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IN THE POSITIVE ZONE

It is encouraging to note that the Indian manufacturing industry has once again entered the 'positive' zone in August 2020, after five months of a bad phase. The PMI numbers are surely heartening and provide a glimmer of hope during these difficult times. Similarly, the passenger car sales and two wheeler sales for August 2020 have also shown relative growth. On another positive note, railways freight loading has increased by four percent in August 2020, as compared to corresponding period last year.

Exports have also seen a good uptick in second week of September. Again, in the first 13 days of September, railways has carried 12 percent more freight compared to same period last year. Even going back to

“I AM ALL FOR CLINGING ON TO MY FAVOURITE FOUR LETTER WORD – HOPE!”

July, sectors like cement, steel, coal and crude oil, which suffered a huge drop in the April-June quarter, witnessed major recovery in July 2020 (although the annualised numbers reflect contraction). Are these signs of recovery? Well, I would like to think so.

While there have been serious concerns about the fall in GDP numbers for the April-June quarter, I am not ready to read too much into that quarter for the obvious reason called Covid-19. The entire world economy has suffered during that period and obviously the Indian economy cannot be an exception. So rather than looking at that quarter, it is important to look at the good signals emitting out of every nook and corner of the economy. We have had a good Monsoon, so it is not surprising that the tractor segment is expecting a growth of seven percent plus between August and December. And with the festive season just round the corner, I am all for clinging on to my favourite four letter word – Hope!

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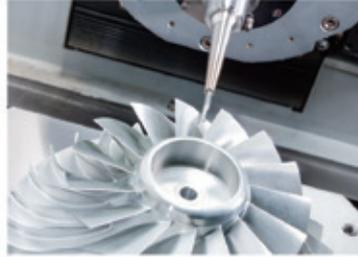
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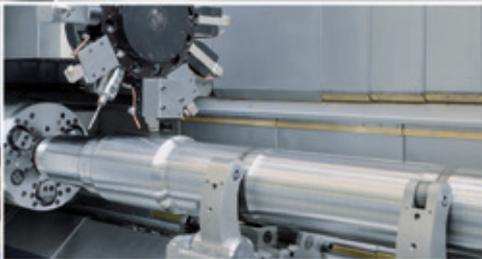
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India and UK to negotiate a FTA shortly: Piyush Goyal

INDIA AND THE UK will begin the process of negotiations for a Free Trade Agreement (FTA) shortly. This was stated by Piyush Goyal, Minister of Commerce and Industry & Railways while addressing the Valedictory Session of the CII@125 Annual Conference in the UK - "A New India-UK Economic Partnership in a New World: Lives, Livelihood & Growth" over a virtual platform recently. According to the Minister, while full-fledged FTA negotiations take a long time, it has been agreed that India and



the UK would look at an early harvest agreement to begin with. The early har-

vest agreement could take the form of a Preferential Trade Agreement with about 40-50 items of trade interest between the two countries. He felt that by having such an agreement in place would give the much-needed boost to bilateral trade. In terms of supply chains, the Minister stated that the world was now looking at more resilient supply chains and was of the view that the Supply Chain Resilience Initiative provide a good opportunity for India and the UK to work together.

Godrej Tooling develops new Pinaka rocket assembly line



GODREJ TOOLING has partnered with the Ordnance Factory Chandrapur, Maharashtra to conceptualise and develop an indigenous Automated Assembly line for production of Pinaka Rockets, which was inaugurated by the Defence Minister Ra-

jnath Singh and dedicated to the nation recently. The new automated assembly line has not only enhanced productivity but also comes equipped with advanced safety features to handle rockets filled with explosives and live igniter. Godrej Tooling completed the entire project from designing a solution to installation and commissioning in a year. With this automated line, the Ordnance Factory Chandrapur has been able to quadruple its production capacity for Pinaka rockets. The key advantages for OF Chandrapur include deskilling of operations, real-time quality monitoring of production, automated safety features, 4X increase in productivity in addition to greater availability for the defence forces.

Economy reshaping fast, ASSOCHAM analysis shows

LOOKING BEYOND the first quarter (2020-21) GDP numbers, the rate of decline in output of key core segments of the economy has been arrested significantly in subsequent periods, if not completely stopped, an ASSOCHAM analysis has shown. Cement, steel, coal and crude oil which suffered heavy drop in the three-month period of April-June in the midst of severe lockdown, witnessed major recovery in July 2020, even though the annualised numbers reflect contraction. After a contraction of 15 per cent in the Q1 of 2020-21 over the same quarter in the previous fiscal, coal production dropped at a much lesser pace of 5.7 per cent in July, analysis of the official data shows. Likewise, cement output in July dropped year-on-year by 13.5 per cent after witnessing a sharp contraction of 38.3 per cent in the Q1. "Even as we are waging an unprecedented war against Covid-19; to safeguard human lives and making best possible efforts to minimise the economic impact, key sectors of the economy are responding well to the new normal," ASSOCHAM secretary general, Deepak Sood said.

Wabtec opens Additive Manufacturing Center

WABTEC CORPORATION, in collaboration with HP and Redington, has inaugurated an Additive Manufacturing Center focused on accelerating the design and production of integrated 3D-printed components in India. The facility is based out of Wabtec India's existing factory in Bengaluru, Karnataka. It builds upon Wabtec's growing additive strategy to leverage the technology to design and prototype 25,000 production parts by 2025. This supports the company's effort to ramp-up the production processes, save the overall cost and offer customized solutions. "This Center is another step in



our Industry 4.0 journey as we continue to integrate smart technologies and production systems to drive innovation and deliver cutting-edge solutions for our customers," said Gopal Madabhushi, Global Director, Wabtec Corporation.

Toys (Quality Control) Order, 2020 pushed to Jan 2021

THE DEPARTMENT FOR PROMOTION OF INDUSTRY AND INTERNATIONAL TRADE (DPIIT), Ministry of Commerce and Industry, Govt. of India has issued notification, extending the date of implementation of Toys (Quality Control) Order, 2020 as 1.1.2021 in place of 1.9.2020.

This decision allows domestic manufacturers four months of extra time to make necessary arrangements for compliance of standards in view of difficulties arising out of COVID-19 pandemic.



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APM Terminals Pipavav announces major expansion

APM TERMINALS PIPAVAV (GUJARAT PIPAVAV PORT LTD) has announced the approval of Rs. 700 crore in coherence to the expansion plan of the company. The stated investment will be utilised for upgrading the port's existing facility to handle bigger ships and eventually expand the container capacity to 1.6 million TEUs. The supply chain and the inland logistics is expected to significantly improve the reliability and reduce transit time going forward with the implementation of Western



Dedicated Freight Corridor (DFC). This will improve overall cargo volume for

imports and exports. About 40 percent of the total investments in entire 1,535 km of DFC is likely to be in Gujarat, which has around 37 percent of area covered of complete stretch. Jakob Friis Sorenson, Managing Director, APM Terminals Pipavav said, "The container yard capacity will be expanded once the cargo growth is visible post commissioning of DFC. We expect the world economy and business to follow an expanded 'U' curve and normalcy in business to be restored by the second quarter of 2021."

LR IPL expands manufacturing capacity in Noida

LAXMI REMOTE (INDIA) PRIVATE LIMITED (LR IPL) has enhanced the manufacturing capacity at its Noida facility. Post the upgrade, the current manufacturing capacity of remote controls stands at 1.25 lakh per day. As one of the largest remote control manufacturers in India, LR IPL intends to lead remote control production for OEMs. Through this increased capacity building, LR IPL will be able to cater, not only to the local, but also global demands. Additionally, with the remote control manufacturing the company has forayed into production of 40,000 Adapters & Power Supplies, 30,000 Set-Top-Boxes, 20,000 Mobile Chargers and 30,000 AV cables per day, catering to different companies in the Electronics Manufacturing Services (EMS) segment. Vijay Kumar Sachdeva, MD & CEO, Laxmi Remote (India) Private Limited says, "India is the biggest market for us. The electronics manufacturing world is rapidly evolving and LR IPL is ready to meet the needs of the new normal with its advanced and sustainable infrastructure, capacity and manpower."

Tata Power to commission India's largest carport at Pune



TATA POWER has signed a Power Purchase Agreement (PPA) with Tata Motors to commission India's largest Carport. With 6.2 MWp capacity, the project is expected to reduce 1.6 lakhs ton of carbon emission for Tata Motors in its life time. Praveer Sinha, CEO & MD, Tata Power said, "As One Tata initiative we are excited to partner with Tata Motors to set the largest carport in India. We are confident that this PPA will complement our efforts to lower the carbon footprint and we look forward to exploring new ways to harness clean resources and implement them in our business operations."

WCL to double rail despatch to meet coal demand

WESTERN COALFIELDS LTD. (WCL), a Subsidiary of Coal India Ltd. (CIL) has drawn an ambitious roadmap to almost double its coal despatch capacity through rail mode to meet additional demand of consumers of Power Sector. It has set 'Mission 100 Days' agenda to streamline activities to reach peak despatch of 50 rakes per day from January 2021 with support from Railways. WCL had recently offered additional coal to Power consumers of Central, West & South India at cheaper landed price. On discussion with State Gencos of Maharashtra, Gujarat, Karnataka, Madhya Pradesh, NTPC & IPPs, WCL expects additional coal demand of around 25 Million Tonnes per annum from these consumers after getting swapped from other Subsidiaries of CIL & SCCL. With expected substantial increase in demand, WCL has taken pro-active steps to gear up additional coal crushing, transporting & loading facility for increasing coal despatch through Rail to a level of 50 rakes per day from next January.

thyssenkrupp opens new engineering office in Pune

THE THYSSENKRUPP GROUP has inaugurated its newest engineering office in Pune, India on Sept 17, 2020. Speaking at the virtual ceremony of the inauguration, Dr Sami Pelkonen, CEO thyssenkrupp Business Unit Chemical & Process Technologies Germany (tkIS- CPT) said: "The new office will accommodate approximately 350 engineers out of the total strength of 1,400 employees of thyssenkrupp Industrial Solutions India." P D Samudra, CEO & MD and Member of Board, thyssenkrupp Industrial Solutions India, said: "This means we are relocating our Pune office after growing steadily over two decades. Our Pune Operations have been independently executing projects with minimum support from our Head Office in Mumbai and have several successfully-implemented projects to their credit."



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Kenichi Ayukawa is new SIAM President



The Executive Committee of Society of Indian Automobile Manufacturers (SIAM), the apex body of the Indian automotive industry, has elected Kenichi Ayukawa as its new President. Ayukawa is the MD & CEO, Maruti Suzuki India Ltd since 2013. Ayukawa, who was the Vice President of SIAM succeeds Rajan Wadhwa, Senior Advisor, Mahindra & Mahindra Ltd. The election for new office bearers was conducted during the Executive Committee Meeting, which was held after SIAM's Annual General Meeting recently. The members of SIAM also elected Vipin Sondhi, MD & CEO, Ashok Leyland Ltd, as the Vice President of SIAM. Vinod Aggarwal, MD & CEO, Volvo Eicher Commercial Vehicles Ltd (VECV) will continue as the Treasurer of SIAM.

Anand Mahindra receives the 2020 Leadership Award



At the US-India Strategic Partnership Forum's (USISPF) third Annual Leadership Summit "U.S.-India Week: Navigating New Challenges", Anand Mahindra, Chairman, Mahindra Group, was conferred with the 2020 Leadership Award for exemplary vision towards promoting U.S.-India bilateral ties. The 2020 USISPF Leadership Awards is given to two business leaders who have displayed leadership and ambition in strengthening the U.S.-India bilateral economic partnership. Anand Mahindra, Chairman, Mahindra Group, said, "If the Mahindra Group is seen as contributing to U.S.-India business ties, it is the achievement of my colleagues who have laboured long and hard in a difficult and unfamiliar market to make the Mahindra brand known. Thanks to their spirit of enterprise, we have seven businesses in the US."

Nagesh Basavanhalli now Vice Chairman of Greaves Cotton



The Board of Directors of Greaves Cotton Ltd announced that Nagesh Basavanhalli, Managing Director and Chief Executive Officer- Greaves Cotton Limited, had decided to relinquish his executive responsibilities in the organization, due to personal and family commitments. While accepting his resignation, the Board announced that Basavanhalli would continue to be a member of the Board and would be designated Vice Chairman of the Board effective 14th August 2020. In his role as Vice Chairman, he would continue to provide strategic direction to Greaves Cotton and be actively involved in the deliberations of the Managing Committee of GCL in a non-executive capacity. Basavanhalli will also continue to be a member of the Board of Directors of Greaves Cotton's ambitious EV venture, Ampere Vehicles Pvt Ltd. The Board also announced the appointment Ajit Venkataraman as the Executive Director of GCL.

Hyundai adds new members to its Board of Directors

Hyundai Motor India Ltd. (HMIL) has announced the addition of two new Directors on its Board, who will hold office for a period of three years effective Aug 24, 2020, to guide HMIL's strategy, operations and lead the organization's initiatives towards a successful and meaningful future. The two new Board of Directors are: Ganesh Mani S (Director- Production, Hyundai Motor India Ltd), and Tarun Garg (Director- Sales, Marketing & Service, Hyundai Motor India Ltd).

K. Vijaya Kumar joins SAR Group's e-mobility biz



K. Vijaya Kumar has joined SAR Group's E-Mobility Businesses as the MD & CEO in August 2020. Prior to joining SAR Group, he was President – Automotive Business, Greaves Cotton Limited (GCL). SAR Group is co-founded by Navneet Kapoor & Rakesh Malhotra, Serial-Entrepreneurs - best known for brands like Luminous (sold to Schneider), Livguard & Livpure. Kumar will focus on all E-mobility businesses at SAR Group and lead the strategy and execution of delivering a comprehensive infrastructure, products & services portfolio to enable electric vehicle usage and growth.

Jens Holtinger to head Volvo's global truck production



Jens Holtinger has been appointed as head of Volvo's global truck production organization and member of the Volvo Executive Board. He will replace Jan Ohlsson, who after a long and successful career will retire. Jens Holtinger, born 1970, began his career at the Volvo Group in 1995. He has extensive international experience and has held many senior positions within production, such as head of production in Ghent, Belgium, Skövde and Tuve, Sweden. Currently Jens Holtinger holds the position as Senior Vice President Europe and Brazil truck manufacturing. Holtinger will take on his position as of October 1st, 2020.

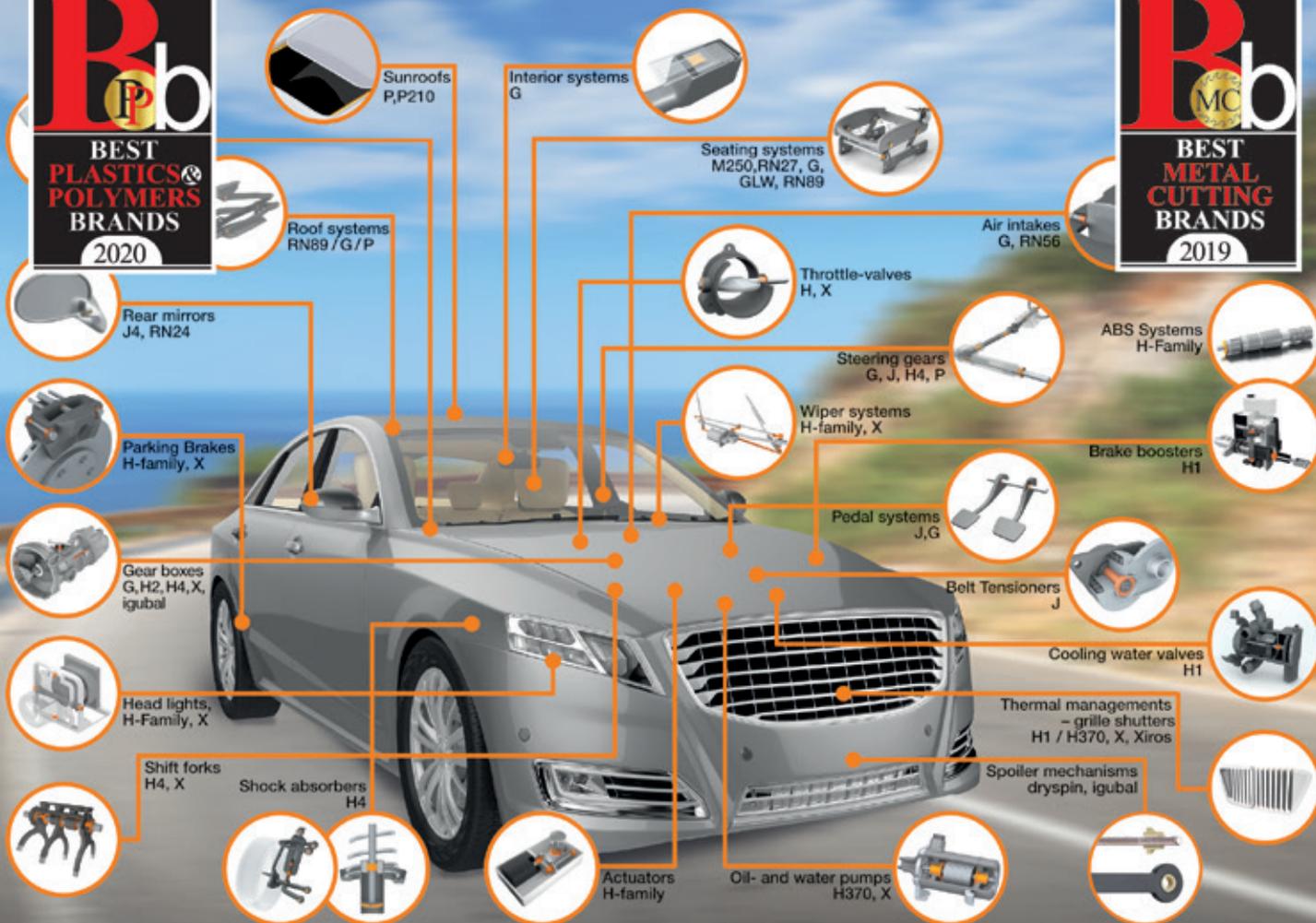
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GROWTH, FINALLY!

