the components and provides convenient access to the workpiece holder during loading and unloading, even with a hoist. The swivelling control panel of the machine is adjustable to the operator's need. In most cases, automatic loading takes place from above with a loading gantry or from the front with a robot. The standardized "MAG Cell" can be connected to the machine as production cell. Inside there is a floor mounted robot, which removes

components from a storage tower or from a belt feeder and delivers the finished parts in the same way. The "MAG Cell" can be expanded with further functions such as cleaning and/or measuring (Pic. 3). MAG Factory Automation plans to integrate machines in the production environment from stand-alone machine with loading to the complex turnkey system for the production of ready-to-install components (example: see Pic. 1).

Processes and layouts are simulated and optimized using state-of-the-art planning tools. Thus, regardless of new machines, used machines or a mix of both in one system, the required plant output and quality can be planned bindingly in the quotation phase. The combination of parallel (redundant) stations and the bottle neck areas (sequential stations) must be managed and a maximum productivity must be achieved in logistics planning.

In terms of turn-key projects, for example, cutting machines with measuring, washing and assembling can be connected via an automated transport system. Furthermore, the respective processes can be validated with Digital Twins, station availability can be determined and simulating the material flow variants a Digital Production Twin can be created. During project implementation, these models are further refined and through virtual commissioning to guarantee a higher level of quality as well as a noticeable reduction in delivery times.

With the virtual shadows of the system components, the numerous modifications over the service life can be planned much more easily and implemented in the shortest possible time by anticipating a virtual commissioning at the Twins in production. Additional advantages of the digitization include operator and maintenance training as well as remote services.

Until combustion engines are completely replaced, highly productive plants will continue to manufacture the components. However, in prospect to the transformation to alternative drive concepts, using the robust and durable BOEHRINGER machine for virtual planning of future application is already possible today. The BOEHRINGER VDF series is ideally equipped to meet the high and growing quality requirements of drive shafts for electric drives. 

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Artwork: LINEA Design, Verdun Chagnon, Bloomfield Hills, Detroit Michigan, USA*

“HOW LONG WILL MY PRINTED GEAR LAST?”

igus has developed gear service life calculator to determine for its 3D-printed gears.



The service life of wear-resistant 3D printed gears now calculated with new online tool in seconds. (Source: igus GmbH)

How long will my gear last? To answer this question, igus has now developed the gear service life calculator for its 3D-printed gears made of the laser sintering high-performance plastic iglidur I3. With the new online tool, the user receives a concrete statement in a few seconds about the service life of the wear-resistant part.

In some gearboxes, gears are used to change torque or speed through one or more stages. Since gears with complex involute teeth are often required, which cannot be designed without aids, igus developed the gear configurator two years ago. This was expanded last year with the capability to configure double gears. In a few steps, the user only needs to enter the specifications of the required gear, such as the tooth module, number of teeth, width and inner diameter of the hole. This automatically displays a 3D model that can be exported as a STEP file. By uploading the file in the igus 3D printing service (www.igus.in/3Dprintservice), the configured gear made from the extremely durable laser sintering material iglidur I3 can be ordered immediately from igus. So that the customer can also determine the service life of his wear-resistant gear, igus has now

“THE ONLINE TOOL GIVES CONCRETE STATEMENTS IN A FEW SECONDS ABOUT THE SERVICE LIFE OF THE WEAR-RESISTANT PART.”

THE HIGH-PERFORMANCE PLASTIC IGLIDUR I3 HAS BEEN SPECIALLY DEVELOPED FOR THE PRODUCTION OF WEAR-RESISTANT PARTS SUCH AS GEARS IN THE LASER SINTERING PROCESS. THE MATERIAL IS ABRASION-RESISTANT AND DURABLE, AS SHOWN BY AN EXPERIMENT.

developed the gear service life calculator. By means of this, the user receives in just three steps a concrete statement about the service life and the application limits of his gear pairing.

Get the precise service life in just three steps

In step 1, the user must first enter the number of teeth, the width and the tooth module of the gear pairing again. Here the customer can choose between iglidur I3 gears, a metal or another plastic. In step 2, the tool asks for the speed and torque of the large or small gear, depending on the which gear's values are available. Step 3 is to determine the duty cycle

of the printed gear, the mode of operation, the ambient temperature and the safety factor. Based on the specified parameters, the new online tool can determine the service life of the 3D printed gear in seconds. This makes maintenance predictable in advance.

Printed gears convince in the pivot test.

The high-performance plastic iglidur I3 has been specially developed for the production of wear-resistant parts such as gears in the laser sintering process. The material is abrasion-resistant and durable, as shown by an experiment in the company's own 3,800 square metre test

laboratory. Here, the gear made of iglidur I3 took on a POM injection-moulded gear and a POM machined gear in a pivot test at 1440°C at a speed of 0.1 m/s and a torque of 2.2 Nm. All gears had 30 teeth and a width of 16mm. While the injection-moulded gear made of POM failed after just 4,000 cycles and the machined POM gear broke down after 12,500 cycles, the iglidur I3 gear withstood almost 20,000 cycles.

The gear service life calculator can be used for free at www.igus.in/gear-expert. Or contact Ragesh Kumar, Product Manager, igubal®, xiros, bar stock, igus (India) Private Limited at ragesh@igus.in

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