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THE MACHINIST

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SPINNING THE ROAD TO SUCCESS

A spotlight on the textiles manufacturing sector as we interact with Indo Count Industries Ltd.'s **Kailash Lalpuria**, Executive Director and CEO

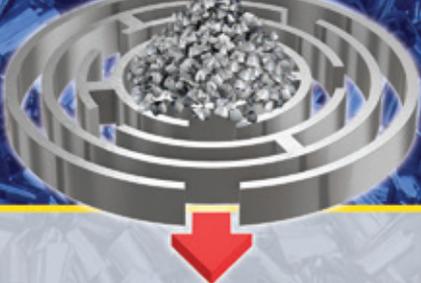
SUPPLY CHAIN MANAGEMENT
A COMPREHENSIVE LOOK AT HOW SCM HAS EVOLVED IN RECENT TIMES

WAREHOUSING
WAREHOUSES OF THE FUTURE

INDUSTRY SPOTLIGHT
KENNAMETAL INDIA SHARES ITS STORY

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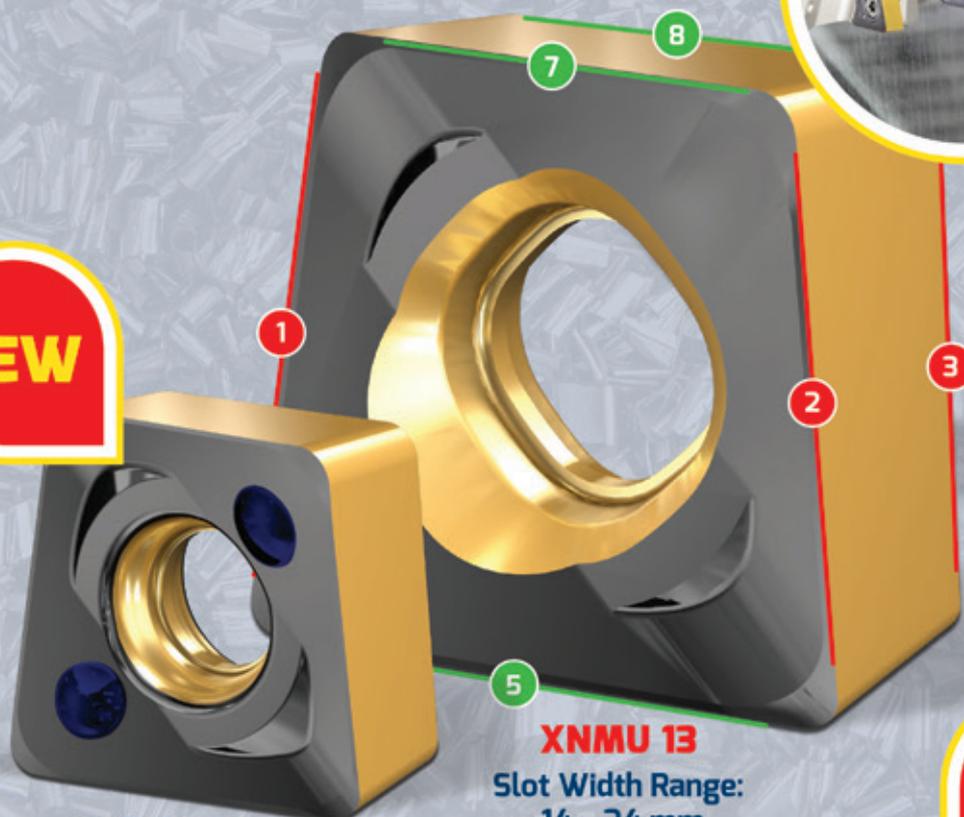
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IT'S RAINING MONEY FOR MSMEs'!

Ciao Readers!

The Indian economy, which witnessed a harsh resurgence of COVID-19 at the beginning of this year, along with stricter lockdown measures, is now getting back to normalcy. Last month, the Finance Minister announced relief measures for both businesses and individuals aggregating Rs 6.29 lakh crore with some credit-supporting measures for businesses. A new loan guarantee scheme for COVID-affected sectors (Rs 50,000 crore for Health and Rs 60,000 crore for other sectors with a guaranteed limit of 50 per cent (on expansion projects) and 75 per cent (on new projects) was announced. There was an enhancement in the permissible limit under the Emergency Credit Linked Guarantee Scheme (ECLGS) from Rs 3 lakh crore to Rs 4.5 lakh crore. However, the ECLGS will provide temporary relief but will fall short of boosting the economic growth on a long term basis.

Meanwhile, the World Bank has approved a \$500 million program to support India's nationwide initiative to revitalise the MSME sector, which has been heavily impacted by the COVID-19 pandemic. This is the second intervention by the World Bank to address the immediate liquidity and credit needs of many viable MSMEs.

Additionally, a special liquidity facility of Rs 16,000 crore has been extended again to SIDBI for meeting short and medium-term credit needs to kick-start the investment cycle and with additional focus on smaller MSMEs and businesses.

That said, come this July, the Team Machinist and ET Edge are putting together a brilliant virtual event for the manufacturing industry – Promising Plants 2021. For the conference, we have set an exciting agenda and will discuss key issues in manufacturing and similarly explore the way forward for the industry too.