Indian manufacturing grows for first time in five months as PMI rises from 46.0 in July 2020 to 52.0 in August 2020

Indian manufacturers signalled a rebound in production volumes and new work in August, according to the latest PMI data. The upturn was led by an improvement in customer demand as client businesses reopened, after lockdown restrictions eased amid the coronavirus disease 2019 (COVID-19). Output and new orders expanded at the fastest paces since February. Meanwhile, job cuts continued into August, extending the current sequence of decline to five months.

At 52.0 in August, the headline seasonally adjusted IHS Markit India Manufacturing Purchasing Managers' Index® (PMI®) rose from 46.0 in July and signalled an improvement in operating conditions across the manufacturing sector following four consecutive months of contraction.

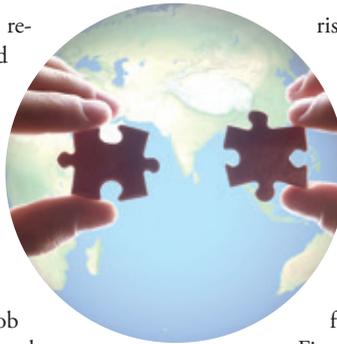
For the first time since March, output expanded in the Indian manufacturing sector in August. Production growth was largely driven by greater client demand for Indian goods following the resumption of business operations, according to firms.

The decline in foreign exports weighed slightly on overall new orders as firms cited subdued demand conditions from abroad. That said, new business received by Indian manufacturers expanded at the fastest pace since February.

Despite an expansion in new orders, job shedding continued in the Indian manufacturing sector. The relocation of employees following COVID-19 was often linked to the reduction in staffing numbers. The pace of contraction in workforce numbers softened from that seen in July but remained strong overall.

Capacity restraints in employment drove the rise in incomplete work at Indian manufacturers midway through the third quarter. The rate of increase in backlog was the fastest since December 2012.

Commenting on the latest survey results, Shreeya Patel, Economist at IHS Markit, said: "August data highlighted positive developments in the health of the Indian manufacturing sector, signalling moves towards a recovery from the second quarter downturn. The pick-up in demand from domestic markets gave



rise to upturns in production and input buying. "However, not all was positive in August, delivery times lengthened to another marked rate amid ongoing COVID-19 disruption. Meanwhile, employment continued to fall despite signs of capacity pressures, as firms struggled to find suitable workers. "The rate of input price inflation was solid, following four monthly declines in cost burdens.

Firms, however, continued in their efforts to drive sales amid greater competitive pressure and reduced their selling prices further."

Higher levels of production supported a modest rise in the quantity of purchases during August. However, firms noted a limited availability of goods, which onset a further reduction in stocks of purchases, thereby extending the current rate of depletion to five months.

Supply chains were disrupted for a sixth consecutive month, with firms citing transportation restrictions, supplier delays and capacity pressures as the main drivers of lengthening delivery times.

Reports of higher raw material costs due to supplier shortages and transportation delays stemming from the COVID-19 pandemic, resulted in rising input prices during August. Cost burdens rose for the first time since March, with the rate of input price inflation at its highest since November 2018. Despite rising cost burdens, Indian manufacturers reported lower factory gate charges due to competitive pressures and efforts to boost sales.

However, the rate of decline eased to only a fractional pace that was the weakest in the current sequence of decrease. Looking ahead, Indian manufacturers remained optimistic for the next 12 months. Positive sentiment was often attributed to hope of the passing of COVID-19 pandemic, improving client demand, and new business wins. Nevertheless, market uncertainty and the onset of a global recession weighed slightly on the degree of confidence which was below the series average in August. 

Source: IHS Markit

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Passenger vehicles grow 14.16% in August 2020: SIAM

According to the data released by the Society of Indian Automobile Manufacturers (SIAM), the total production of Passenger Vehicles*, Three Wheelers, Two Wheelers and Quadricycle in the month of August 2020 was 21,62,367 units, as against 22,31,355 units in August 2019 with a de-growth of (-) 3.09%. Passenger Vehicles sales was 2,15,916 units in August 2020, compared to 1,89,129 units in August 2019, marking a growth of 14.16%. Three-wheeler sales was 14,534 units in August 2020 compared to 58,818 units in August 2019 marking a decrease by (-) 75.29%. Two-wheeler sales was 15,59,665 units in August 2020, compared to



15,14,196 units in August 2019, with a growth of 3%. Commenting on the August 2020 data, Rajesh Menon, Director General, SIAM said "After a period of lull owing to the COVID 19 imposed lockdowns, the month of August 2020 has witnessed improvement in the sales figures of Two-Wheelers and Passenger vehicles. Industry is positive that the coming festive season will pave the way for a faster revival

of the industry." Kenichi Ayukawa, President, SIAM stated "We are beginning to observe growth which is instilling confidence back into the industry, especially in the Two-wheeler and the Passenger Vehicle segments."

EESL to procure 250 Electric Vehicles



Energy Efficiency Services Limited (EESL), a Super Energy Service Company (ESCO) under the administrative control of Ministry of Power, Government of India, will procure 250 electric vehicles from Tata Motors and Hyundai Motor India. The companies were selected through an international competitive bidding process, which was aimed at increased participation. Tata Motors Limited and Hyundai Motor India Limited won the tender and now will supply 150 Nexon electric compact SUVs & 100 Kona electric premium SUVs respectively for government use. The letter of award for the procurement was presented to the two companies, in the presence of Guenter Butschek, CEO & MD, Tata Motors, Shailesh Chandra, President, Passenger Vehicle Business Unit, Tata Motors and Tarun Garg, Director – Sales, Marketing & Service, Hyundai Motor India Ltd. This procurement will utilize 5 Million from the recent grant provided by the Asian Development Bank (ADB). EESL has received financing from ADB towards the cost of scaling up and financing high priority areas like Demand Side Energy Efficiency Sector Projects.

Tata Motors rolls out 1000th Nexon EV

Tata Motors has announced a significant milestone in the electric vehicle (EV) domain by rolling out the 1000th Nexon EV from its plant in Pune. This landmark has been achieved in just over 6-months after the commercial launch of the vehicle portraying the rapid growth in both interest and demand for EVs. Tata Nexon EV is the best seller in its segment, helping Tata Motors post a market share of 62 percent in EVs in Q1FY21.



Shailesh Chandra, President – Passenger Vehicle Business, Tata Motors Ltd. said, "Acceptance of EVs is accelerating fast, and we are seeing growing interest in it from all parts of the country. The rollout of the 1000th Nexon EV in a short time span, despite the challenges of Covid-19, reflects the rising interest of personal segment buyers in EVs. Tata Motors will continue to innovate and develop comprehensive sustainable mobility solutions meeting global standards. EVs are the future and as the industry leader, we are committed to make them desirable and a mainstream choice for the customers."

TVS Motor grows by 14% in August 2020

TVS Motor Company registered a sales growth of 14 percent in August 2020 with 287,398 units as against 252,744 units in July 2020. TVS Motor Company registered sales of 287,398 units in August 2020 as against 290,455 units registered in the month of August 2019. Total two-wheelers registered sales of 277,226 units in August 2020 as against 275,851 units in August 2019. Domestic two-wheeler registered sales of 218,338 units in August 2020 as against 219,528 units in August 2019. Motorcycle registered sales of 119,878 units in August 2020 as against 109,393 units in August 2019. Scooter sales of the Company registered 87,044 units in August 2020 as against 109,272 units in August 2019. The Company's total exports registered sales of 68,347 units in the month of August 2020 as against 69,702 units in August 2019. Two-wheeler exports registered sales of 58,888 units in August 2020 as against 56,323 units in August 2019. Three-wheeler of the Company registered sales of 10,172 units in August 2020 as against 14,604 units in August 2019.

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Ashok Leyland expands LCV portfolio

Ashok Leyland has launched the Bada Dost, reinforcing its offering in the LCV (Light Commercial Vehicle) range. Equipped with the latest BS-VI engine, it has two variants, i4 and i3, with a best-in-class payload capacity of 1,860 kg and 1,405 kg, respectively. Dheeraj Hinduja, Chairman, Ashok Leyland, said, "The new in-house developed platform is a key part of our long-term LCV strategy aimed at positioning AL as a serious and significant player in the segment. Plans are also on for introduction of electric versions in due course." Vipin Sondhi, MD & CEO, Ashok Leyland, said, "LCV segment holds huge potential for us. The recovery of the CV industry is being led by this segment in the current market. With Bada Dost, we will now address an important part of this market which has tremendous promise." Nitin Seth, COO, Ashok Leyland, said, "Bada Dost is just the right product at the right time, and one which will take the legacy of



Dost brand to greater heights. It will be built at our newly installed, state-of-the-art, first fully robotic cubing line at Hosur."

Mahindra introduces the BS-VI compliant Marazzo



Mahindra & Mahindra Ltd has announced the introduction of the Marazzo with BSVI technology. Marazzo, which scored impressively on the GNCAP Safety charts, will now be available in three variants, namely M2, M4+ and M6+. According to Veejay Nakra, CEO, Automotive Division, M&M Ltd., "We are delighted to introduce the BSVI-compliant, cleaner-technology Marazzo. Engineered for excellence, the Marazzo offers spacious comfort, safety, a smooth car-like ride, effortless handling and a low operating cost. Further, with the enhanced value of the new M4+ and M6+ variants, we are confident that the Marazzo will be the preferred choice in its segment".

Honda forays into the 180-200cc segment

Honda Motorcycle and Scooter India Pvt Ltd. has made its entry into the 180-200cc motorcycle segment with its all new muscular, sporty and advanced Hornet 2.0. Talking on the launch, Atsushi Ogata, Managing Director, President & CEO, Honda Motorcycle & Scooter India Pvt. Ltd. said,



"Inspired by the dreams of the new age customers & their passion for riding, we are pleased to introduce all new Honda Hornet 2.0. With its advanced technology & thrilling performance, new Hornet 2.0 is set to create a new benchmark among the young motorcycle enthusiasts. It is the beginning of Honda's new era of portfolio expansion catering to a wide range of customers in India". Introducing the new Hornet 2.0, Yadvinder Singh Guleria, Director - Sales & Marketing, Honda Motorcycle & Scooter India Pvt. Ltd. said, "The new Hornet 2.0 is a transformation of Honda's racing DNA into sheer thrill of street riding."

Continental develops on board weighing system for CVs

Continental has developed a high-performance and reliable On Board Weighing System (OBWS) that records and displays the weight of commercial vehicles, including trailers and semitrailers. Quick, easy, and independent from a stationary scale - before starting a trip. Further functions make it possible to increase efficiency far beyond the specifications of EU Directive 2015/719, which will go into effect in May 2021. The directive requires EU Member States to measure the gross vehicle weight of commercial vehicles more frequently. Drivers and fleet operators must already know the load condition of a vehicle before



starting a trip. So far, this has been almost impossible and poses particular challenges for vehicles for which the semitrailer is usually provided by the forwarder. To meet the new requirements, most EU countries are currently relying primarily on a comprehensive, stationary solution. "Even if the load is measured by sensors in the road in the future, the integrated solution

will remain interesting for forwarding agents, fleet managers and drivers," says Marc Leinemann, who is a technical project manager at Continental and involved in the development of the On Board Weighing System.



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MAC

By Niranjana Mudholkar

UNSHAKEABLE CONFIDENCE!

We believe India will recover sooner and better from the crisis than many other economies and growth would start to return in 2021. In the next 2-3 years, the CV industry could return to the market volumes we saw in 2019, says **Satyakam Arya**, MD & CEO, Daimler India Commercial Vehicles (DICV)



“ There are three storms the industry is facing altogether 1) cyclic storm 2) structural storm 3) transformational storm. COVID comes on top of all that. With COVID, the effect of these storms will be deeper and faster.

You have been in charge of the current role since November 1, 2018. How would you describe the journey so far?

The journey so far has been exciting, challenging and filled with new learnings. In 2018, our focus on profitable growth paid off as we witnessed one of the best performance years in the history of DICV. We also observed excellent results in bus sales and exports as well. Despite the weak market scenario in 2019, we managed to continue our growth trajectory and break even. We also successfully increased our touch points in 2019 by 30 percent over 2018.

This year we have celebrated several milestones; our BSVI premiere, over one lakh BharatBenz trucks on Indian roads, more than 30,000 accumulated truck exports, our second MoU with the government of Tamil Nadu, and so much more.

With the lockdowns easing, and markets making a small, yet spirited comeback, we are seeing a slow recovery of the market and a strong demand for BharatBenz BSVI products. This once again proves the con-



fidence the customers have in our products and BSVI technology. In fact, we have recently started a second shift at our plant and we continue to ramp up our operations and supply chain while maintaining high level of precautions. In a nut shell, personally it has been a very exciting journey filled with lot of learning.

How has the Covid-19 pandemic affected DICV?

Even before the lockdown, we initiated a Crisis Management Team (CMT) consisting of representatives from across the organisation that holds virtual meetings with DICV's top executives on a daily basis. The CMT has initiated hundreds of health, safety and sanitisation measures over the last few months, ranging from mass cleaning of DICV's 400 acre Oragadam plant to adjustment of facilities to ensure that social distancing norms are followed while we re-boot our operations. The CMT has also taken charge of tracking the health and safety of the company's 4000+ employees, plus overseeing the company's extensive CSR contributions. Aside from this, we conducted an intensive education and communication campaign. All major stakeholder groups have been provided with tailored health and safety manuals, instructional videos and web-based trainings.

DICV has now rolled out an internally-developed app that allows employees to track their health, get online medical consultations and maintain the correct social distance from colleagues while at the plant via a proximity buzzer. We continue to look for the best way to sustain production while doing our best to protect our employees.

What have been the learnings from this pandemic?

The lockdown gave us the chance to take a step back from our daily operations and take a fresh look at our core functions. We have taken the opportunity to improve efficiencies in our business processes and have started our operations in a safe, sustainable manner. At DICV, localisation has been a high priority since the introduction of our vehicles in 2012. We currently source around 80-90 percent of our parts locally and hence were resilient in the current situation.

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If infrastructure and mining sectors continue to see momentum, we will see an uptick for BharatBenz products in these segments. With consumers making most of their purchases online, we see a demand for e-commerce trucks as well.





One of the most important lessons was that we need to build more self-reliant supply chains as we continue to work towards achieving higher localisation levels. Going forward, supply chains will need to turn digital with more usage of Robotics, Internet of Things, Artificial Intelligence and other technologies that will help make them more resilient. Moving on, we will continue to focus on providing safer and more modernised trucks ensuring industry-leading fuel efficiency, safety, comfort and reliability. We will also further increase our focus on digitalization for our customers.



The opportunity to explore new technologies and ways of thinking (such as work from home, virtual sales meetings and events that involve participants from all across India) has shown us new ways to increase productivity and efficiency with impressive cost savings.

How would you analyse the current status of the commercial vehicles industry in India?

At the start of 2020, people thought the market will be 10 percent lower than 2019 as India switched to BSVI norms from the 1st of April. But now there is a new situation of COVID and that number is gone. There are three storms the industry is facing altogether 1) cyclic storm 2) structural storm 3) transformational storm. COVID comes on top of all that.