Meanwhile, the current edition is something to look for. An interesting conversation with one of India's textile giants would tell you about how various campaigns and marketing strategies helped to enhance their domestic presence amid Covid-19. The current edition also emphasises on how supply chains are transforming globally by adopting agile networks, using disruptive technologies, ensuring end-to-end visibility, and moving from risk mitigation to risk management. We also give you a glimpse of an Indian startup and its growth journey in the last five years. Also, this edition takes a brief look at what the warehousing sector has been doing.

I hope you enjoy this reading this edition as much as we enjoyed putting it together. Do share with us your opinions, comments and thoughts at rahul.kamat@wmm.co.in

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Textile Minister, Shri Piyush Goyal, Takes Review of Textile Sector Policies

AFTER TAKING OVER charge of the **Ministry of Textiles, Shri Piyush Goyal** made a maiden visit to the Office of the Textile Commissioner, Mumbai, to review textile sector schemes and their progress, and suggested measures to speed up their implementation.

The Hon'ble Minister of Textiles took review of the various schemes/ activities implemented/undertaken by the Office of the Textile Commissioner, Textiles Committee, Cotton Corporation of India Ltd, Export Promotion Councils and Textile Research Organizations. The Hon'ble **Minster of State for Textiles Smt. Darshana Jardosh**, was also present in the meeting. **Shri U.P. Singh, Secretary (Textiles) and Shri V. K. Singh, Additional Secretary** joined the meeting from New Delhi through Video Conferencing.

During his interaction, the Hon'ble Minister of Textiles emphasised the need for close liaisoning and co-ordination between government agencies and the local elected representatives for making a congenial atmosphere in implementing the various government initiatives. He

viewed that the applications received under subsidy oriented schemes should be processed in a transparent manner, using automation, keeping in view the broad objective of each scheme and that necessary mechanism should be devised so that personal contact of industry and department can be eliminated, and standardised processes implemented. For accelerating the progress of TUF scheme, he suggested that the major issues to be outlined and deliberations with the stakeholders including Banks may be arranged to resolve the issues once forever.

He also expressed the need for stepping up the productivity of cotton and necessary initiatives to be taken up with the Ministry of Agriculture and Farmers Welfare. The Cotton Corporation of India to work out possibilities for providing kapas plucking machines to the cotton farmers through Start-ups established by way of availing Mudra Loan and special



models to be developed for supporting small players. Furthermore, he seriously emphasised the issue of elimination of child labour in the sector.

While reviewing the activities of export promotion councils, the Hon'ble Minister of Textiles suggested that broad based industry interaction for developing a country oriented, comprehensive trade agreement. He also stressed the need to brand Pashmina wool internationally. Further, he urged textile research associations to become self-sufficient instead of depending on government grants.

Lenzing Expands Innovative Fibre Identification Technology

THE LENZING GROUP has announced the extension of its revolutionary fibre identification technology to TENCEL™ branded lyocell and modal fibers, solidifying its commitment to providing supply chain transparency along the entire textile production process. The successful launch and feedback from the industry on the system used for LENZING™ ECOVERO™ branded fibres, as well as the growing number of wood-based cellulosic manufacturers, encouraged Lenzing to further expand the technology for the TENCEL™ brand to ensure traceability of its products.

Lenzing's fibre identification technology provides physical identification of fibre origin at different stages of textile products such as the fabric and garment level. This enables full traceability of the fibre, protects from counterfeiting and provides assurance to brands and retailers that their products are made from TENCEL™ branded lyocell and modal fibers.



It also guarantees that the fibres are produced in state-of-the-art-production facilities that meet high standards for resource efficiency and environmental and social responsibility. This allows brands and consumers to have full visibility of how and where their products have been made.

Fibre identification will be a vital part of the fabric certification process within Lenzing E-Branding Service. As of November 2021, all fabrics will be tested for fibre identification, enhancing the

security of Lenzing's online services and testing facilities and increasing transparency and security between value chain partners. By the first half of 2022, additional services for brands and retailers will be integrated onto Lenzing E-branding Service.

"As the awareness of sustainability grows, we see the need to continuously improve transparency and traceability of our products, so as to make sure our brand credentials are well protected and trusted by industry stakeholders and consumers," says **Florian Heubrandner, Vice President Global Textiles Business at Lenzing AG**. "By extending the TENCEL™ brand's effort on supply chain transparency with our fibre identification technology, we hope to enable the textile industry to become more sustainable, as well as ensure our brand partners have the credibility to communicate their sustainability efforts and combat green-washing."

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Wipro Lighting Partners with Enlighted, for IoT enabled Lighting Solutions

WIPRO LIGHTING, a leading provider of lighting and Internet of Lighting (IoL)[®] solutions in India has partnered with Enlighted, the leading provider of Internet of Things (IoT) solutions for commercial buildings to deliver smarter workplaces.

Wipro Lighting and Enlighted are integrating their solutions and technologies to create smarter buildings across multiple customer segments. Enlighted IoT sensors are being integrated with Wipro's future-ready luminaires, forming the backbone for Wipro's Smart Space Solutions. Enlighted's cloud-connected smart sensors, distributed through lighting fixtures and under desks, create a dense infrastructure collecting data about what is happening in the building multiple times per second. This data is available for use in software applications through APIs – provides utilisation analytics, location services for people and assets, and insights into how buildings are being used in real-time.