Cyclical storms last for around 8-9 quarters. Structural storms are related to how customers are changing their buying decisions due to regulatory norms like axle loads, BSVI, etc., so this changes the way demand happens. Transformational storms are related to how the entire automotive industry needs to move towards a more sustainable way. With COVID, the effect of these storms will be deeper and faster.

The economic reforms by the Government offer some hope. If infrastructure and mining sectors continue to see momentum, we will see an uptick for BharatBenz products in these segments. With consumers making most of their purchases online, we see a demand for e-commerce trucks as well. Overall, there should be a definite and sharp rebound in 2021.

Where do you think does DICV stands vis-à-vis the different challenges facing the industry?

As I said, the industry is facing three storms: 1) cyclic storm 2) structural storm 3) transformational storm, with COVID on top. To overcome these challenges, we are making DICV even more resilient and using this crisis as an opportunity to emerge even stronger. One area we are focusing on is to further increase our localisation levels from the 80-90 percent which we had achieved in the past.

Secondly, the pandemic has provided DICV with an unprecedented chance to focus on new ways of connecting with stakeholders. Until now, manufacturing was thought to be a 100 percent hands-on business. Now, we see that it is possible for us to digitalize more processes and tasks than we ever thought possible. We connect with our employees, suppliers, dealers and customers virtually, regularly and comprehensively to manage our value chain.

The opportunity to explore new technologies and ways of thinking (such as work from home, virtual sales meetings and events that involve participants from all across India) has shown us new ways to increase productivity and efficiency with impressive cost savings.

We are working to digitally transform our business in the coming years. We made a great start in two major interfaces with our customers. The first is our complete customer service business which can be managed with a



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Exports has been a key pillar of our strategy from the beginning. Our top export destinations include Central Africa, MENA, and South East Asia. The majority of our exports are FUSO products.

single app. We call this “Proserv” and the customers can do more than 60 transactions on their smart phones. The second is that with BSVI, we have launched Truck-connect and BusConnect which is a state-of-the-art connectivity platform. This will help our customers to improve the efficiency of their fleets on many fronts. India lags behind many western economies when it comes to logistics costs and Covid would accelerate customer expectations on improving efficiency of their fleets. We will continue to work in future to provide an even better value equation to our customers, which has been our endeavour since we started operations in India: BharatBenz offers the best value for money products.

Which are the key factors that you see driving the growth the CV industry in the times to come?

Currently, owing to the positive sentiments generated in the construction, mining and e-commerce sectors there seems to be a small uptick in the sector. It is expected that the Indian economy will return to its growth trajectory around 2022. The MHCV segment

will rebound in line with that. If the government introduces measures like a scrappage policy, reduces taxes or gives a big boost to infrastructure spending, the recovery could be faster.

What are the things that you see working for DICV?

Being part of the global powerhouse of Daimler Trucks & Buses, we have full access to Daimler’s vast array of state-of-the-art technologies. This makes our products workhorses, reliable and efficient. We will focus on expanding our reach within the country to reach more BharatBenz Customers.

Tell us about the manufacturing capacity and capability of DICV.

DICV produces 9 to 55 ton trucks as well as buses at our state-of-the-art manufacturing plant in Oragadam. This plant spreads over 400 acres (160 hectares), including a highly modern test track, company headquarters, R&D and training operations. With one global quality standard, DICV also produces Daimler Trucks’ brands of FUSO, Mercedes-Benz and Freightliner in addition to the made-for-India brand ‘BharatBenz’. Products and parts are exported to more than 50 markets in the Africa, Asia, Latin America and the Middle East.

The annual capacity of the truck plant is up to 72,000 units and up to 4000 units for the bus plant. We believe not only in producing green products but also in ensuring the environment that they are rolled-out from also meets energy-efficient standards. Our solar power facilities have a capacity of 3.3 Megawatts, and are able to provide more than one fourth of the average daytime electrical power needed. DICV also has a water harvesting pond on an area of 27,000 square meters, able to hold over 65,000 cubic meters of run-off water. This is used to charge ground water and irrigate the in-house landscaping projects.

There is a lot of talk about providing customised solutions to different customer segments. What is DICV doing on this front?

With the new generation of BharatBenz trucks, we are looking to move away from the traditional



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tonnage classification. Instead, we will focus on creating 'the best truck for every need', customizing vehicles for use applications and targeting specific sectors such as e-commerce.

A concrete example of this is the new 5228TT model launched in June. With an all-new 4x2 tractor configuration, this model achieves the lowest TCO and highest GCW in its class and is specially designed for applications like cement, tankers, parcel, market load and tip trailers.

How satisfied are you with regards to the overall product portfolio of DICV?

In January 2020, we introduced an entire all-new portfolio of BSVI-compliant trucks and buses and recently launched India's first 5228TT on a 4x2 tractor. We are continuously monitoring the market and will introduce products to fill gaps in the line-up on a priority basis.

Give us an overview of your exports business.

Exports has been a key pillar of our strategy from the beginning. Our top export destinations include Central Africa, MENA, and South East Asia. The majority of our exports are FUSO products. We export BharatBenz trucks to Nepal and Bhutan, Mercedes-Benz trucks to Indonesia, and Freightliner trucks to Mexico. We export a large number of variants based on our proven MDT and HDT product platforms as well as our bus platforms. In addition, we export a sub-9t product to Middle East markets. All variants are individually configured and tested to meet the very specific requirements of each market. Last year we reached cumulative export milestones of 30,000 units and 125 million parts sent to over 50 markets worldwide.

Very recently, you signed your second MoU with the Tamil Nadu government covering Rs.2,277 crore of investments. What's the progress on that front?

DICV signed a second Memorandum of Understanding with the Government of Tamil Nadu several

months ago covering INR 2,277 crore of investments. This investment is directed towards expanding our product portfolio, investment in technology, digitalization and represents approximately 400 jobs.

It demonstrates our unshakeable confidence in the long-term potential of India as a market for commercial vehicles, and our ongoing commitment to the country as a whole.

DICV has just launched its used vehicles business. What prompted this move at this time?

We are expanding into the used trucks market with our newly launched programme 'BharatBenz Exchange'. With this, truck owners can get new Bharat Benz trucks in exchange for their used ones which can be of any brand. Over last years, many customers we interacted with wanted to experience a BharatBenz but did not have demand to buy new trucks. Now is an opportunity to for them to exchange their truck of any brand with a brand new BSVI BharatBenz. Apart from that, anyone who is looking for a used truck can now buy a refurbished BharatBenz which will also be offered with warranty and maintenance contract. Basically, both the sellers and buyers of used vehicles will benefit from the peace-of-mind and ease that this platform offers with most of the stress and hassle being taken out of the process.

Demand for new MHCVs (medium and heavy commercial vehicles) continues to stay stressed due to COVID-19 and other factors, so we believe that it is the right time to launch the BharatBenz Exchange programme. We are also seeing traction in customers who want to buy used vehicles partially due to BSVI, which has increased the price-gap between new trucks and old commercial vehicles. Over and above that, the used truck market in India is quite substantial in volume but still largely unorganised. The customers are looking for a transparent, trustworthy and reliable product offering which will be our endeavour under BharatBenz exchange. Our endeavour here is to also provide entrepreneurship opportunities to drivers under Driver to Owner Program under BharatBenz Exchange.

Where do you see the CV industry in India heading in the next two years? What position do you envisage for DICV in the market in that time?

We believe India will recover sooner and better from the crisis than many other economies and growth would start to return in 2021 from the low level of 2020. In the next 2-3 years, the CV industry could return to the market volumes we saw in 2019.

DICV's focus remains on sustainable growth, and we are convinced we will be able to make positive contributions to the success of Daimler Trucks & Buses. 

By Raviraj Rodrigues

BUILDING RESILIENCE TO THE SUPPLY CHAIN

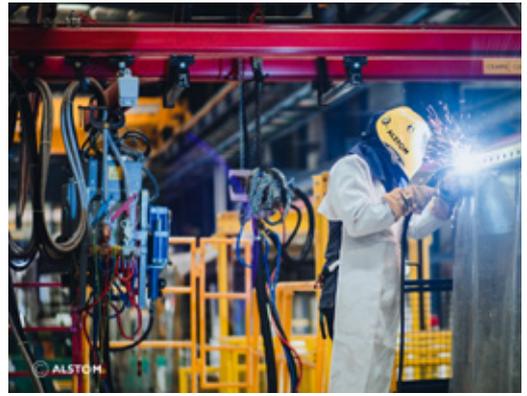
While the pandemic did bring hurdles, we see more opportunity to source from India in the times to come, thereby making the country self-sufficient.

The Covid-19 pandemic brought to light each organisations' capability to handle the changes that came with it. It tested the ability of an organisation to handle VUCA scenarios, demanding them to be adaptable and resilient. As a function, supply chain managers are always geared up to be able to 'anticipate better' and 'react faster' to be able to preempt and upkeep the inventory. Each organisation has built structure and processes to manage both these capabilities. Often, organisations grow managing these capabilities, not with a split down the middle. With the onset of the pandemic, the supply-demand equation toppled across organisations affecting the overall businesses in many parts of the world.

During this phase, organisations experienced the impact in three notable stages:

Stage 1: When China issued the lockdown in mid-January, the world became more attentive towards recognising the spread and damages of the virus. By the end of January, Covid-19 epidemic was identified as a public health emergency internationally by the World Health Organisation (WHO). Around this period, some of us began acknowledging the uncertainty of the situation and focused our efforts on foreseeing the risks to develop possible solutions.

Stage 2: It was clear to us that the Covid-19 situation would cause a mid-term disruption to our supplies, as the spread of the pandemic began to agitate our supplies in Europe. Efforts were put in to immediately set up a war room in the office (which moved on to become a virtual war room by the end of March) and established two 'control towers' specifically for end-to-end visibility. While the supplier control tower focused on prioritising supplies from international vendors to our four sites in India, the 'logistics tower' oversaw end-to-end visibility of shipments from our consolidation centres. A collaborative peer network



was also formed to bring together all the supply chain heads across the organisation to calculate our risks/vulnerabilities and tackle them as a team. Ultimately, our efforts resulted in fully functioning sites without a single day of shut down on account of non-availability of materials.

Stage 3: We started adapting to the idea of a new reality, where several aspects of businesses have been drastically modified after the two months of lockdown in India. We revisited our supply chain structure, processes and controls to form a stronger and more flexible system that could withstand issues that may arise in the future. In the short term, we have embarked upon initiatives such as complete procurement diagnostics, review supplier vulnerability and building of collaborative inventory. We plan to quickly adapt and scale up our sourcing strategy, collaborative planning-forecasting, replenishment with key partners and virtual co-location, information sharing, to be prepared for the days to come.

In the long run, we are gearing up to drive digitalization, predictive supply chain planning and smart logistics to achieve complete end-to-end transparency in supply chain.

With the focus on Atmanirbhar Bharat, our efforts are strongly towards creating an ecosystem within the country. While the pandemic did bring hurdles, we see more opportunity to source from India in the times to come, thereby making the country self-sufficient. 



"In the long run, we are gearing up to drive digitalization, predictive supply chain planning and smart logistics to achieve complete end-to-end transparency in supply chain."

The author is Supply Chain Director - Alstom India

By Niranjana Mudholkar

THE TOUGHEST LEADERSHIP TEST!

With the changing consumer behaviour and preferences, there may be new opportunities opening-up with the need for new business models to service the changing market needs, says **Krishan Kohli**, Head of Hydraulic Brake Systems & Vehicle Dynamics business units, India, and Managing Director, Continental Automotive Brake Systems, India

Has Covid-19 put you through the toughest leadership test of all time?

COVID-19 has undoubtedly brought an unprecedented situation upon the whole world. In a way, it is one of the biggest and most stringent tests for leadership across the industry. Many name Covid-19 as the black swan event which hit mankind in multiple decades.

While being part of the industry, we are equally impacted by this pandemic. However, at Continental, we are continuously working with all our stakeholders, including our employees, suppliers, and customers, to best manage the situation.

During this time, our primary focus has been the safety and health of our employees. At the very outset, Continental provided a work from home option wherever possible and took all necessary steps to ensure a smooth transition of work to manage business continuity topics. We have also been in close touch with our customers during the lockdown, continually understanding the changes, operating procedures, and their requirements, which f-tracked our operation resumption in a phased manner. Also, we have been meticulously following government directives and regulations on COVID-19, ensuring we are fully compliant with the law and maintaining a high degree of safety for all our employees and business partners.

Once the government relaxed the lockdown regulations for the manufacturing sector, we gradually resumed our operations with 20-30 percent of our workforce at our manufacturing plants and partly aided by the automation processes that were already in place. We

not only followed the regulations established by Government authorities but in parallel also aligned with Continental global standards and guidelines to handle the pandemic. We have also implemented social distancing in all workplaces, including the shop-floors and canteen areas.

Our Industry 4.0 standard manufacturing facilities are equipped with various smart factory features, which support the resumption of work seamlessly. Apart from resuming the production, our highest priority has been to secure the supply chain and to meet the customer volumes demand. The automotive supply chain is one of the robust, fast-evolving, and lean processes across industries. Our ERP systems are integrated globally across countries and regions, which help to retrieve information quickly and integrate demand management starting from OEMs and automatic discharge of orders etc. This also reflects any changes instantly, ensuring accuracy and allowing us to respond to demand changes in a short time. Additionally, our supply chain is spread across the globe, and we are not one region dependent. Our well-equipped inventory management and warehousing help us with optimized processes to serve our customers and markets.

What do you think is more important for a leader in times like these – to be plan-driven or to be purpose-driven?

Both approaches have their own merits. Plan driven leadership, being traditional, specifiable, predictable, and process-centric, requires extensive and meticulous planning. It's more on the command and control style of leadership.

On the other-hand, purpose-driven leadership is popular among many business leaders who align the aspects of running their organisation with the core values and beliefs. Leaders who follow the model of purpose-driven leadership believe deeply in a cause, focusing on purpose before profit, which primarily motivates their decision-making. Purpose-driven leadership attracts and engages employees.



"In times like these, we can't just pick and choose any one leadership style. We need to be agile to the changing market demands and conditions. The best approach would be a combination of agile, purpose, and plan leadership to derive the most in the current times."

However, in times like these, we can't just pick and choose any one style. We need to be agile to the changing market demands and conditions. The best approach would be a combination of agile, purpose, and plan leadership to derive the most in the current times.

Any crisis calls for being resilient in the face of growing difficulties. But moving ahead also requires experimenting and the ability to take risks.

How does a leader balance between these two seemingly opposite ideas of being resilient and the ability to take risks?

As mentioned earlier, leadership in such times is all about agility and adapting to situations quickly. Taking ownership and accountability during these testing times is an essential reflection of the right leadership.

From the very beginning of the outbreak, we at Continental have been closely monitoring and adapting to the fast-changing situation. Virtual war room meetings tracking the customer project status and supply chain topics were running round the clock. A complete switch to a virtual workstyle is not possible for a manufacturing-centric technology company, but we are indeed considering these options with a significant increase in future times.



mented Augmented Reality (AR) for remote assistance and problem-solving, Automated Guided Vehicle (AGV) for material movement on the shop floor, Artificial Intelligence (AI) for facial detection of quality inspectors. We have also implemented Cobots in our plants. Collaborative Robots or Cobots are designed to work alongside and together with humans.

With the help of these technologies, we can enhance the productivity and efficiency of the workforce and our operations. This has also enabled us to challenge the traditional way of working and have started implementing newer innovative ideas. Planning is underway to adopt several other technologies like E-Kanban, automatic replenishment, AGVs for automation in the warehouse, E-Jidoka, Augmented Reality (AR) for remote assistance, and problem-solving, AI for facial detection of quality inspectors, etc. A low-cost automation concept called Chaku-Chaku has also been adopted to help us improve the efficiency of our production lines. We are again using IoT enabled sensors and devices at our plants for predictive maintenance.

Your outlook for the Indian manufacturing industry?

Even before the outbreak of the pandemic, the automotive industry was sluggish for almost 18 months. With the new regulations and increased insurance cost, the acquisition cost went up, impacting the market demand adversely. Additionally, liquidity issues and overcapacity topics worsened the situation resulting in overall lower consumer sentiments. Currently, the industry is going through a very challenging situation. While there are some green shoots visible, however, a full recovery would take time and will heavily depend on the government policies and initiatives. With current visibility, it would take anywhere between 3-5 years for the automotive industry to reach the 2018-19 levels. On a positive note, with the changing consumer behaviour and preferences, there may be new opportunities opening-up with the need for new business models to service the changing market needs. 

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Apart from resuming the production, our highest priority has been to secure the supply chain and to meet the customer volumes demand. The automotive supply chain is one of the robust, fast-evolving, and lean processes across industries.

The power of proactive, transparent, and engaged communication during these tough times, not only with employees but with all stakeholders, is unparalleled. It takes a great deal of consciousness from the leadership amid crisis and upheaval to maintain a balanced view that is neither too negative nor overly optimistic.