The real-time data drives analytics and powers Wipro's Smart Space Solutions including space utilisation (density of usage, social distance issues), asset tracking, way finding, and colleague finding. Together the integrated solutions improve operating efficiencies and occu-



pant experiences, enhance productivity, and optimise resource and asset use. In addition, the integration of the Enlighted sensors into Wipro's LED luminaires saves up to 85 per cent lighting energy for consumers and also reduces overall utility costs.

Anuj Dhir, Vice-President & Business Head – Wipro Lighting, said, "Wipro Lighting is a pioneer in offering smart and connected solutions on the platform of Internet of Lighting (IoL)[®] across various customer segments in India. We are able to solve space utilisation and optimisation challenges faced by our customers, helping them to create smarter workplaces, especially from the

context of the upcoming hybrid work-model. Optimising the investment in real estate, enhancing productivity and occupant experience, ensuring healthy and safe spaces is our key focus."

Azheem Haseeb, Vice-President of Sales – Enlighted, said, "Meeting the needs of today's flexible and hybrid workplace is challenging, which is why the ability to integrate best-in-class technology and combine data sources is critical. Our solution gives companies the tools needed to make smart, data-driven decisions quickly about their workspaces. Together with Wipro, we can swiftly support businesses to implement technology which supports employees as they return to the office, while laying the foundations of long-term digital transformation in workplaces."

By embedding Enlighted sensors into Wipro luminaires, it will not only enable integration with the HVAC/BMS, but also detect motion trails through heat mapping and deliver safe and healthy workspaces, which is the need of the hour during the pandemic. Enlighted's Open API platform will converge with Wipro's IoL[®] platform to facilitate making smart, data-driven decisions quickly and furnish the confidence to reopen safely.

L&T Technology Services And Mavenir Partner Up

L&T TECHNOLOGY SERVICES LIMITED, a global leading pure-play engineering services company, has announced a strategic partnership to deliver end-to-end 5G automation services with Mavenir, the network software provider, building the future of networks with cloud-native software that runs on any cloud.

The automation services will include Continuous Integration / Continuous Delivery (CI/CD) automation of the 5G ORAN portfolio of RU/DU/CU products, in conjunction with the Cloud Native 5G NSA and SA core network products, for global frequency bands supporting TDD and FDD technology.

LTTs's rich heritage in the delivery

of telecommunications engineering products and services and growing portfolio of ready-to-use 5G components played a crucial role in this agreement. LTTs will contribute to the acceleration of Mavenir's cloud-native product roadmap driving increased market share in the 5G telecom landscape. This engagement between LTTs and Mavenir also enables a unique opportunity for co-creation and contributes to a joint go-to-market strategy driving innovation in the 5G space towards CSPs and Enterprises.

Amit Chadha, CEO and Managing Director, L&T Technology Services said, "5G ORAN solutions are disrupting conventional approaches to network

services delivery for people and objects across industry verticals. This partnership enables both companies to drive the solutions and serve the global demand for connectivity and enriched services. At LTTs, we look forward to providing a world-class, comprehensive automation solution to Mavenir and serve as a hub for accelerating innovations in the 5G space."

Pardeep Kohli, President and CEO, Mavenir said, "Our partnerships with leading global mobile service providers have set high expectations among our stakeholders. With its expertise in 5G, we are pleased to partner with an engineering services company like LTTs to enhance our go-to-market strategy."

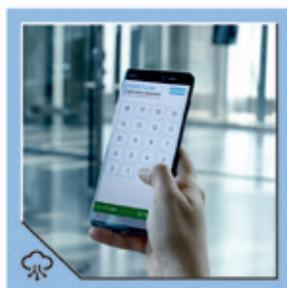
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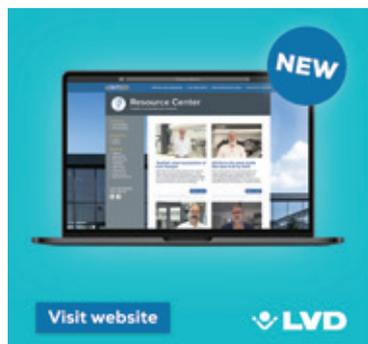
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Lvd Launches Online Resource Centre



LVD COMPANY nv announces the launch of its Resource Centre, a new online portal offering fabricators 24/7 access to information on new sheet metalworking equipment, industry trends, ideas and strategies to advance their business.

Within the Resource Centre, visitors can gain perspective on the current state of metalworking from LVD technical experts, discover how to address fabrication challenges, and learn ways to operate more efficiently in a changing marketplace.

125 Years Of Krebs & Riedel

THE CORNERSTONE OF THE KREBS & RIEDEL grinding wheel factory in Bad Karlshafen was laid some 125 years ago. Today the family-owned company operates worldwide as a manufacturer of individually manufactured precision grinding wheels and impresses with innovation and solution-oriented application technology advice. Above all, customers from the automotive, aerospace, mechanical engineering, medical technology and wind power sectors rely upon the high-precision products manufactured by Krebs & Riedel.



In addition to conventional grinding wheels, cutting wheels, cup grinding wheels and grinding segments with ceramic and synthetic resin bonds, Krebs & Riedel also manufactures CBN and diamond tools with ceramic bonds, as well as honing rings. The medium-sized family business with over 250 committed employees has an annual turnover of 31 million euros. Krebs & Riedel is one of the global innovation leaders in abrasives and has subsidiaries in China and India and a strong distribution network in more than 30 countries worldwide.

Analog Devices and Keysight Collaborate

ANALOG DEVICES INC. AND KEYSIGHT TECHNOLOGIES INC. have announced a collaboration that accelerates network interoperability and compliance testing for Open RAN radio units (O-RUs).

The companies are collaborating to create a robust test bench to verify the interoperability of a new O-RU that includes ADI's low-PHY baseband, software defined transceiver, power, and clock integrated with an Intel® FPGA. Applying Keysight's Open RAN emulation, signal generation and signal analysis capabilities to a wide range of use cases improves the testing process, reducing complexity and testing time.

"We are pleased to align our resources with ADI, a leader in O-RU technology solutions, to help service providers realize the full potential of the O-RAN specifications," said **Kailash Narayanan, Vice President and General Manager of Keysight's Commercial Communica-**

tions Group. "Keysight and ADI offer technology and test solutions that create an effective bridge between the radio unit and the core network, resulting in accelerated development and interoperability testing."



Open RAN technology is expected to account for more than 10 per cent of the overall radio access network market by 2025, according to the Dell-Oro Group. The ADI and Keysight collaboration address commercial opportunities in this industry that is transitioning towards open, disaggregated, and virtualised RAN (vRAN) architectures.

"As a result of combining our tech-

nology, tools and design resources, ADI and Keysight are able to provide the O-RAN ecosystem with a robust platform to quickly develop reliable O-RUs," said **Joe Barry, Vice President of Wireless Communications at Analog Devices.**

"By working together, we offer our customers the fastest path for developing cost-effective, power-efficient, and interoperable O-RAN ready O-RUs."

An Open RAN infrastructure, based on O-RAN ALLIANCE open interfaces, enables mobile operators to create a robust multi-vendor network environment designed to streamline the delivery of advanced 5G services for enterprises in manufacturing, financing, transportation, logistics and healthcare. Performance validation of O-RUs and interoperability testing between network elements from the edge of the RAN to the 5G core (5GC) allows mobile operators to effectively deploy O-RAN in multi-vendor 5G networks.

By R K Jain, Senior Vice President – Commercial, Jindal Aluminium Limited

MAKING THE EV DRIVE WITH ALUMINIUM

R K Jain, Sr. Vice President, Corporate affairs, Jindal Aluminium Ltd
talks about how aluminium is a major driving force – literally and proactively – behind India's electric vehicle impetus

Policy incentives and technological advancements are going to guide the manufacturing and adoption of electric vehicles in a big way, as India witnesses a sea-change in its attitude towards the segment. Electrified and efficient are words often used to describe the future of the automotive sector, which is also set to push the demand for aluminium exponentially, with innovation in products being the focus of the downstream aluminium sector.

EVs are a bright spot in the Indian automotive segment as they are a key element of the transition to cleaner energy. Official data from government sources state that India had 69,012 units of electric vehicles being sold in 2017-18. These numbers went up to 1,43,358 units in 2018-19 and to 1,67,041 units in 2019-20. The growth in units includes sales of two-wheelers, three-wheelers, and buses. Two-wheelers have led this growth. With the government having its eyes set on selling only electric cars in India after 2030, the sector is poised for the biggest renewable energy revolution the country has seen.

ALUMINIUM – THE BACKBONE FOR EV

Making the EV story successful is aluminium, both used in the manufacturing of electric vehicles and in creating the necessary charging infrastructure. A higher performance metal, the push for EVs is adding importance to the role that this light and sturdy metal will play as it brightens prospects for the downstream aluminium segment. From the challenge of helping vehicle manufacturers in reducing vehicle weight to improving the efficiency of conventional vehicles or to better the range of electric vehicles, aluminium extrusions are an increasing part of the solution.

The shift to electric vehicles is no longer just an option; it is a must. India, China, many European countries, and the United States have all already decided in favour of electro-mobility supported by R&D programs, charging infrastructure, and buyer incentives. This is an opportune moment for the downstream aluminium sector – which is an old partner of the automobile industry and finds its use in the making of a vehicle body, doors, trunks, hoods, bumpers, crash boxes, brakes, cables, wheels, etc. – to increase its overall usage.

However, bringing about innovation in production is the need of the hour for the Indian downstream aluminium manufacturers if we want to meet the EV demand. Innovation in production is also crucial to raise the average quantity of aluminium used per vehicle from India's average of 29 kg per vehicle to global usage standards of 160 kg or 250 kg as predicted for use in EVs in time to come.

Automobiles, whose bodies are made of aluminium are costlier than their other metal counterparts. This poses as one of the major obstacles to Aluminium's market appeal in India. This will be addressed once the demand for EVs picks up and costs are lowered. As consumers get environmentally conscious and the government introduces policies that require vehicles to bring out variants that are to be more fuel-efficient than before, fuel-saving, carbon emission, costs, including repair are areas where the downstream aluminium sector has an important role to play.

Innovation is needed and is already being done at various levels. For instance, in meeting the EV demand, the automobile industry is looking at major changes in vehicle manufacturing that will focus on improved combustion, calibration, injection, and cylinder pressure. Downstream aluminium suppliers are meeting the needs through extrusions and rolling by using technology and innovation.