How do you view digital transformation for your organization in the New Normal?

Continental strongly believes in digital transformation, including smart and automated services. We are implementing Industry 4.0 processes across all our plants worldwide, which includes Artificial Intelligence, IoT, 3D Printing, AR in product development, and process automation.

At our Bangalore plant, we have already imple-

By Niranjan Mudholkar

FOCUSSED STRATEGY

“We shall focus on new product development to meet the market requirements in order to maintain our leadership position in the market,” says **Nikhil Sawhney**, Vice Chairman & Managing Director, Triveni Turbine Ltd.

You have taken charge in 2012. How's been the journey since then? Are you satisfied with the progress so far?

Yes, I am satisfied with the overall progress of the company since 2012. There has been significant growth in the turnover and profitability of the Company and now we are the second largest industrial steam turbine manufacturer in 5 MW to 30 MW segment, globally. In terms of manufacturing capabilities, we commissioned our second state-of-the-art manufacturing facility in the outskirts of Bengaluru which adheres to Industry 4.0. In 2012, we had limited exposure in international market, but over these years, with focused market strategy, our exports grew by 21 percent CAGR and now we are present in over 70 countries and continue to grow.

Since Triveni is a technology driven company, design and product development is key. We have been working relentlessly to improve the efficiencies of our products while making them more cost competitive through a dedicated Research & Development program. The world-class Research and Development unit of the Company is recognised and registered as an in-house R&D unit by the Department of Scientific and Industrial Research (DSIR), Government of India. In line with industry trends, the Company has been diversifying into different types of turbines and other



renewable energy products that focus on high efficiency cycles, including injection applications, supercritical CO2 turbines etc. We have in place a robust IP strategy for the creation and protection of our long-term IP assets, to secure and preserve its technological advantage over competitors. We have also filed 269 IPRs globally till March 2020.

Where does Triveni stand in terms of market competition?

Triveni Turbines' reliable, robust and efficient solutions have made it one of the world's most reputable and dependable turbine OEMs. It is the second largest manufacturer of industrial steam turbines in the sub 30 MW range globally.

With more than one billion operating hours of turbine fleet, the company has installed over 4,000 steam turbines generating a total power generation capacity of 13GW across 20 industries. Triveni is present in over 70 countries around the world.

Our steam turbines are used in diverse industries, ranging from sugar, steel, textiles, chemical, pulp and paper, petrochemicals, fertilisers, solvent extraction, metals, palm oil to food processing and more. Triveni



“In 2012, we had limited exposure in international market, but over these years, with focused market strategy, our exports grew by 21 percent CAGR and now we are present in over 70 countries and continue to grow.”

offers steam turbine solutions for industrial captive and renewable power. Its products and manufacturing facilities are approved by users, EPCs, PMCs and OEMs globally.

The company's product portfolio comprises a large range of Backpressure, Condensing and API compliant steam turbines that are easily customised to suit sector-specific and customer-specific needs. Equipped with a choice of impulse and reaction technology, these turbines can work across a wide range of pressure and flow applications.

Industry requirement is evolving regularly, end users constantly want to achieve enhancement of the efficiency of the power plant, as a result recovery of energy and reducing the wastage of energy becomes very important in this sector.

Triveni REFURB is a vertical, focussing on efficiency improvement of the older generation turbines across all brands other than the ones manufactured by Triveni. It also caters to all rotating equipment i.e., Compressor rotor, Generator Rotor, Gas Turbine rotors



Activities, and Root Cause Analysis.

The world-class manufacturing plants are built to handle complex processes and large-scale production with total efficiency at optimal costs, with minimal wastage. The manufacturing facilities are Indian Green Building Council (IGBC) – Green Building Platinum certified for green, eco-friendly and energy-efficient standards.

Over the last decade, our Triveni REFURB team has worked on machines of most OEMs successfully and supported customers across the globe in ensuring healthy operating systems. We reverse engineer the whole turbine or compressor, either at site or at our works using the 3D white light scanners to scan the components, developing the same and generating working models with a 3D printer before going into mass production.

How has the Covid-19 outbreak affected Triveni Turbines? How are you dealing with it?

Given that the Covid-19 situation is still grim in many parts of the world, we believe it will take some more months to get back to normalcy, particularly in the international market, based on the enquiry leads and customer feedback. In the domestic market, too, despite a good enquiry pipeline, we believe there could be delay in order finalisation and deliveries in H1. However, things are expected to improve in H2 for the domestic market.

Overall, based on the current situation, the Company may witness a decline in revenues and order booking in the first half of FY21. However, the Company is geared up to meet the deliveries and order bookings as and when the market improves, and would be able to capitalise on such developments in the shortest possible time. All attempts are being made to minimise the impact but certain circumstances are not within our control, and would depend on our customers' situation, in terms of funds. With tight control on expenses such as manpower rationalisation, administrative overhead reduction, continuation of our value engineering and



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and spare parts. All refurbished rotors are subject to High Speed Balancing with vibration limits as per API standards. Expanding our portfolio and our foot print, we are working on almost all OEMs' turbines across the globe and supporting customers at short notice

Tell us about the manufacturing capabilities and capacities of Triveni Turbines.

Triveni manufactures turbines at its world-class manufacturing facilities in Bengaluru, India. Driving our efficiencies are our two state-of-the-art production facilities, equipped to providing manufacturing of critical components, assembly, testing and refurbishing services, benchmarked to industry best practices and international standards as endorsed by its various certification awards from ISO, IES, BS, API, NEMA, DIN, ASME, CE, PED, AGMA, TEMA, and HEI; and tools and technologies such as Six Sigma, Kaizen, Small Group



cost reduction programme aggressively, we believe we will be able to maintain our margins and generate positive cash flows.

How has Triveni Turbines responded to the Covid-19 outbreak in terms of its responsibility towards its employees, other stake holders and overall society?

The Company has scaled up its safety regulations to address the Covid-19 pandemic needs. Regular sanitisation, social distancing and wearing of mask are strictly enforced in our factories and offices premises. All safety directives issued by both Central and State Governments are strictly adhered. Thermal screening and hand

competitiveness in the steam turbines market globally.

Triveni has consistently strengthened its position by establishing strong global footprint through its network of offices, offering wide range of state-of-the-art steam turbines, coupled with excellent aftermarket portfolio to meet the needs of our customers round the clock.

The growth potential of foreign subsidiaries to expand in international space is encouraging. Through these foreign subsidiaries, the Company has increased its capabilities to connect with global EPC players and industries. The connections have enhanced the visibility of the Triveni Turbines brand and future business potential. The Company expects that the foreign subsidiaries will further augment business growth in the near future.

Do you think technology can play an important role in helping manufacturing companies unlock and deal with the New Normal?

As part of the new normal, the Company has also strengthened its digitalisation drive, through adoption of various tools such as Augmented Reality (AR) and Virtual Reality (VR). The team is currently undertaking many activities through the digital platforms, including successful erection and commissioning of steam turbines remotely. And, all the customer requirements are met electronically i.e. response to enquiry, discussion on the engineering, technical and financial aspects. The customers are also experiencing as well as adapting to this new normal practice and this approach is helping to keep our employees secure.

What is your outlook for the next two years?

Our long-term vision is to maintain market leadership in the sphere of our operations and also to augment our strategic focus on scaling our technological prowess, coupled with high quality manufacturing, and building a strong aftermarket support system. We shall focus on new product development to meet the market requirements in order to maintain our leadership position in the market. 



Industry requirement is evolving regularly, end users constantly want to achieve enhancement of the efficiency of the power plant, as a result recovery of energy and reducing the wastage of energy becomes very important in this sector.

sanitising are being done for all persons entering the office premises. Awareness on prevention of Covid-19 is being created on daily basis among all sections of employees, including contractual employees.

What are your plans to grow overseas?

We are the domestic market leader in steam turbines in sub 30 MW range. We have maintained our dominance consistently over the years. The Company's ability to provide hi-tech precision engineered-to-order solutions has made it one of the most trusted brands within the sector. Our repeat customers validate the strength of the Company's leadership position in steam turbines. Over the past few years, the Company's foray into international market is also gaining momentum and Triveni competes with all major steam turbines manufacturers across the globe quite effectively and increased share of exports in the sales demonstrates its

By Niranjan Mudholkar

TAKING RESPONSIBILITY

It is very important as a senior management member on how we respond to these challenges and overcome this situation, says **Sanjiv Paul**, Sr. Vice President, India Yamaha Motor

How did the Covid-19 Pandemic affect India Yamaha operations and how did you deal with it?

We all know how the Covid-19 pandemic has caused disruptions globally in the normal routine of everyone whether it is individuals or to the industry or any business. Most important is how quickly and effectively efforts are being taken to install all possible precautionary measures to minimise the impact of spread of infection. As you know, the Indian manufacturing industry is purely dependent on large workforce requirement for parts manufacturing and assembly line operations. So, it is very important as a senior management member on how we respond to these challenges and overcome this situation.

I personally believe an organisation attains the level of excellence by strong management will and leadership by demonstrating proactive preventive measures. Safe workplace for all at Yamaha was the highest priority for us. Being a Japanese MNC, 'Plan-Do-Check-Action' principle is in our DNA. Covid-19 was not an exception. We focused on the planning part and to do this, a Task Force comprising of members of top management was formed before the lockdown was declared in India. Cross functional groups developed plans and ideas for improvements to deal with the Covid-19 situation.



"When employee owns his workplace and machines, he shifts himself from the reactive mode to interdependent mode. He not only ensures safety for himself but also for his colleagues."



By the time we received the permission from authorities to resume our operations in both the North & South factory locations, we took a lot of measures in our operations to ensure Covid-Safe workplace. The major challenge for us was to maintain productivity and efficiency of operations as per the standards which were established before this pandemic and at the same time complying 100 percent with the government's Covid-19 Guidelines. We adopted the approach which was - Safety from Home to Home for all our employees. Employees should feel safe right from getting into the company bus and till the time getting off the bus after work.

Our team of engineers used their expertise for re-orientation of layout, process flows, positioning of operatives and other measures for maintaining social distancing norms. Team of volunteers led by medical officer was deputed to offer the required medical assistance to employees at entry gate. Measures have also been taken for touch-free common touch points such as door handles, wash basin taps, drinking water taps etc. We also deployed scientific methods to verify surfaces of common touch points. Through our measures, we ensured that every employee entering the workplace

gets a safe and conducive work environment.

Are pre-Covid health and safety manuals obsolete now?

Nothing is Constant – Change is only constant when you intend to excel in the area of occupational health & safety. Be it pre-Covid or Post Covid, Occupational Health & Safety Manuals are dynamic and we keep on reviewing it for the betterment of work environment. At Yamaha, we have extended our thought process of risk assessment from identification of workplace hazard to determining potential biological hazard which may prevail at actual workplace (Gemba).

Accordingly, mitigation measures planning to nullify effects of hazard also got overhauled. We understood that limiting ourselves to confines of identification of unsafe act and conditions may not be enough in post Covid era; it is critical to identify potential causes of infection at actual workplace. If we correctly identify these hazards, we can control potential causes of infections at workplace.

What are some of the major changes that the industry with regards to the working environment and culture?

In my opinion senior management in any organisation must show a strong commitment towards safety for everyone and must adopt the most appropriate approach. We must ensure that all systems are set up to



scanning and sanitizes his/her hands.

- While leaving the workplace also, there is mandatory thermal scanning of employees to ensure that all employees are leaving the workplace in healthy condition.
- Frequent sanitization of common areas & touch points.
- Maintaining social distancing during Lunch & Tea breaks by providing partitions at tables.

We have also implemented certain education and awareness methods:

- Announcements through Public Address System.
- Point & Call method to verify PPE adherence before morning exercise.
- Visualization across the plant through Awareness posters.
- Several other training initiatives, Group Activity, Quiz competition – Awareness sessions & Awards by Top Management at shopfloor.

What new set of safety standards and health strategies need to be put in place for future shopfloors to remain functional?

For total employee involvement, we have the concept of My Safety, My Responsibility. We further extended this belief to My Machine, My Responsibility. The idea is to create 'Ownership Mind' among employees. When employee owns his workplace and machines, he shifts himself from the reactive mode to interdependent mode. In reactive mode, he depends on supervision to follow safety rules and shifts to his natural attitude as soon as he finds out that nobody is watching him. Whereas when employee owns his workplace, he not only ensures safety for himself but also for his colleagues.

At the same time, it is important to make line managers understand the concept in broader way in order to identify and reinforce a risk-free behaviour at shopfloors.



It is critical to identify potential causes of infection at actual workplace. If we correctly identify these hazards, we can control potential causes of infections at workplace.

support our commitment. Most importantly, emphasis must be put on education and awareness of employees. In the current scenario, we have entirely changed the way our employees use to work at our workplace earlier. I will just provide few examples of what we have done at Yamaha to ensure safety of our employees.

- Boarding in the employee bus to deboarding from the bus, social distancing is ensured.
- At entry gates, every employee declares his/her health status.
- Every employee goes through mandatory thermal

What kind of innovative approaches are you taking at your organisation to improve effectiveness and enhance monitoring capabilities on the shopfloor?

Innovation is one of the core values at Yamaha; I feel innovation does not necessarily mean 'Eureka Moment'. Small Kaizens that helps to uplift work conditions above the standard improving any of the PQCDMSME parameters should be encouraged.

At Yamaha, we have implemented the concept of Small Group Activity (SGA) to create a sense of Ownership and Responsibility among the Employees. Entire employee strength is divided into small groups of 15-20 employees. These small groups are encouraged to implement at least one kaizen to prevent or control COVID 19 infections in each month in their respective work areas. Around 100 nos. of such groups are formed at each plant location of Yamaha.

Has Covid-19 also made us alert enough to plan and prepare for similar large-scale future outbreaks?

Yes definitely, this pandemic has reaffirmed the need for robust Business Continuity Planning. COVID 19 has signalled not only to make preparedness plan but prepare for real time situation and I always suggest that wherever feasible, we must conduct rehearsal of implementation plan. It will instil confidence among members of the response team.



There is an immediate need of mutual collaboration among industries to bring a common vision and standard for safety and health of manufacturing professionals.

I would also say, not to confine to prepare for emergencies like pandemic but there is an urgent need to take holistic long-term approach while planning for business continuity. Culture of 'Work from Home' started with this pandemic is going to stay with us longer than the COVID 19 pandemic itself. Methods such as video conferencing and reducing travel carbon foot will also become way of working in corporates.

How can technology be leveraged to educate and train shopfloor employees in the New Normal?

I would say survival in these tough times has been possible only by leveraging technology. Education and training at shopfloor is also not an exception. In the era of new normal, focus has shifted from classroom training. At Yamaha, we have concept of providing learning through prototype machine that gives an environment of workplace away from Gemba. We call this arrangement 'Safety DOJO', at Safety DOJO employees get practical insight by touch and feeling. Layout in Safety DOJO area is arranged to ensure social distancing.

Practical learning in this manner remains with the employees in longer run with periodic refresher sessions.

Similarly at the Yamaha Technical Academy, we have also started remote education and training of our dealership service personnel to ensure skill upgradation of staff and continuity of excellent service to our esteemed customers.

Remote education and training has helped to maintain real time interaction and at the same time ensures physical distancing with emotional connect.

Can manufacturing companies use AI, machine learning and data analytics to predict disruptions and develop training simulations to mitigate risks related to the health and safety of their workforce to increase organisational resilience?

In Indian manufacturing, specifically in the automobile industries, the era of artificial intelligence (AI) is yet to begin. Currently, it is limited to provision of Auto Guided Vehicle (AGV) in assembly line, robotic welding, robotic lifting of metal sheets in press machines. History data and data analytics in CNC, PLC and DCS machines help to understand and analyse operational parameters and disruptions during the working that help engineers to schedule predictive and preventive maintenance. These all measures primarily help to mitigate risks related to the health and safety of the employees besides safeguarding the machineries.

Still, I feel there is a long way to go. The binary language is going to bring a revolution in manufacturing. Not only the health & safety aspect but also the entire business operation is going to get benefitted with AI. AI will become necessary and an integral part of almost any manufacturing process in coming days.

How can the industry develop a unified vision and standards for safety and health of manufacturing professionals?

This is a very valid concern and practical thought. There is an immediate need of mutual collaboration among industries to bring a common vision and standard for safety and health of manufacturing professionals. There are few Government and non-government entities such as National Safety Council, Directorate General of Factory Advice Service & Labour Institute (DGFASLI), SIAM, FICCI, CII, etc. who are working in this direction.

Having a unified vision and standardisation of health & safety practices will not only protect but add value in lives of manufacturing professionals. In my view, all industries can join hands through any of the above-mentioned agencies to develop a common vision and uplift standards of safety & health of employees. When the best and intelligent minds are shared for common cause of the society, overall industrial culture will improve for better. 

By Niranjana Mudholkar

EYES ON SKY, FEET ON GROUND!

Riding on technology adaptability and scalability, **Nishant Jairath** – Director, Metalman Auto Pvt. Ltd. is confident that India will probably see the same growth in terms of achieving five percent or six percent YOY growth on GDP after March 2021.



Can you give us a quick overview of Metalman Auto's business?

We manufacture sheet metal and tubular-fabricated components for the automotive industry. We act as a Tier 1 company to various OEMs (Original Equipment manufacturer) in India and abroad. Simply put, I would say we are exalted welders and our products include motorcycle frames, exhaust systems, and fuel tanks alike.

Tell us about the manufacturing capabilities and capacities of Metalman in terms of geographical footprint as well as product portfolio.

We have around 10 plants across India. Four of which are located in West India, around the Aurangabad region. We set up one plant recently in Hosur, close to Bangalore. We have one plant in the NCR region, three plants in Ludhiana and two plants in Pantnagar, Rudrapur.

Our major focus is on two-wheelers wherein we are producing motorcycle frames, the exhaust systems (anything to do with Sheet Metal, Tubular Fabricated products). We also assemble motor bikes for some of our customers.

How has the Covid-19 pandemic affected Metalman?

It affected us as much as it has affected everyone else in terms of zero sales. But it was a status quo for every-

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Covid-19 has affected us as much as it has affected everyone else in terms of zero sales. But it was a status quo for everyone at that point of time but what matters now is that since sales have started picking up now, we are kind of achieving the pre-Covid results.



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I think the Prime Minister of our country has also done a good job in terms of communicating down the line. We didn't have to do much as entrepreneurs because this was driven from the global prospective. Whatever little we can do is just the supervision and ensuring that the norms are being followed.

one at that point of time but what matters now is that since sales have started picking up now, we are kind of achieving the pre-Covid results.

We as an organisation, we are dependent on OEMs i.e. Bajaj, Hero, Royal Enfield and alike. So as they sell, we are able to deliver it to them. So, their sales have been pretty good and I think it is primarily because public transport hasn't started everywhere! So people are buying vehicles, prompting a positive growth in our sector. Apart from that, there is a fast-approaching festive season! This is a seasonal time where sales start picking up. From the Covid perspective, a lot of people were affected in the organisation but luckily there has been not a single death in our Metalman Auto family. From that perspective, we have been fortunate and safeguarded!

How has Metalman responded to the Covid-19 outbreak in terms of its responsibility towards its employees, other stake holders and overall society?

During this pandemic and to date, safety measures have been the biggest and the most important thing for us! In that sense, we have taken all the necessary precautions in terms of maintaining the basic norms of social distancing, we have been disinfecting on routinely. Add to that, we have also deployed an app called DROR. This app, developed by the DROR team suits our op-

erations by incorporating features like social distancing score, the self-declaration form wherein we are able to control and keep a watch on the people entering the organisation. This app has acted as a communication channel between us and the workforce, both in a proactive and reactive way.

Proactive in a way, where people are able to send us information about people being or crossing a containment area and we are able to warn them as well. Reactive in a way, that if someone is found positive, we are able to find out the potential area and people who these affected people have come in contact with. We as an organisation can quickly take action and ask the affected ones to stay in isolation.

Aurangabad region was one of the worst affected areas being in Maharashtra and we know that Maharashtra is one of the largest contributors towards the number of cases. During the peak days, 10-15 people were affected in that region and because of our measures and this app, we were able to control the spread in no time.

Another tool, which we have, is an active CCTV monitoring tool. We have hired a team of speech and hearing impaired employees who are sitting and monitoring those CCTVs live and whenever they see any kind of rules being flouted, pertaining to the SOPs that we have set, they are immediately raising a red flag to the concerned authority of the plant. Its working as a third eye watching over you. Now we have zero cases in our plants.

Do you think technology can play an important role in helping manufacturing companies unlock and deal with the New Normal?

I think people have realised because of the pandemic that work from home has become a new normal. Technology has played a very crucial role. I can quote it from our own company that people who were earlier hesitant to adapt to technologies, were left with no op-



tion but to adapt it. Either you adapt technology or you won't get paid; that's what Covid-19 has done. Maybe it was forcefully done but I am glad that once they got a feeler of it, they are cherishing it right now. Like for example, we wanted to implement G Suite for a long time for people who were working on offline spreadsheets and we wanted to get them online. We assume that old people's adaption towards technology is a challenge but I am surprised by how they have adapted it so well with a little training given to them.

On a broader level, technology also brings along with itself certain challenges like scaling up. But with cloud being available, scaling up has never been a challenge in terms of investing separately on servers etc. Earlier one had to have certain skillsets to manage those servers but now you can do over a phone call. You can

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IoT is suddenly picking up as people look out for tech-driven solutions. Earlier people were taking it just as a fad. Now, they can see the real value to it. They know that it is actually possible to monitor the machine's health sitting at home.

increase server spaces, buy licenses online and what really helped is that most of these companies, instead of encasing on these opportunities, they came up with a win-win situation. Like how DROR came up with POCs free of cost for the people to understand and adapt. Even Microsoft offering three additional licenses for a period of say three months was a gesture of being supportive. Generally, it is perceived that people would take advantage of a situation, but all these companies have come together to promote them and create a customer delight experience.

Social distancing restrictions are a huge obstacle for manufacturing companies in the context of optimising their resources. How can organisations leverage on technology to deal with this aspect?

Let's understand that companies do not use technol-

ogies to ensure that things are happening or how ground rules are maintained. Technology is a tool. Take for example our use of the DROR app, which is automated with an auto alert system. We don't need someone to keep a watch on people all the time! If there are multiple manufacturing lines, we don't need to have supervisors standing on the head and warning people to maintain distance. So we have already taken care of these additional costs by implementing solutions and they are not heavy on pockets. So from that perspective solutions like these really help you in

terms of maintaining this social decorum.

Also, from the perspective of technology, earlier people were not thinking of working from home. They always thought of being physically present at work in terms of really contributing towards the work they do. But the whole system has mentally evolved over the past few months. They feel they are able to give the same kind of productivity by sitting at home and able to reduce cost, but the only thing is that one needs to be connected technology wise. All you need is a better internet connection.

So technology, adaptability and scalability have played a very important role.

How easy or difficult has it been for the shopfloor staff to adapt to the New Normal? How are they responding to the adoption of digitisation in this context?

Whether it is a person on the shopfloor or a manager sitting in the office, the adaptability has been exceptionally well. Maybe it was been shoved down the throat, but still people have adapted it so well and they have accepted it as the new normal. There is nothing that they feel uncomfortable about. Not even one person has come to me complaining about the situation.

I think the Prime Minister of our country has also done a good job in terms of communicating down the line. We didn't have to do much as entrepreneurs because this was driven from the global prospective. Whatever little we can do is just the supervision and ensuring that the norms are being followed.

Has the Covid-19 pandemic expedited Indian manufacturing industry's digital transformation? In what way?

Definitely it has. Earlier we would want to have people to monitor the shopfloor workforce's health. Earlier we saw people adapting to technology owing to it being a trend or because of the coolness factor! Now, we see something called the 'Industry.4.0', wherein people have heard about it and would like to connect with one machine and try and get data out of it. Now, you will

realize the transformation when you realize that earlier you could not have multiple supervisors to monitor these things in person. IoT is suddenly picking up as people look out for tech-driven solutions. Earlier people were taking it just as a fad. Now, they can see the real value to it. They know that it is actually possible to monitor the machine's health sitting at home. Supervisors not necessarily need to be on the shopfloor to come and count the production. Only thing that is required is adequate manpower. So this has indeed given a lot of push towards automation and digitization. Even from the perspective of companies which had achieved a certain threshold, now are looking ways of



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People should stop thinking about conditions which are beyond one's control pertaining to the government policies. Start working on your shopfloor because those things will probably change over a period of time.

adapting automation not only from the perception of reducing cost but also from the safety prospect.

Earlier it was more from what the ROI would be or how to scale it up. During this whole time, to be honest everybody was free, so a lot of time has been spent on researching about different products that are available, getting educated on all these things. People have learnt about it and now they are actually implementing it on the shopfloor. There is a lot of research done by our team and we are also working with different companies to have a single solution where all of these small ecosystems can come into one major ecosystem when it comes to 'Industry.4.0'.

There is a growing anti-China sentiment across sectors. While there is definitely an opportunity for Indian manufacturers to produce substitutes of Chinese imports, there are many challenges as well. How can the auto components industry evolve further to compete not just with the Chinese but also other global competitors?

Acceptability is important. Generally people have this thing in mind that we cannot beat China. China has certain leverages by the Government. I personally feel that first acceptability is important. You need to believe that you can do it. People should stop thinking about conditions which are beyond one's control pertaining to the government policies. Start working on your shopfloor because those things will probably change over a period of time. One should focus on

one's own manufacturing excellence as well as on the culture within the organisation and on the shopfloor. These things are in our control and we should work on that and benchmark it with China to beat them on something that is within our control. People really need to first accept, work on manufacturing excellence to ensure that you are able to deliver a quality product at a very competitive price. This can be achieved by getting the basics of manufacturing right and by eventually look at smart manufacturing. This is only possible if you are following manufacturing excellence and various methodologies like lean management and so on. Digitization and technologies should be leveraged aggressively over China.

We also need to understand that as an industry we should handhold Tier-II's and Tier-III's. It is the big companies with the resources of profitability and Cloud technology that should make the technology reach their Tier-III's and encourage them to adopt some sort of smart technology in order to witness the results.

What is your outlook for the next two years?

Just how people have adapted technology, the same way they would accept the fact that Covid will not disappear in the next few months. People have started living in the new normal that is no longer waiting for the vaccine. The Covid pandemic will be just like another regular flu irrespective of whether a vaccine is there or not. From that perspective the market is already showing positive signals in terms of the automotive sector. We are seeing good demand and I believe that this demand will sustain at least for the next one year. If I talk about short term, whatever schedules we have received are definitely promising until Diwali and I hope it will continue till March 2021. After March 2021, I guess India will probably see the same growth in terms of achieving five percent or six percent YOY growth on GDP. We will be achieving the pre-pandemic timeline in the next three months and things will be how they were before. I wouldn't say that things will be promising with exceptional growth but at least the sustenance of pre Covid level will be there. 

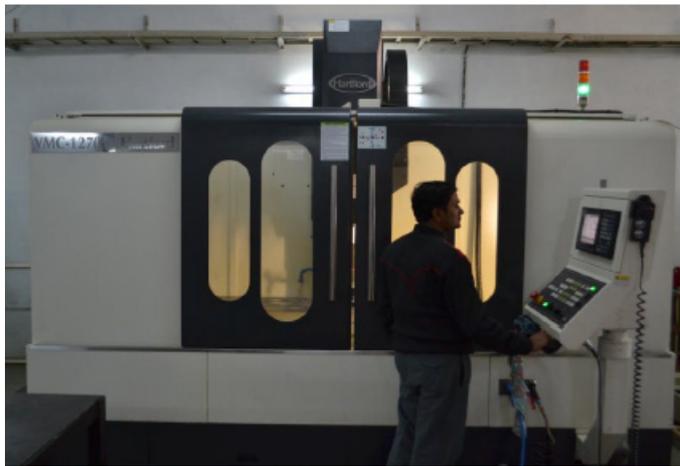
By Niranjana Mudholkar

THE QUEST FOR TERRIFIC AIR!

A company active in the real estate business was looking for an air disinfection system to be deployed in its campuses. When it could not find an appropriate solution in India, it decided to develop and manufacture the system on its own. **Ankit Sharma**, Director, Airific Systems Pvt. Ltd. shares the journey with The Machinist

What was the motivation behind this start-up and how has been the journey since then?

Well, to answer this question, I would need to go even further back. I am an engineer, by education, from The University of Texas at Austin, and therefore as you can imagine technology has always been at the forefront of what I decide to do. We, as a family, have other businesses in the commercial real estate field, and we also develop and market building and energy management systems. Advant Navis Business Park, one of our campuses present in sector 142, Noida, has always been ahead of time with the technology deployed within the campus. UVGI systems for air disinfection is something we always discussed as a company to implement within our campuses, but for one reason or the other, it never came to fruit, until COVID-19 struck. It quickly became apparent how important it is to disinfect the air that we breathe in indoor environments, and unfortunately (or fortunately for me) there were no organized players here in India that developed such systems, and the ones abroad were too busy with their own internal requirements. It was then that we decided that we will manufacture our own systems, develop our own design software, and provide clean air to as many people as we can, because everyone deserves to



breathe free and I must say it has been a fun journey ever since!

Airific is a rather 'different' name. What does it mean and what is its genesis?

I quite like the name Airific. It is actually a combination of two words, the word 'Air' and the word 'terrific', and I think that's the end goal for us, we want to provide 'terrific air' quality to everyone, therefore I think the name is quite apt.

Tell us something about your R&D activities.

Through many iterations, and long hours spent in the office and at our manufacturing facilities, we have finally come up with what we believe as the perfect technology to deal with the issues that we see today. There are two ends to this product, and without one joining the other, the process of getting the correct solution to our clients fails. The first component is obviously getting the right hardware setup. It was very important to realise that we must design a system that we can mass produce. One whose production can be scaled up several notches if required, and in that capacity we were able to create a modular design that requires very lit-



"Covid-19 has been tough on everyone personally and professionally. But, if you see with every crisis, new businesses emerge, and go on to do big things! I guess I am holding on to that glimmer of light, and hoping that the situation resolves soon!"

the customisation that allows us to provide quick delivery times to our customers, and reduces the overall cost as well. The second component is software. It is one thing placing a UV lamp in a duct and hoping that you kill the pathogens present in the duct, for that I might not

have even needed to create this product! But, to get the right output, it is very important that each and every system is designed on the basis of each and every location. We have developed a software that takes in various input parameters in a 3D format, and on the basis of these input parameters, we are able to determine the number of lamps required to achieve 99 percent disinfection of certain viruses, bacteria, etc. in the air. The software also creates an intensity map, and portrays the kill percentage of various types of pathogens present in the air at different locations!



Each and every system is designed using CFO (computational fluid dynamics), and designed on the basis of exposure time, and UV dosage required to disinfect a particular pathogen.

How has the Covid-19 outbreak affected your business and how are you dealing with it?

Covid-19 has been tough on everyone personally and professionally. But, if you see with every crisis, new businesses emerge, and go on to do big things! I guess I am holding on to that glimmer of light, and hoping that the situation resolves soon!

Disinfection or neutralizing the virus has suddenly become everyone's priority in the New Normal. Is this what inspired your team to come up with UVHeal SafeAir?

To answer the question, yes. But it is so much more than that. Did you know that there is a term that coined in the West called 'Sick Buildings'? This is a term that has been recalled over and over again over the last several years. The reason for buildings being termed as 'sick' is the bad quality of air circulation. Mold and fungi accumulation are common themes in Air Circulation units, and many people are allergic to such exposure. Therefore UVGI technology has been used extensively

to eradicate these types of problems, and it is my goal to bring the same to India.

How does this innovation work and has it been certified by the relevant authorities in India?

The name of the product we are promoting at the moment is called UVHeal SafeAir. It is an in-duct disinfectant for continuous air supply for central air conditioning systems. The modular design of this product allows you to get the best solution for your requirements. Each and every system is designed using CFO (computational fluid dynamics), and designed on the basis of exposure time, and UV dosage required to disinfect a particular pathogen. Air disinfection takes place through the air being forced by natural convection into the irradiated region of a UV disinfection device. The air then passes through the UV rays from the germicidal lamps within the UVHeal SafeAir system. The UV rays render the airborne microorganisms, such as viruses, bacteria, yeasts and fungi, inactive by disrupting their cellular membranes and by damaging their DNA or RNA. This technology provides a range of Industrial Ultraviolet Disinfection Systems that prevent the spread of airborne bacteria, viruses and mold within public areas. Public places like airports, hotels, corporate offices, hospitals, movie theatres etc. admit not only thousands of people on a daily basis but also several airborne microorganisms.

We were recently accredited by the Sriram Institution of Research to be 99.9 percent effective in the disinfection of various types of microorganisms present in the air.

What's the way ahead for Airific from here on?

There's a long way to go, we have only gotten started. UVHeal SafeAir is an important product for us, and we will keep trying to bring in new technology to it. We also have something very cool and interesting coming up for people at homes. Very soon you will be able to breathe safe air at your homes too, and we hope to bring you this technology within the coming days! 