New applications of downstream aluminium include lightweight battery casings and heat exchangers, besides overall structural integration. Offering a higher strength-to-weight ratio compared to other metals, the ability to absorb a larger amount of crash energy and ensuring that vehicular performance enhancements do not come at the cost of safety is what downstream aluminium offers to the automobile industry, especially in meeting the EV demand.

All this, and the ease with which aluminium fits into creating simple and intricate shapes giving an elegant finish to the vehicle, make it an automaker's dream metal. Thus, not only will this innovation in material supplied lead to light-weighting, lowering costs, and meeting the commitments of going green, it will, through EVs, now offer a higher per-unit usage of downstream aluminium products in automobiles. 

By Kruti Bharadva

THE WAREHOUSES OF THE FUTURE

Supply chain managers are already dealing with a myriad of technology and market changes as they implement modular, automated solutions to increase productivity and throughput in their warehouses. The pace of change has never been as fast as it is today, and those changes will ultimately influence the warehouse of the future

From demographic shifts to increasing urbanisation, and from drones to 3D printing, social and technological changes will put pressure on supply chain managers to move goods closer to consumers and develop warehouses with the flexibility and speed to support local, faster delivery through multiple channels.

Supply chain managers are already dealing with a myriad of technology and market changes as they implement modular, automated solutions to increase productivity and throughput in their warehouses. The pace of change has never been as fast as it is today, and those changes will ultimately influence the warehouse of the future.

What will the warehouse of the future look like? If you were blessed with an active imagination, you might picture warehouses that extend vertically into the sky, drones buzzing about in delivery activities, and robots being utilised for lights-out order fulfilment. This scenario is not as far off into the future as you may think. Many warehouses have already put the 'human touch' on the back foot. Robots and automated materials handling systems do virtually all the warehousing and order fulfilment work.

While fully automated facilities are still an exception to the rule, there are some significant trends and market changes that are shaping the warehouses of the future. Here are some of them:

FULFILMENT, SELECTION & VELOCITY

The warehouse of the past was a place to store finished goods that moved in and out on pallets – a necessary cost centre. Today, warehouses are promise keepers: Their job is to enable a company's go-to-market strategy and make good on the promises made by the marketing and sales departments. Order turnaround — the



time it takes to pick and pack an order, so it is ready for pickup by a delivery company before the cut-off time — is measured in hours rather than days.

Distribution centres (DCs) are tasked with carrying more items, or SKUs, than ever, to keep customers on a site. At the same time inventory is spending less time than ever in the DC.

MORE AUTOMATION

The labour shortage that's making the news today is old news to warehouse managers. They've been battling a war for talent for years. Thanks to the growth of e-commerce, it's more acute than ever. As a result, the distribution industry is in the middle of an automation boom, driven by the need to take as much labour out of the process as possible. Technologies like high-density automated storage, shuttle systems, pouch sorters, put walls and automated packaging systems are ideal for handling items. While not in wide use yet, automated lift trucks are on the horizon. Some leading retailers are even taking inventory in their warehouses using drones.

TRACKING THE PACKAGE

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build efficiency into every aspect of the warehouse. Radio Frequency Identification (RFID) Tags attached to each inventory item can transmit real-time data to and from the warehouse floor and inventory management applications, allowing warehouse teams to use mobile devices to track inventory from the moment it arrives.

A HYPER-CONNECTED FACILITY

In a hyper-connected warehouse, operating systems are laid out in a highly advanced matrix to accommodate the growing mix of technologies. Today's warehouses hold bandwidth for technologies like barcoding, IoT, RFID scanning, GPS, load optimisation and future technology innovations that may emerge. With this tech in place, logistics managers can quickly make and execute decisions.

ROBOTICS

While adoption of robotics in distribution centres has been slow, they're coming. We're seeing the emergence of mobile collaborative robots that travel to a picking location where a warehouse associate drops an item into a tote. Stationary piece-picking robots then pick items from a storage tote and place them in a shipping container. We're even seeing autonomous mobile piece-picking robots that can travel to a location, pick an item and travel to the next location until the order is complete. Right now, the market is limited to some brave early adopters who are piloting robotic technologies or going live with small implementations. But, as those early adopters learn how to get value from robotics, the space will grow.

AUTONOMOUS GUIDED VEHICLES

AGVs have been used in warehouses for over thirty years and expected to grow exponentially in the coming decade. There are several drivers behind this trend. First, there is an increasing demand for flexibility in warehousing. Changes in processes, product ranges or distribution channels are all impacting warehouse requirements. Traditional, bolted-down automated conveyor systems are not able to adapt to these changes. AGVs provide the required flexibility. The other driver is the simultaneous decrease in cost and increase in performance of AGVs as the core components increasing-



ly support consumer products, such as robotic vacuum cleaners and automated lawnmowers. The economies of scale are much greater for consumer products than for warehouse technology and could drive down the costs of the underlying technologies, such as sensors and navigation systems, used by AGVs. A similar impact could result from the technologies used to support self-driving automobiles.

SOFTWARE AND SENSORS

Warehouse automation used to be about "speeds and feeds," or how fast a piece of equipment did its job. Today, it's about how smart the system operates. Can the system orchestrate activities

in the facility so that items picked in three different locations arrive at the packing station at the same time to close out an order? Can the system predict when a motor, a bearing or a conveyor is about to fail so you can address the problem before it shuts down your line? Solving problems like these is the result of sensors that monitor conditions and collect data and software that optimises operations, and not mechanics.

Forklifts, always a familiar sight in warehouses, are more connected than ever. IoT technologies can connect a warehouse operator's forklifts with their enterprise resource planning system and workers across the warehouse, shaving operations time. Some forklift manufacturers are incorporating alternative fuel systems and energy-efficient engines to reduce energy costs.

SUSTAINABILITY MAKING STRIDES

Alternative energy and energy efficiency are no longer optional as warehouse operators bring more automation into the warehouse. Solar panels, LED lighting, cool-roof systems, thermal glass, clerestory windows, and other new green materials and innovations are leading warehouses into a new age.

RETHINKING THE WAREHOUSE

The typical warehouse is about 500,000 square feet and located in a distribution hub near a major parcel shipper. In the future, expect to see more, smaller facilities located near major urban areas as e-tailers try to get closer to their customers for same-day delivery. Expect those facilities to be two, three or four floors tall to get more storage space on an available footprint. 



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AIR RING GAUGES

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Scale	Reading	Maximum Usable Range
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+/- 0.100mm	0.001 mm	+/- 0.040 mm



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By Andy Miller, Service Training Manager, Perkins

LIQUID ENGINEERING AT WORK

A brief look at extended life coolants and why they are an engine's best friend

There is nothing sophisticated about coolant, just mix a bit of antifreeze with some water and it's good to go, right?

Well, the answer to that depends entirely on how long you expect your engine to last and how much you want to spend repairing it because coolant does a lot more than simply move heat from the engine to the radiator. To those who design cooling systems, the coolant they depend on is a product of liquid engineering and it's anything but unsophisticated.

In addition to protecting an engine from heat and cold, a properly formulated coolant serves as a carrier for additives such as pH stabilisers, anti-foaming agents, and protection agents for rubber and plastic components. It also contains additives that inhibit corrosion within the heat transfer system that typically includes components made of copper, brass, steel, cast iron, aluminium and solder. Without that protection, corrosion can block the narrow spaces in a radiator, which can lead to overheating of the coolant causing damage to water pumps, oil coolers, cylinder heads and gaskets.

A less obvious feature of coolant is protection against cavitation and cylinder pitting, particularly in wet-cylinder diesel engines where the sleeve that contains the piston comes into direct contact with the coolant. While this design allows more efficient heat transfer, it also transfers a lot of vibration and, movement from the pistons to the cylinder sleeve, and through the sleeve to the coolant which can cause cavitation.

Unless the coolant is formulated with additives to prevent cavitation the tiny bubbles created can lead to pitting of the sleeves and premature failure. While this is less of a problem with parent bore engines where the cylinder is part of the block, and dry-sleeve engines where the liner is inserted into the block but does not contact the coolant, cavitation and corrosion still can occur and need to be protected against. Because it performs so many critical functions, proper coolant selection and maintenance can have a significant impact on the total cost of ownership (TCO) of a diesel engine. Home-brew mixtures are seldom a good option for several reasons including unknown impurities and mineral content of the water, and the exact amount and type of additives in the antifreeze.



Most engine manufacturers offer coolants specifically formulated for their products. Perkins, for example, offers a Long Life or Extended Life Coolant (LLC/ELC). Perkins® Extended Life Coolant provides optimum engine protection as well as reduced maintenance requirements over the life of the coolant.

COOLANT MANAGEMENT

If your engine uses a conventional, commercially available heavy-duty or fully formulated coolant, the corrosion inhibitors are used up over time. Thus, the coolant requires testing every six months, or every oil change, to determine if a corrosion additive needs to be added. Testing can be easy to overlook and is often difficult to do when engines are in the field.

Coolant testing typically involves a trip to the local service centre, but test strips are available depending on the corrosion additives being used. Using the wrong test strip, or one that has exceeded its shelf life could result in incorrect results and improper dosing. If additives need to be replenished, only a product meeting the manufacturer's specifications must be used.

If your engine uses an extended life coolant or a similar product, the main requirement is to make sure that the system is properly filled, and coolant is changed at the correct period stated by the supplier. For Perkins ELC the change interval is three years or 6,000 working hours. It is sold in a pre-diluted mixture using mineral-free distilled water to allow the cooling system to be topped up as necessary straight from the container. When the coolant needs to be changed the system can be flushed with clean water since no additional cleaning agents are required.

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Extended life coolant formulation practically eliminates hard water deposits and extends water pump seal life. Removing phosphates and silicates helps prevent scale formation that can reduce heat transfer and encourage corrosion

Regardless of which type of coolant is used, the level needs to be checked often and topped up when necessary.

WHAT'S THE DIFFERENCE?

Again, using Perkins ELC as an example uses an advanced formula with organic additive corrosion inhibitors. Instead of nitrates, silicates, phosphates, borates and amines, Perkins ELC contains mono and dibasic organic acid salts that provide maximum protection for the metal alloys found in most heat transfer systems. In addition, some nitrites and molybdates are added to help protect iron components and reduce steel corrosion and pitting effects.

Extended life coolant formulation practically eliminates hard water deposits and extends water pump seal life. Removing phosphates and silicates helps prevent scale formation that can reduce heat transfer and encourage corrosion. Moreover, the additives that are used deplete very slowly allowing nitrite levels to be maintained up to 20 times

longer than conventional coolants.