By Dr. Jairam Varadaraj

TQM: A SUSTAINABLE, COMPETITIVE ADVANTAGE

The levers to accomplishing a sustainable competitive advantage are many; but if one were to delve deeper, you would find that quality forms the guiding thread across every internal touchpoint.

A crisis has a way of concentrating the mind. Conventionally, a lapse in quality could translate to massive recalls and even lawsuits. But despite their impact, these events are just a sliver of the full scope. If an organisation is to survive and remain ahead of its competitors and predators, it will need to build differentiation by providing specific value to their customer base. Creating and sustaining a competitive advantage is one way of achieving this goal i.e., the ability to possess some advantage relative to their competitors. And there exist several routes to achieving this – via building a cost advantage, which is fairly straightforward. A value advantage, where an organisation provides a differentiated offering perceived to be of superior value, or via developing a focus advantage i.e, focus on a specific market niche with a breakthrough tailored offering. The levers to accomplishing a sustainable competitive advantage are many; but if one were to delve deeper, you would find that quality forms the guiding thread across every internal touchpoint.

Indeed, it is important to keep the rare disaster from happening. But for organisations well focused on building a sustainable competitive advantage in the marketplace, simply reacting to quality problems is no longer tenable. For example - quality, cost, delivery (QCD) is a 'three-dimensional' approach and if a problem exists with one dimension, the others will inevitably suffer. Being good at quality is therefore barely sufficient – they need to be smart about it as well. In effect, quality is no longer mainly a question of bottom-line savings but of top-line revenue generation.

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So yes, organisations must learn to think about quality quite systematically and strategically. It is essential to build the early stage foundations of quality awareness namely, developing operating systems and promoting greater transparency about quality defects.



Fundamentally, quality is about meeting or exceeding customer expectations: every day, every shipment, in each product, year after year. That's where the true value is, measured not only in higher revenues from greater customer satisfaction but also in higher operational efficiency and effectiveness due to increases in productivity and innovation—and even employee engagement.

For example - the ISO 9000's definition of quality is the 'degree to which a set of inherent characteristics fulfils requirement'. The customer must be considered as well as the attributes of the product and the degree to which the product or service meets the needs of all stakeholders. Based on these characteristics we define the quality of a product as 'good', 'average', 'excellent'. Adherence to a recognized quality standard is essential for dealing with certain customers or complying with legislation. If an organisation sells products in regulated markets, such as health care, food, or electrical goods, one must be able to comply with the health and safety compliance standards designed to protect consumer's interests.

Achieving these outcomes requires investment. And the secret sauce by which an organisation can build an intrinsic focus on quality and develop a sustainable competitive advantage in the market is via the adoption and implementation of TQM.

With origins tracing back to the 1920s, TQM has received the widespread acclaim that it currently en-



“Being good at quality is therefore barely sufficient – they need to be smart about it as well. In effect, quality is no longer mainly a question of bottom-line savings but of top-line revenue generation.”

joys, somewhere in the late 1900s. The credit for this revolutionary quality management principle goes to Edwards Deming, Joseph Juran, and Kaoru Ishikawa. Deming was hired by the Japanese industry leaders to come up with solutions that would improve industrial productivity, thereby increasing Japan's share in the global market. His statistical approach soon led to what is now known as the Japanese post-war economic miracle.

Later, Deming authored the 14 key principles of total quality management in his seminal work, ‘Out of the Crisis’. These principles defined the total quality management movement worldwide.

Total Quality Management (TQM) excellence helps organisations across the world increase market share and build the necessary sustainable advantage they need to succeed:

ENHANCED EFFICIENCY IN COST MANAGEMENT

Though the initial time and cost of installing an efficient Total Quality Management system is high, it has often been noted that this initial cost has long-term benefits. This preliminary expenditure ensures that undue expenses, wastages, and defects are significantly reduced. This helps enhance the overall cost management in the organisation.

PROFITABILITY ON INVESTMENTS

Efficient cost management contributes to higher productivity. There is also a marked increase in the economies of scale, which makes sure that businesses reap more at minimal costs. This productivity then accentuates the return on investment and the profitability of the organisation.

EMPLOYEE MORALE AND PRODUCTIVITY

TQM involves the full commitment from the management. Once ingrained as a way of doing things, the business can reap the benefits of TQM – including a healthier bottom line. When your employees are more involved, it gives them room to be innovative and engaged, increasing their sense of job security and boosting their employee's morale.

CUSTOMER CENTRICITY

Implementation of TQM measures results in superior quality service to customers. This enhances the customer's satisfaction and loyalty towards your products. Besides, businesses can go a step further and involve the customers in the overall process, creating a collaborative environment for all stakeholders.

ACCENTUATED ADAPTABILITY

As there is a continuous evaluation at all the stages of the business, TQM ensures that the organisation can adapt to various changes in the economy. As a result, the organisation gets a higher competitive advantage and a strong image as a highly adaptable leader in the market.

So yes, organisations must learn to think about quality quite systematically and strategically. It is essential to build the early stage foundations of quality awareness namely, developing operating systems and promoting greater transparency about quality defects. The next stage of maturity focuses on strengthening cross-functional accountability and collaboration. At the third stage, quality forms the basis for much of the organisation's decision making, entwining itself so deeply that it becomes a part of the culture and essential to the company's value proposition.

Managing change and solving problems sounds quite simplistic. But in reality, this often results in disruption of colossal proportions if not managed efficiently. At the very core, organisations would greatly benefit from implementing the scientific method of problem-solving PDCA (Plan-Do-Check-Act), popularized by W. Edwards Deming. A simple four-stage effective approach for continually improving processes, products, and services. Problems are resolved using hypotheses and continuous feedback loops resulting in valuable learning and efficient, objective aligned outcomes.

Not every organisation needs to achieve the highest levels of quality maturity and certainly not all in one go. But every organisation must recognize that investments in quality capabilities open new opportunities for building sustainable competitive advantage. 

The author is Managing Director, Elgi Equipments Limited

By Niranjana Mudholkar

ENHANCED VISION

The new Kodak TV India manufacturing plant will develop and test more Android TV products within India thereby reducing dependency on other countries, says **Avneet Singh Marwah**, Director and CEO, Super Plastronics Pvt Ltd

You have recently announced that you will be investing more than INR 500 crore in a fully automated TV manufacturing plant in Hapur, Uttar Pradesh, over the next three years. What is driving this expansion plan?

The new Kodak TV India manufacturing plant will develop and test more Android TV products within India thereby reducing dependency on other countries. With this, Kodak TV India aims to be one of the first Indian companies to make such a huge investment towards TV manufacturing within the country and strengthen its position as one of the leading manufacturers in the affordable smart TV segment.

When will this plant be operational, and what will its capacity be?

We are aiming to produce a million TV sets annually. The new facility will be equipped with two fully automated, AI-enabled manufacturing lines to facilitate near-contactless production. The plant should be operational in 2021, depending on how the pandemic pans out.

What is your current manufacturing capacity?

The current capacity is around half a million units.

How has the Covid-19 outbreak affected your business, and how are you dealing with it?

Like most businesses, SPPL also shut its factories in the wake of Covid-19, which had severe repercussions on business and workforce, and led to a huge revenue loss. By following the safety precautions and standards, we resumed work mandating social distancing and regular temperature checks.

What is the situation after the unlocking has started?

We saw that people have started shifting to OTT apps, and a big TV screen only enhanced the experience of watching content over smaller screens like laptop, phones, etc. We saw an increase in the rating of viewership's in India, which broke all the records. The demand for smart TVs grew and as malls and shopping complexes are closed, ecommerce played an important



role and offered huge discounts to further support sales.

The growing demand for Made in India products further fueled this demand and there was a lot of pent up demand from the lockdown period. We were the first TV manufacturing plant to open after the lockdown and had a ready inventory to meet this demand and continued to serve over 15000 pincodes in India. We have already achieved our 100 percent production capacity and invested in further expansion.

How would you analyse the evolution of the Kodak TV brand in India in the last few years?

We launched Kodak in 2016 and since then have developed products that are aligned to the needs of Indian customers. We have had back to back successful product launches such as with our XPRO series in December 2019, CA series in March 2020 and the recent extension of XPRO series with 7 new variants. These recent models focus on assisting consumer demands of cinematic screen experience, work from home requirements and affordable prices.

Over the years, we have also strengthened our after sales service to provide 100 percent customer satisfaction. Our service network has increased from 220 service points to 550 service points in India.

An important aspect behind this success is our manufacturing strength that we have established since 2016. Today, we are the second largest TV brand manufacturer in the country and with our latest investment we will be able to reduce dependency on imports, whether it's for the product development or the af-

ter-sales service. By next year, we want to expand our presence to over 17000 pin codes and are already investing in creating the ecosystem. The best part about Kodak has been its brand equity and the nostalgic sentiment associated with the name. Kodak is the world's fifth-most recalled brand.

I think everyone in India has used Kodak products in their life and that legacy plays a role in the success of all our TV models.

Do you think that the lockdown has been a blessing in disguise to push consumers towards smart TVs?

Yes, the lockdown led to behavioural changes in the customers which increased the likelihood of them purchasing a smart TV. As mentioned above, we saw an increase in content consumption over OTT apps which led to increased demand for Smart and Android TVs. There was also an emerging demand for a complete work from home and entertainment solution. A large screen Android TV offering cinematic experience in affordable prices was an ideal fit for such requirements. As a result, the TV ceased to be a non-essential commodity in the traditional sense.

What are your plans with brand Kodak and its growth in the Indian market?

We were the first partners for Google-certified Android TVs in India. We recently launched seven new TV variants under our XPRO and CA series. The 7XPRO Android TVs are available in six variants- 32-inch (HD), 40-inch (Full HD), 43-inch (Full HD & Ultra HD), 50-inch (Ultra HD) and 55-inch (Ultra HD); and a new 75-inch model under the CA series which was launched in March. All our products are available on Amazon and Flipkart.

Currently, Indian TV manufacturing industry depends on imports of raw materials from various countries and has a value addition of 10-15 percent. Our investments, in the new manufacturing plant, are a step towards the long term vision of self reliance or Atmanirbharta in the TV manufacturing industry. With this plant, we will not only increase our value addition to 50-60 percent but also elevate India as an exporter of TVs to other Android markets across the world.

We are very excited about the success of our latest models in India- The XPRO variants. They have been successful because of the latest features and technology such as RM Cortex-A53 Quad-core processor, Android 9.0 interface, and multiple connectivity options with USB 2.0, HDMI ARC/CEC. The Bluetooth v. 4.1 comes with a user friendly remote and has been



We are aiming to produce a million TV sets annually. The new facility will be equipped with two fully automated, AI-enabled manufacturing lines to facilitate near-contactless production.

designed in India. It has dedicated hotkeys for Netflix, Amazon Prime Video, YouTube and Google Play Store to provide a premium entertainment experience to our customers.

Tell us about the R&D activities of Super Plastronics.

We are the first Indian TV brand to get the Android license for manufacturing and developing Android TVs under Make in India. We are proud to announce that all our Android TVs will be completely developed in our R&D centre in Bengaluru. It will benefit Indian customers as we are currently manufacturing for the Indian ecosystem. From the content of the TV to sound, we have done extensive customisation.

The speed of technology disruption is phenomenal in today's times. How are you preparing Super Plastronics to navigate this technologically disruptive era?

I think the way technology is moving, one needs to be ahead all the time. We started working with the Google Android team two years back. Today, we are competing with the leading brands of the world in terms of innovation in a smart TV. Currently, our new Android TV can be cast with more than 1000 Applications. It includes TVs from 32 to 75 inches. We have started making a software ecosystem in India. We have collaborated with the world's top R&D firm in Bengaluru for testing. Now, Kodak Android TV can be connected to 85,000 smart home devices, which are available in India.

Apart from that, we are investing in the voice command feature in Smart Television. All our Android TVs are enabled with Google Assistant. In the next two years, we aim to offer nine local Indian languages.

Where do you see Super Plastronics two years down the line?

In the next two years, we will be more of a technology company. I feel there will be more innovation in software than hardware. We will now be focusing on exports, and we want to increase the global market share for Kodak. Out of every 10 TV sets manufactured in India, one should be from SPPL. 

By Venkateshkumar D

COLLABORATIVE PROCESS PLANT ENGINEERING

Design, integration as well as the layout of industrial equipment in terms of plant design and engineering to ensure operational efficiency has become crucial as it involves many factors.

The upheaval in customer demand for “personalised” products has increased product and process complexities for manufacturers. This increasing complexity and need to produce multiple product variations simultaneously, at different production plants across the globe are causes of concern for the manufacturing industry. There is a growing need for integrated information flow and streamlined automated processes, which are exceedingly flexible, easy to adapt, and highly efficient. The amount of data handled during plant design and various stages of production is humongous. However, with the advent of computer applications, communications, design codes, and standardisation of practices in plant design, it is now possible to collaborate in design, installation and commissioning.

To stay in business while upgrading plants to meet growing demands, plant owners and plant integrators face a list of questions that usher the need for a streamlined process. These questions usually revolve around the efficiency and sustainability of the plant design, operational costs, warranty, time-to-market, etc.

CHALLENGES

Design, integration as well as the layout of industrial equipment in terms of plant design and engineering to ensure operational efficiency has become crucial as it involves many factors. Recently, the size of the plant has been growing at a faster pace, which has increased the challenges involved in plant layout design. To meet increasing demand and to maintain the speed of the rapidly growing market, process, utilities and manufacturing industries are focusing on core technologies and new products suitable for the local market as well as increasing global requirements.

Engineering solutions should be agile, innovative, robust, and profitable at the same time. While we usually know what the client wants, very few have the resources and the capabilities to achieve that feat.

The most common challenges that plant design engineering faces can be summarized as below:

- Multiple disciplines of engineering are involved in plant design
- Need for data standardisation to enable different stakeholders involved in the delivery of a plant from concept design to operationalisation.



- Domain expertise in plant design
- Data consistency plant design when being transmitted from one stage of design to another and among stakeholders.
- Expertise in overall, basic and detailed design in multiple engineering disciplines

SOLUTIONS

Understanding that the challenges require customised and niche engineering services that best suit the needs of a dynamic market environment is a must. Be it in plant design engineering across various domains, such as Water, Power, and Oil & Gas in mechanical, piping, civil, controls & operation and structural services, there is a growing need of streamlining processes to meet increasing global demand while keeping the cost low and within budget.

The following shall be considered in plant design for cost optimisation and reduced time to market –

INCREASED PLANT PERFORMANCE

Increased performance of the plants plays a crucial role in ensuring cost optimisation and reduced time to market. This can be achieved by minimising maintenance costs, increasing maintenance intervals, reducing energy consumption, and improving the yield of valuable products.

OPTIMISATION OF DESIGN STAGES

The number of design stages is linked with capital cost

and operating cost in plant design. The more the stages, the higher the capital cost and the lower the operating cost.

DESIGNING THE PLANT WITH CONTINUOUS PROCESS STEPS

While designing the plant, manufacturers should identify the process to increase the quality constantly while lowering the operational cost. The continuous process tends to increase the consistency in the quality of the product and reduce the operational cost by effectively using the utilities and reduced waste. The batch process tends to be inefficient and more difficult to control.

INCREASED AUTOMATION

Automation in plant design will help in making the plant more economical and efficient. The key process is automated using a control system by integrating machines, monitoring performance, and key information being communicated to increase productivity. It reduces the time loss, electrical loss, and helps in focusing more on eco-friendly methods to protect the health of employees which adds up to the increased performance of the plant.

OPTIMISATION APPROACH

An optimised approach in plant layout will determine the most efficient plant layout arrangement equipped with associated connectivity. Connectivity, operations, land, area, safety, construction, retrofit maintenance, organised production, etc. are the cost and management drivers to be considered in plant design. The vertical structure mounted arrangement (multi-floor process plant layout) is the optimised approach in process plant layout arrangement rather than grade mounted horizontal arrangement. The land area, the number of floors, allocation of equipment to each level, and overall layout of each level were determined by the optimisation model as per the process required to minimise the total cost.

COMPUTER-AIDED SIMULATION

Computer-aided simulation provides a structured procedure for understanding and quantifying the new improvements in plant design. It is actively used in the development, decision-making, and subsequent improvement in plant design, aiming at maximising the process performance and minimising the processing cost. The computer-aided simulation starts with process data selection and validation, creating the model and validation, recognizing constraints and optimising process parameters and model through virtual commissioning/training simulator.

REMOTE WORKING TOOLS

In the engineering services industry, the exceptionally

high demand for plant design and shorter time-to-market has led to a lack of expert engineers and skills to do this work. With the availability of software tools and communications, process plant design phases of basic and detail engineering, which forms the bulk of the work, can be done remotely across the globe with cost advantages that can be leveraged with experience.