THE BOTTOM LINE

Both types of coolant will protect an engine, but one requires testing and periodic maintenance of additive levels and the other doesn't. An extended life coolant also reduces disposal volume by up to 50 per cent as well as the related costs, which in an era of increasingly stringent environmental regulations can be substantial.

While it's important to follow an engine manufacturer's recommendations extended life coolants that meet or exceed the ASTM D6210 standard for heavy-duty, low silicate antifreeze/coolants, and ASTM D3306 for light-duty and automotive applications are generally compatible with most OEM diesel, gasoline and natural gas engines. That means only one coolant needs to be stocked for an entire fleet, saving additional time and money.

Extended life coolants are excellent examples of what can be achieved with today's liquid engineering technology. 

CLARIANT AND INDIA GLYCOLS SUCCESSFULLY ESTABLISH JOINT VENTURE

Clariant, a focused, sustainable and innovative specialty chemical company, and India Glycols Limited (IGL), a leading company in the manufacturing of green technology-based chemicals, have announced the successful creation of their 51-49 per cent joint venture for renewable ethylene oxide (EO) derivatives after receiving all necessary regulatory approvals. The joint venture will operate under the name Clariant IGL Specialty Chemicals Private Limited.

"The successful closing of this joint venture strengthens our core portfolio and makes Clariant one of the leaders in green ethylene oxide derivatives. As part of our strategy, we are committed to adding value through sustainability. Our partnership with India Glycols will make us one of the leading surfactant suppliers in India, with a focus on renewable solutions for home and personal care", said **Conrad Keijzer, CEO of Clariant**.

Originally announced in March 2021, the joint venture is now effective and combines IGL's renewable bio-ethylene oxide derivatives business, which includes a multipurpose production facility including an alkoxylation plant located in Kashipur, Uttarakhand (India),

with Clariant's local Industrial and Consumer Specialties business in India, Sri Lanka, Bangladesh and Nepal.

Clariant will fully consolidate the joint venture as of July 1, 2021 and expects an incremental addition to the top-line of the Business Area Care Chemicals in the range of around CHF 50 million for the FY 2021.

"I am very pleased with the swift manner in which both parties were able to obtain all necessary regulatory approvals. This allows us to now move ahead and leverage IGL's position as the largest manufacturer of green EO in the world in a value-generating combination with Clariant", commented **U.S. Bhartia, Chairman of India Glycols Limited**.

The joint venture will be led by **Nitin Sharma, currently Head of Clariant's Industrial and Consumer Specialties** business in South Asia, who added: "Profitable growth through sustainability is the key target for all of us in this newly formed company. The entire team will work together to leverage the contributions made by both partners to the joint venture into innovative solutions that serve the growing markets around us." Mr. U.S. Bhartia acts as the joint venture's Chairman.

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By Kruti Bharadva

TOP-NOTCH MACHINING SOLUTIONS!

With its foundations going back to 1938, Kennametal has a history of providing one-stop solutions to its customers. Here is an overview of the company.

In 1938, metallurgist Philip M. McKenna created a tungsten-titanium carbide alloy for cutting tools that provided a productivity breakthrough in the machining of steel. With his invention, Philip started the McKenna Metals Company in Latrobe, Pennsylvania. Later renamed Kennametal, the corporation has become a world leader in the metalworking industry and is headquartered in Pittsburgh.

Kennametal's journey in India commenced in 1964 when Widia India Private Limited was incorporated in Bengaluru with a strength of 30 employees and one shaping plant. Kennametal acquired Widia in 2003 and established Kennametal India Limited. Today, the company continues to be headquartered in Bengaluru with a modern manufacturing facility and offices in eight territories that serve customers across the length and the breadth of the region.

In a chat with The Machinist team, **Vijaykrishnan Venkatesan, Managing Director, Kennametal India Ltd**, described the journey of the company.

Take us through your business activities in terms of product portfolios and the sectors to which you cater.

Kennametal is an industrial technology leader in materials science, tooling and wear-resistant solutions for customers across the aerospace, earthworks, energy, general engineering and transportation industries. Our metal cutting segment is dedicated to delivering world-class metalworking solutions and services through our two trusted brands: Kennametal and WIDIA. Through these brands, we offer a complete portfolio of precision-engineered products and custom solution services. With an array of milling, turning, hole-making, threading and tooling systems products, backed by a skilled network of authorised distributor partners and spares



support, our customers can find everything they need from one single source.

Our machining solutions group manufactures special purpose machines, tool and cutter grinding machines, as well as fixture and tooling solutions through the WIDMA brand. Several customers are benefiting from the expertise of WIDMA in engineering the most complex components with precision, right from microtools to large structural parts for railways and aerospace.

Our infrastructure segment is a global market leader in wear solutions, engineered components, earth cutting and construction tools that deliver productivity, reliability and extended life to a wide range of industries in the harshest environment. We offer expertise in matching our advanced material solutions and technologies to various applications. This helps customers solve their biggest wear problems, avoid costly downtime, prevent catastrophic failures and achieve significant savings.

What are the end-to-end additive manufacturing solutions provided by Kennametal and how relevant are they in the Indian market today?

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With an array of milling, turning, hole-making, threading and tooling systems products, backed by a skilled network of authorised distributor partners and spares support, our customers can find everything they need from one single source

and manufacturing, Kennametal offers end-to-end Additive Manufacturing (AM) solutions, from metal powder feedstock, to design optimisation and rapid prototyping, to post-print processing and fully finished components.