NEED FOR COLLABORATION

Organisations are moving towards providing better customer-centric products and services to improve market share and size with continuously growing revenue. An engineering plant is a complex arrangement of different equipment working in a synchronised manner to produce the desired product. Designing of the plant facilities involves multiple and diverse stakeholders. Whether it's the architect, structural and MEP engineer, plant designer or project specialist, this assorted design team need to share important project information with each other and stakeholders efficiently.

A typical project would lead to multiple departments collaborating during various stages, and if this collaboration is seamless, it makes the project successful. For example, during the plant design process, the capacity of the pump would be designed by the process engineer and the head requirement and construction of the pump would be calculated by the mechanical team. Other teams will also be involved to install the motor and automate it, and all these teams need to be in sync for the efficient functioning of the plant. Multi-disciplinary engineers seamlessly collaborating with other disciplines during the development of plants will lead to the economic evaluation of the process, design, and sizing of equipment, installation, and maintenance of the plant. It also encourages accountability, streamlined project management, and gets everyone involved in the sense of ownership.

PLANT DESIGN ENGINEERING IN THE FUTURE

Collaboration has always been the key to success in many industries. The Architecture, Engineering, and Construction (AEC) industry consists of separate players who work together to bring a project to fruition. Efficient co-operation between client and all the parties is vital to reduce the iterations and bring the design to life in its entirety. Better collaboration helps reduce the time taken for project completion and errors while saving huge costs. The availability of GIS technologies helps optimise plant installation and total cost of the plant while the design from concept to realisation of the process plant is digitised for a seamless process. 

The author is Technical Manager at QuEST Global.



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FROM SHOPFLOOR TO TOPFLOOR

The maiden edition of 'The Machinist Manufacturing Conference & Exhibition 2020' was successfully organised on a virtual platform on August 28, 2020.

'The Machinist magazine' has conceptualised and created the Manufacturing Conference and Exhibition 2020 (MCE 2020) a virtual event. This first virtual flagship event from 'The Machinist magazine' received overwhelming response from the industry as well as from partners.

THE PERFECT PLATFORM

This virtual platform gave a very good opportunity to manufacturing industry professionals and key suppliers to come together on a single virtual platform in a mutually beneficial manner. Not only did the virtual delegates get an opportunity to experience top class content with the Conference, but they also got to meet some of the best suppliers providing the right solutions and services for their professional needs at the Exhibition. Well, like all such engagements brought to you by 'The Machinist magazine', this event was also high on quality and value for time.

MCE 2020 in Numbers

Attendees – **1500+**
 Speakers – **19**
 Exhibitor partners – **12**
 Panel Discussions – **Three**
 One-on-One sessions – **Three**
 Presentations – **One**

THE EXHIBITION

The exhibition section of MCE 2020 was truly special since it addressed the all-round requirements of a shopfloor. Rather than crowding it with 'Me Too' exhibitors, it was actually an elite get together of

suppliers providing different and best in class solutions for the progressive manufacturing organisations operating in India. Visitors could virtually visit their stalls, make enquiries, speak to their representatives, chat with them, and even place orders at MCE 2020.



"After the last few very challenging months of 2020 due to both the economic slowdown as well as the Covid-19 pandemic, our opinion is that the Indian market will grow significantly."

Shashank MP, President, FFG MAG India



"Manufacturing sector is in the recovery path after experiencing difficulties of pandemic time and expected to reach normalcy soon with new protocols."

Subrahmanya Kumar, Country Sales Manager – India, SBU Metal Precision, Tyrolit India Superabrasive Tools Pvt. Ltd.



“Industries must adopt new business techniques, digital platforms, smart marketing tools, and social distancing on shopfloor to achieve smooth business operations.”

Mohini Kelkar, Director – Business Development, Grind Master Group



“The biggest differentiator is the competitive advantage India offers with a young resourceful workforce.”

Preetham P A, Aerospace and Defense Lead, Forbes and Company Limited



“I am very confident of Indian Manufacturing in long term 12 ~15 months period thanks to various reasons like our own consumption, less dependency on export, local manufacturing initiatives like Make in India and so on.”

Yatendra Kumar, Business Head, MotulTech India



“We are already experiencing a steady growth in our business as the industry is looking at optimisation of the investments and the automation which would be the key for future success.”

Shyam B V, MD, Blum-Novotest Measuring & Testing Technology Pvt Ltd



“The best outlook that we hope for is an early restart and accordingly plan to re-skill and up-skill to be leaner, smarter and ready.”

Deepak Paul, MD, igus India



“With Industry 4.0 adoption led by companies, growth and productivity is expected to increase exponentially.”

Dr. Kaustubh (Keb) Nande, Director Marketing-Korea, ASEAN, Pacific & India, Manufacturing Intelligence division, Hexagon

THE KEYNOTE PANEL DISCUSSION

The Keynote Panel discussion was themed: Disruptive Times, Evolving CEOs. Through it, top leaders shared how they are adapting to the various market disruptions - including the pandemic. They discussed how they are steering their organisations in these difficult times. The Panellists included: Kishore Jayaraman, President, Rolls-Royce, India and South Asia; Suresh KV, Country Head – ZF in India; Rajeev Joisar, Managing Director – India, Bombardier Transportation; Satyakam Arya, MD & CEO, Daimler India Commercial Vehicles, and Krishan Kohli, MD, Continental Automotive Brakes Systems (India) Pvt. Ltd.

IMPORTANT PRESENTATION

Akshay Kumar NV, Senior Manager – Sales & Vinay Kumar Shetty, Manager – Sales, FFG MAG India, shared some very useful information on ‘Total Solution for Smart Manufacturing’, through an insightful presentation.

KEEP IT RUNNING

A session called ‘Keep it running’ saw participation of some of the finest manufacturing professionals discussing the challenges of running and maintaining the plant in the New Normal. The wonderful panellists included Raghavendra Deolankar, Head Operations – Region India, ZF India Pvt Ltd; Abhijit Janugade, Head - Production & Maintenance, Draexlmaier Manufacturing India; Sameer Mathur, Chief Operating Officer, Schaeffler India; Shrikant G Mundada, Chief Operating Officer, Metalman Auto Private Limited, and Shailesh Sharma, Director of Manufacturing, SKF India Ltd.

RIGHT RESTART

Four industry leaders came together in this panel discussion to talk about the how and what of restarting operations the right way. The panellists included T K Ramesh, MD & CEO, Micromatic Machine Tools Pvt. Ltd.; Ravi Prem, COO, Forbes & Company Ltd. (Brand Totem); Yatendra Kumar, Business Head, MotulTech India, & Deepak Paul, MD, igus India.

ONE-ON-ONE SESSIONS

Besides moderating all the three panel discussions, The Machinist Editor Niranjan Mudholkar also conducted three interesting one-on-one sessions during MCE 2020. The first was ‘Make Better in India’. In this special one-on-one chat, Zurvan Marolia, Senior Vice President, Godrej & Boyce, discussed the need to focus on excellence and supply chain management in the quest for making India a global manufacturing hub.

The second session titled, Clean Bowled focussed on ‘Hygiene & Cleanliness on the shopfloor’. In this session, seasoned industry professional, Sanjiv Paul, Sr. Vice President, Manufacturing, India Yamaha Motor Pvt. Ltd. threw light on cleaning up old habits to maintain both social distancing and sanitation on the plant.

The Third session was with Georg Graf, Regional Representative India Freudenberg Group. Graf, who is also the President of the Indo-German Chamber of Commerce, shared his story as a western CEO working in India. 

By Kanishka Arumugam

ENSURING SMOOTH BUSINESS IN THE COVID ERA

The Covid-19 crisis allowed businesses to engage in new strategic directions. It also encouraged to accelerate the implementation of existing ones and to optimise the organisational structure.

With one of the primary pieces of advice to regularly wash hands thoroughly to prevent the transfer of the disease, it means more than ever that the provision of clean and safe water by utilities is vital to stop the disease spreading. The main purpose of the pump industry is to provide clean water to mankind through its sustainable water technologies such as pumps and systems.

As part of the culture and the specificity of the healthcare system in India, people tend to save money for difficult times, making them withstand for a little while. The government lifted the lock-down in April with restrictions as the survival of the population and economy was at stake. Many factories started to operate again while taking all necessary safety measures. Still, activities were impacted due to disruptions in the supply chain.

There is a need to reduce the fixed costs and swap it with variable costs. For example, salary is fixed cost and incentive for sales people would be a variable cost. When sales goes down fixed costs remain the same. One should take steps to reduce fixed costs and leverage it with variable costs that will help business performance.

The Covid-19 crisis allowed businesses to engage in new strategic directions. It also encouraged to accelerate the implementation of existing ones and to optimise the organisational structure. Our organisation took the last few months to think and pivot further our business model towards a sustainable water technology company. Fresh water is the basis of life on our planet, a basic human right, a critical factor in the



health of our global environment, and a vital part of the business operations in a wide range of industries. But this resource is fragile and prone to crises. According to the United Nations, four billion people—more than half of the world's population—suffer from water scarcity every year. The diversity of freshwater species has declined more than 80 percent since 1970. And in 2018, businesses worldwide reported \$38.5 billion in financial losses related to water scarcity or pollution. In India, we have significant water pollution issues and around 10 percent of electricity is used to run pumps. This pandemic crisis emanates from environmental issues. All this contributed to awake our consciousness for planet earth. The future is more than ever related to sustainable companies.

Companies engaging in a reflection about their organisational structure. Due to the pandemic, many salespeople could not travel as before, so the industry as whole; are now looking for new ways to improve sales processes, communication as well as the thinking process by leveraging digitalisation. This lock-down experience showed us that some business functions such as finance and HR can be efficiently managed from home. Another consideration is to revisit the cost structure and make sure to do more with less by hiring the best talents. This opens-up opportunities for women who are a pool of talent which is still under-explored in In-



“There is a need to reduce the fixed costs and swap it with variable costs. When sales goes down fixed costs remain the same. One should take steps to reduce fixed costs and leverage it with variable costs that will help business performance.”

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By embracing sustainability, we envision a realistic opportunity to positively impact the environment using the technology and building a future-proof business model.

dia and who are seeking more flexible work arrangements to balance work and family life.

Third, in line with the digitalization of business and consideration of new business models, companies are now considering a diversification strategy, an opportunity driven by the Covid19 crisis. In fact, the current situation is the occasion to evaluate other business opportunities rather than putting all our eggs in one basket, so we are looking at new business opportunities and strategic partnerships.

Crisis helps build resilience in terms of mindset; so we prepare for the worst. The crisis in the past have taught us all some useful lessons and showed us that we can grow out of them. Again, while the Covid-19

Crisis may not have affected many companies very hard financially, it has helped us pursue growth aspirations by thinking on a deeper level about building more sustainable water solutions for the world, engaging in diversification and digitalization, and managing risks by diversifying portfolio.

In the end, I am optimistic about India as it represents a market with 1.3 billion people and incredible potential. Everything happens for a reason. Five years down the line, perhaps we will look back and admit that some good things came out of this crisis such as more sustainable products and solutions for the world. By embracing sustainability, we envision a realistic opportunity to positively impact the environment using the technology and building a future-proof business model. 

The author is Co-CEO Ekki Pumps

NEW DRILLING SYSTEM THIS FALL – T-A PRO

Allied Machine's team of engineers developed technology that takes the 'go-to' solution for general purpose holemaking.

Allied Machine and Engineering has announced its revolutionary high-penetration drilling system, the T-A Pro. After 35 years of spade drilling success with their iconic T-A (Throw Away) insert, the best just got better. Allied Machine's team of engineers developed technology that takes the 'go-to' solution for general purpose holemaking to a performance level previously unachievable by a spade insert.

The T-A Pro drill combines material-specific insert geometries, a redesigned drill body and a proprietary coolant-through system to allow penetration rates which run at speeds nearly 30 percent faster than other high performance drills on the market. Coolant outlets are designed to direct maximum flow to the cutting edge providing quick heat extraction where it is most critical - even at significantly higher speeds.

"THE T-A PRO DRILL WILL TARGET ALL INDUSTRIES, OFFERING PHENOMENAL TOOL LIFE AT HIGH PENETRATION RATES, ESPECIALLY IN SITUATIONS WHERE THE BALANCE OF CHIP FORMATION AT HIGH PENETRATION IS CRITICAL."

SAL DELUCA, Product manager



Material-specific insert geometries produce impeccable chip formation and the drill body incorporates straight flutes redesigned for maximum coolant flow and excellent rigidity. These design elements combine to extend

tool life, create consistent quality holes, and provide superior chip evacuation. As a result, the T-A Pro drill offers machine shops and high production manufacturers a spade drill with incredible speed and a cost per hole averaging 25 percent less than existing drills.

The T-A Pro drilling system will be available in diameters ranging from 0.4370" – 1.882" (11.1mm – 47.80mm) and is ideal for holes ranging in stub, 3xD, 5xD, 7xD, 10xD, 12xD, and 15xD depths. The drill will

be stocked in both imperial and metric shanks, with flat and cylindrical variants. The carbide insert geometries offered initially will cater to the following ISO material classes:

- Steel (P) with AM300 coating
- Cast iron (K), with TiAlN coating
- Non-ferrous (N) with TiCN coating.

Product manager, Sal Deluca, states, "The T-A Pro drill is designed for use in applications ranging well beyond general purpose drilling. It truly will target all industries, offering phenomenal tool life at high penetration rates, especially in situations where the balance of chip formation at high penetration is critical."

The T-A Pro drilling system will be available to order from Allied Machine's distributor partners in late October.

For more information,
www.alliedmachine.com

A FULLY INTEGRATED SERVO MOTOR FOR THE NEXT GENERATION

An optimal solution would be a motor which is highly compact, more reliable, requires fewer cables, offers broad capability yet is easy-to-use, making the system almost maintenance-free.

Market demands are driving manufacturers to reshape their product portfolios, with focus on critical components to make machine building simpler, faster, easier, and the machines themselves more reliable. The Electric servo motor used in multi-axis machines is a critical component in the spotlight at present. An optimal solution would be a motor which is highly compact, more reliable, requires fewer cables, offers broad capability yet is easy-to-use, making the system almost maintenance-free.

Moog offers the SmartMotor - a highly programmable, integrated servo motor system that is integrated with a motor, an encoder, an amplifier, a controller, RS-232/RS-485 communication, and I/Os.

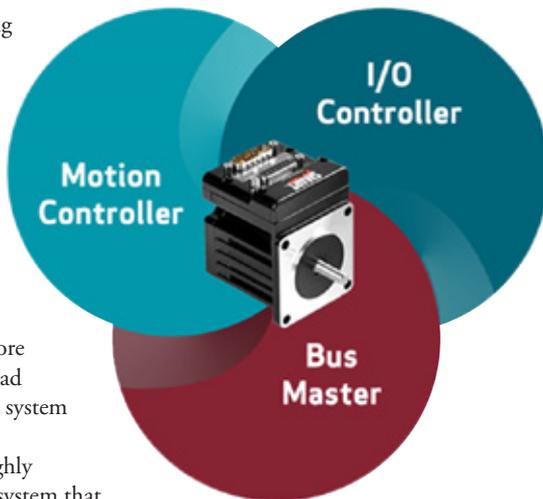
All aspects of motion and I/O, along with data collection and error checking, may be controlled by a single SmartMotor. In large machines with many motors and drives, this frees up the main (centralized) controller from the burden of handling localized tasks. This unburdening opens communications bandwidth for optimized, faster control and fault handling of the overall system. The SmartMotors therefore become the distributed control masters to sub-systems of the larger machine.

Combitronic Technology – High-speed transparent communications over CAN Bus

Combitronic, developed by Moog Animatics, is a peer-to-peer communications protocol using local common programming syntax. Incorporating SmartMotors servos, Combitronics enables any SmartMotor device to control multiple other SmartMotors and larger drives on a given machine.

Combitronic operates over a standard “CAN” (Controller Area Network) interface. It may coexist with either CANopen or DeviceNet protocols at the same time. Unlike these common protocols however, Combitronic requires no single dedicated master to operate. Each Integrated servo connected to the same network

“ALL ASPECTS OF MOTION AND I/O, ALONG WITH DATA COLLECTION AND ERROR CHECKING, MAY BE CONTROLLED BY A SINGLE SMARTMOTOR. IN LARGE MACHINES WITH MANY MOTORS AND DRIVES, THIS FREES UP THE MAIN (CENTRALIZED) CONTROLLER FROM THE BURDEN OF HANDLING LOCALIZED TASKS.”



the controls into the motors themselves reduces or eliminates the control cabinet, making the machine much smaller.

- **Reduced Cost:** Fewer components and no cabinet cut costs dramatically.
- **Reduced Development Time:** Fewer components to specify, purchase, learn and mount make for dramatically reduced development cycles, getting to market faster, generating revenue sooner and producing a compelling competitive advantage.

“AN INTEGRATED MOTOR OR SIMPLE “Y” CABLE CAN BE SWAPPED OUT IMMEDIATELY. THE FAULTY COMPONENT CAN BE DEBUGGED, OR SIMPLY SENT BACK TO THE MANUFACTURER FOR ANALYSIS AND REPAIR — WHILE THE MACHINE CONTINUES TO PRODUCE.”

communicates on an equal footing, sharing all information, and therefore, sharing all processing resources. Combitronic communications operate over a standard “CAN” interface, the same basic hardware used in most automobiles as well as in familiar industrial networks such as CANopen and DeviceNet. Unlike these common control networks, however, Combitronic has no master or slave.

Combitronic™ protocol features:

- 120 axis node count
- 1 MHz bandwidth
- No master required
- No scan list or node list set up required
- All nodes have full read/write access to all other nodes

Combitronic technology provides the following design and advantages:

- **Reduced Size:** Compressing

- **Reduced Field Service:** Machine repair moves from debugging a cabinet full of wires and controls, to a simple component swap of motors and standard cables.
- **Reduced Down-Time:** Keeping component spares on-hand can virtually eliminate down-time. A traditional control can only be debugged in the cabinet while the machine is down, and the factory processes stopped. An Integrated Motor or simple “Y” cable can be swapped out immediately. The faulty component can be debugged, or simply sent back to the manufacturer for analysis and repair — while the machine continues to produce.

For further information, please contact: Avinash Seetharam; Email: savinash2@moog.com

MAINTENANCE ACCORDING TO THE TRAFFIC LIGHT PRINCIPLE: SMART DRYLIN LINEAR GUIDE FROM IGUS

New intelligent solution for the predictive maintenance of the drylin W linear systems

The drylin linear guide systems have to withstand extreme conditions in continuous operation or even in abrasive environments. In order to have the linear guides slide without lubricant, igus relies on linear bearings made of high-performance polymers. But when should I change the bearing? The new smart linear carriage from igus helps here. In accordance with the traffic light principle 'stop when red, go when green', the maintenance technician receives information about the maintenance requirement at the push of a button.

Continuous operation, glass dust and wood fibres are extreme challenges for the sliding elements in drylin linear guides. igus has developed a smart drylin linear system to detect wear in the tribo-polymer bearings at an early stage. The principle: a sensor, attached directly to the liner, measures the wear of the bearing, which is insensitive to dirt and dust, and gives the user a signal in good time when the wear limit is reached. The signal can then be transmitted from the icom communication module to an intelligent system via Bluetooth, LoRa or LTE and evaluated. "On the part of our customers, however, there was also feedback that a uniform, superordinate and economical system for processing the signals was not yet available. That's

"ON THE PART OF OUR CUSTOMERS, HOWEVER, THERE WAS ALSO FEEDBACK THAT A UNIFORM, SUPERORDINATE AND ECONOMICAL SYSTEM FOR PROCESSING THE SIGNALS WAS NOT YET AVAILABLE. THAT'S WHY WE HAVE NOW ADDITIONALLY DEVELOPED A SOLUTION THAT FULFILS THE FUNCTION COMPLETELY WITHOUT A NETWORK CONNECTION."

STEFAN NIERMANN, head of drylin drive technology at igus GmbH.



Based on the traffic light principle, the maintenance technician is now informed via an LED display on the carriage of the drylin linear guide whether the liner needs to be replaced.

why we have now additionally developed a solution that fulfils the function completely without a network connection," says Stefan Niermann, head of drylin drive technology at igus GmbH. Based on the traffic light principle, the maintenance technician can now find out via a red/green LED display on the carriage whether the liner is in good condition or has already reached the wear limit of 0.5mm. All he has to do is press a button on the carriage. Maintenance can be planned in good time.

"THE NEW SMART LINEAR CARRIAGE FROM IGUS HELPS HERE. IN ACCORDANCE WITH THE TRAFFIC LIGHT PRINCIPLE 'STOP WHEN RED, GO WHEN GREEN', THE MAINTENANCE TECHNICIAN RECEIVES INFORMATION ABOUT THE MAINTENANCE REQUIREMENT AT THE PUSH OF A BUTTON."

Bearings changed in seconds
igus has developed a sophisticated replacement technology for a quick exchange of the bearings. This allows the liner to be replaced directly on the rail. The linear axis or the multiple-axis robot with toothed belt drive no longer has to be disassembled. A free tool from igus helps in dismantling the old bearing and installing the new one. Downtime and maintenance costs are reduced to a minimum. The system can be put back into operation within a few minutes and in many cases does not even need to be referenced.

For more information, contact, Vinayak Shetty, Product Manager - drylin®, igus (India) Private Limited, Mobile: +91-9341136381; Email: vinayak@igus.in, or visit www.igus.in

NITI AAYOG TO LAUNCH NDC-TIA INDIA COMPONENT

NITI Aayog has recently launched the India Component of the Nationally Determined Contributions (NDC)-Transport Initiative for Asia (TIA). With the aim to promote a comprehensive approach to decarbonize transport in India, Vietnam, and China, NDC-TIA is a joint programme, supported by the International Climate Initiative (IKI) of the German Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and

implemented by a consortium of seven organisations. The India Component is implemented by six consortium organisations, all except SLoCaT. On behalf of the Government of India, NITI Aayog will be the implementing partner. The NDC-TIA programme has a duration of four years and will allow India and other partner countries to achieve accountable long-term targets by making a sectoral contribution.

VIBRATION-FREE MACHINING IN DIFFICULT CONDITIONS

Walter presents vibration-damping Accure•tec technology

With Accure•tec, Walter provides a damping system specially for turning and milling using tools with a long projection length. The vibration damping provided by the axially and radially flexibly positioned damper element is preset at the factory. The tools can therefore be used immediately without any time spent on adjustment.

Turning operations up to 10 x D can be manufactured with high process reliability and with very good surface finish quality using the A3000 boring bars. Examples include H7 engineering tolerances and the counterboring of generator shafts to Rz 6.3. The equally new QuadFit quick-change heads enable rapid tool changes and increase repeat accuracy ($\pm 2 \mu\text{m}$). When milling, Accure•tec AC001 adaptors up to 5 x D can be used with cutting data up to three times higher than conventional tools.

Accure•tec AC001 adaptors are ideally suited to the Walter milling cutter range. This applies in particular to high-feed milling cutters, which have their main cutting force in the direction of the spindle. This means that the system is highly versatile: For example, for components with deep cavities in aircraft construction, as well as in mechanical engineering, the aerospace industry and the automotive industry. With turning applications, the focus is on the energy sector (e.g. valves for the oil industry) and/or on the aerospace industry (e.g. landing gear). Users benefit from good vibration damping and a system



“WITH TURNING APPLICATIONS, THE FOCUS IS ON THE ENERGY SECTOR (E.G. VALVES FOR THE OIL INDUSTRY) AND/OR ON THE AEROSPACE INDUSTRY (E.G. LANDING GEAR). USERS BENEFIT FROM GOOD VIBRATION DAMPING AND A SYSTEM WITH LOW NOISE LEVELS.”

with low noise levels. Accure•tec promises longer tool life, productivity and process reliability and protects tools and machine spindles – despite higher cutting data. Walter offers Accure•tec AC001 (milling) and A3000 (turning) with all popular machine interfaces: Walter Capto™, HSK/HSK-T, SK, MAS-BT and

parallel shank.

For more information, contact: Pankaj Khaladkar, Manager – Strategic Marketing and Channel Management, Walter Tools India Pvt Ltd., Pune, India, Email: pankaj.khaladkar@walter-tools.com; or visit www.walter-tools.com

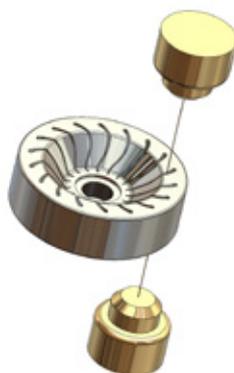
CAMWORKS ANNOUNCES PARTNERSHIP WITH CIMTECHNOLOGY

Will allow customers of both companies access to a culmination of technology

HCL Technologies (HCL), a leading global technology company, recently announced a CAMWorks partnership with CIMTechnology LLC, a leading provider of Wire EDM (Electrical Discharge Machining) software. As part of the agreement, CIMTechnology's Wire EDM programming software will be exclusive to CAMWorks. This will provide CAMWorks users access to more advanced Wire EDM programming functionality for precise and intricate part cutting.

The partnership with CAMWorks and CIMTechnology will allow customers of both companies access to a culmination of technology and a wider range of CNC programming options.

CIMTechnology have specialized in Wire EDM



for more than 30 years. Their Wire EDM technology was previously sold through OEM partners as stand-alone systems or as technology added to current programming systems. In the 1990s, CIMTechnology established its business by writing and selling the Impact CAD/CAM System for Wire EDM through Sodick, as well as developing Brother's PC-based conversational programming system for their drilling and tapping centers.

CAMWorks products include a range of milling and lathe solutions, in addition to Wire EDM. Technologies such as feature-based programming, knowledge-based machining and TechDB allow users to automate their CAD/CAM functions. CAMWorks is also fully integrated with SOLIDWORKS, which means that users can work within the familiar user interface of SOLIDWORKS as they program the CNC code for their parts.

CELEBRATING A MILESTONE

Over the last 75 years, a manufacturer of everyday products such as waffle irons and irons has evolved into a worldwide leading supplier of industrial connection technology for the three lifelines of data, signal and power, a global player fielding innovative products and solutions focusing on Industry 4.0 and digitization.

For 75 years now, the Harting Technology Group has been driving technological change and providing decisive impetus for the future. The vision formulated in 1996 by the owner family “We want to shape the future with technologies for people” remains the guiding star of its entrepreneurial activities. September 1 marks the 75th anniversary of the founding day of the family company. The manufacturer of everyday products such as waffle irons and irons has evolved into a worldwide leading supplier of industrial connection technology for the three lifelines of data, signal and power, a global player fielding innovative products and solutions focusing on Industry 4.0 and digitization.

Wilhelm and Marie Harting opened the ‘Wilhelm Harting Mechanical Workshops’ on September 1, 1945, in a repair workshop covering a good 100 square meters in Minden, Westphalia. After returning from Berlin, where he had held a leading position in a company in the aviation industry, the trained engineer had dared to take the step into self-employment in his home region. Wilhelm Harting initially concentrated

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We must be close to our customers, see the world through their eyes, know their wishes and needs and develop solutions together with them. If we produce locally, we can deliver promptly.

Philip Harting, Chairman of the Board, Harting Technology Group

on everyday consumer goods, which were in short supply after the war: Immersion heaters, hotplates, energy-saving lamps and electric firelighters that sold like hot cakes. His wife delivered the goods by bicycle in the surroundings of Minden and was paid with bread, bacon, eggs and legumes. For copper and other raw materials the company’s first buyer had set off to Cologne and Wuppertal with his rucksack. The return trip was on a coal freight wagon.

STAND AT THE FIRST HANNOVER FAIR

The nascent company had a stand at the first Hannover Messe in 1947 and received numerous orders for alternators, starters, regulators, fuel pumps and ignition distributors. Even back then, Wilhelm Harting, an energetic technician who always focused



on the needs of his customers, had his sights set on new applications and markets. The company grew rapidly and needed more space. From 1950 onwards, the company gradually moved to the neighbouring refugee settlement of Espelkamp. The barracks of a former ammunition factory offered enough space for the expanding company and Harting to provide bread and work for many refugees and displaced persons. By 1955, the company already had 500 employees and was able to double its turnover to 8.6 million D-Mark within a year.

This was the period in which the success story of the Han connector commenced. The Han (Harting standard), patented in 1956 and a registered trademark since 1957, became the standard, the epitome of the industrial connector and laid the foundation for the ascent of the medium-sized company from East Westphalia. In the following years, the Han modular programme went on to write new chapters of the success story. Thanks to the Han-Modular series, customers are able to achieve optimal design solutions for the supply of machines, systems and plants. This is enabled by the combination of individual modules for various transmission media – data, signals, power and compressed air – via industrial connector housings in standard sizes. Han-Modular stands for highly flexible, compact solutions impressing with high functionality and ease of use. Today, the Han-Modular represents ‘The market standard’ for modular industrial connectors.

Fielding a wide range of innovative products such as jukeboxes, record players, tape recorders, electromedical equipment, cigarette vending machines and magnets, the family business put in continuous growth. Wilhelm Harting had a keen perception of industry trends at an early stage. He incrementally phased out the product portfolio of the fifties – with the exception of cigarette vending machines – and firmly focused the company on the production of

connectors. With this far-sighted decision he created the foundation for today's company.

Wilhelm Harting died in 1962 at the age of 53. Marie Harting took over the helm – a challenging position – and initially managed the company on her own, before being joined by her son Dietmar as from 1967. In 1969 Jürgen Harting, the second son of the founders, joined the management. He died in 1973 in a tragic accident at the age of only 32 years.

Until 1987, Marie (who passed on in 1989) and Dietmar Harting jointly headed the expanding company. In March 1987, Margrit Harting took up her position as General Manager of the company. At the end of the 1970s, the internationalization of Harting had set in with the founding of a subsidiary in France. For more than a quarter of a century, Dietmar and Margrit headed the Technology Group, which is on its way to becoming a global company with production facilities in the USA, China, Mexico, Russia, India and Europe, among others. A good 70 percent of sales are now generated abroad.

PHILIP HARTING IN CHARGE SINCE OCTOBER 2015

In October 2015, after almost 50 years in the management of the Technology Group, Dietmar Harting handed over the reins as Chairman of the Board to his son Philip (46). Today, Philip Harting



The Board continues to keep a firm focus on the vision formulated in 1996 – ‘We want to become a global company’. To this end, the expansion of the global network of development, production and sales companies is being consistently driven forward.

and his sister Maresa Harting-Hertz (Member of the Board for Finance, Global Purchasing and Facility Management) work closely with their parents Margrit and Dietmar Harting on the Board. The body includes three managers from outside the family, Dr. Michael Pütz (Member of the Board for Human Resources and Legal Affairs) and Andreas Conrad (Member of the Board for Production and Logistics), as well as Dr. Kurt Dirk Bettenhausen (Member of the Board for New Technologies and Development).

The Board continues to keep a firm focus on the vision formulated in 1996 - “We want to become a global company”. To this end, the expansion of the global network of development, production and sales companies is being consistently driven forward. “We must be close to our customers, see the world through their eyes, know their wishes and needs and develop



solutions together with them. If we produce locally, we can deliver promptly,” as Philip Harting sums things up. Harting focuses on the automation, mechanical and plant engineering, transportation and robotics markets as well as on the key topics of Industry 4.0 and digitization. The Harting Quality and Technology Center (HQT), opened its doors in 2014, where new technologies are developed and tested, and also contributes to the company's stringent customer orientation. Consequently, the company is following the maxim of founder Wilhelm Harting: “Quality is when the customer comes back and not the product”. Customers all over the world are supplied from the advanced, ultra-modern European Distribution Center (EDC), which was inaugurated in 2019.

CHALLENGES AND OPPORTUNITIES IN CONNECTION WITH E-MOBILITY

Harting has successfully opened up new markets with its technologies in the core business of connectivity, such as e-mobility and resource-saving power generation. The Harting Automotive subsidiary develops and produces charging equipment for electric and plug-in hybrid vehicles. Harting is also making its key contributions to sustainability in the generation of regenerative energy, and has long featured as an experienced and reliable partner to the wind turbine industry. The company manufactures connectors and applications that are predestined for the extraordinary stresses of offshore and onshore plants due to location, environment, climate, corrosion and other environmental influences.

In recent years, Harting has been increasingly relying on cooperation activities, networks and partnerships such as the MICAnetwork and the Future Alliance for Mechanical Engineering, with which Industry 4.0 and digitization are being driven forward, while shaping and co-determining the networking of processes and objects. The Technology Group regards partner networks as an ideal platform for the further development of Integrated Industry. In this way, the future can be shaped and designed with technologies for people and values created. 

Source: Harting Technology Group

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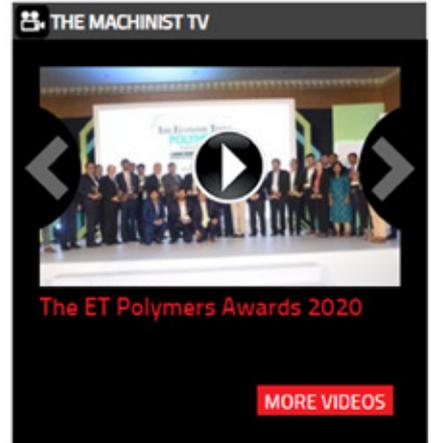
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