While AM has existed for a long time, we are witnessing its traction in recent years as a significant lever to drive the Industry 4.0 revolution, with the potential to transform conventional production processes. As the name suggests, AM implies adding material in layers to create a finished product.

Additive manufacturing offers opportunities to produce complex geometries that would be impossible using traditional manufacturing methods, shorten development cycles and lead times, consolidate parts and improve performance through materials and design. India is currently at a nascent stage of technology adoption with a largely unexplored market for AM that is estimated to grow significantly in the coming years.

What was the rationale behind setting up Rapid Response Centres? How is it serving a customer-centric approach to your business activities?

Kennametal Rapid Response Centres offer reconditioning services and localised production of simple and special round tool drills and end mills. Tools are reconditioned to Kennametal original coatings and geometries for like-new performance and reliability. With repeated reconditioning, tooling costs can be reduced by 50 per cent or more in many cases, compared to the cost of purchasing new tools.

In India, we have reconditioning centres at five locations with easy access to customers and a quick turnaround time. These centres offer a win-win solution, as they enable our customers to quickly access Kennametal quality and precision at a lower cost, while our brand can acquire a higher market share in the value segment.

How important is sustainability to your company's mission and vision and how are you contributing towards it?

At Kennametal, sustainability is an integral part of doing business with a consciousness towards the ecosystem in which we operate. We are committed to programs that ensure: the health and safety of our

employees; a diverse, engaged, and ethical workforce; the development and enrichment of the communities where our employees live and work; and protection of the environment for future generations. Last year, Kennametal released its Environmental, Social and Governance (ESG) report that provides a comprehensive summary of the progress and opportunities in this area. Some highlights of our global ESG during 2020 include:

- Implementing extensive safety protocols to protect the health and safety of our employees while continuing to serve customers during the COVID-19 pandemic
- Proactively eliminating or mitigating more than 690 potential injury risks and
- Reinforcing our commitment to a culture of accountability to employees, customers, shareholders, the environment and the communities in which we operate.

Our Bengaluru manufacturing facility, for example, has adopted various measures to ensure minimum impact on the environment. For instance, close to 80 per cent of our energy comes from solar, we ensure optimum water and waste recycling to reduce freshwater consumption significantly and our emissions are well within the stipulated PCB (Pollution Control Board) norms.

Take us through your CSR initiatives.

Our corporate social responsibility platform is built on a three-pronged framework: environmental, social and governance. Through credible NGO partners, we are involved in various projects to make a meaningful impact around our manufacturing facility. In one of the key initiatives, we have partnered with the NGO, India Literacy Project, to support seven government schools for underprivileged children in creating a multi-dimensional learning space by funding 'smart' classrooms. From computer and science labs to libraries, the project is giving nearly 2,500 local students access to the critical educational infrastructure needed to build skills for the future. Through the NGO Katalyst, Kennametal India is sponsoring deserving girl students pursuing engineering courses, enabling them to gain a level playing field in their professional careers, while propelling gender equity.

How is innovation and R&D contributing to the company's overall business strategy?

Core to who we are as a company, our innovation helps solve our customers' biggest challenges so they can deliver the products and services we rely on every day. We have a R&D and engineering base in Bengaluru that works closely with the global organisation to continuously develop and commercialise both new and improved offerings suited for the Indian market. This DSIR (Department of Scientific and Industrial Research) recognised R&D centre is equipped with advanced labs and testing equipment managed by a team of engineering and technical experts.

Kennametal has recently launched the VXF™ series of high-feed cutters that combine the best features of round and square inserts to boost metal removal rates, achieve the next level of high-feed milling, and make it the first choice for deep cavities. VXF high-feed mills master demanding workpiece shapes in up to 9 different machining operations and 5 material types, making it a versatile solution for various industries. Another newly launched cutter, VSM890, delivers superior metal removal rates through high-performance grades and

chip breakers. It is applicable for a wide range of workpiece materials: aluminium, steel, cast iron, titanium, stainless steel and high-temp alloys- and addresses light machining to heavy-roughing jobs. We also launched TOP DRILL™ Modular X (TDMX) for high-demanding drilling applications and Varimill Xtreme for aggressive machining conditions from the WIDIA brand as our recent launches.

Take us through the company's manufacturing facilities and capacity utilisation.

We have a state-of-the-art manufacturing facility in Bengaluru, spread over a campus of 29 acres. Our manufacturing setup is divided into 8 production units that develop products, both for the domestic and international markets. It complies with necessary environmental norms as mentioned earlier. Kennametal has made a significant investment to modernise its facilities globally, and as part of that initiative, we are deploying advanced technology and equipment here in Bengaluru that will bring value to our customers through improved quality, product performance, innovation and delivery. 

CONTINENTAL INVESTS IN ISRAELI INDUSTRIAL SENSING START-UP, FEELIT

Continental has acquired a minority stake in the Industry 4.0 start-up Feelit, headquartered in Tel Aviv, Israel. Feelit provides cutting-edge predictive maintenance solutions for various industrial equipment and machinery based on proprietary hardware sensors and dedicated algorithms. The start-up has developed a structural sensing technology that is up to 50 times more sensitive than current standard market applications. Feelit uses printed, nanomaterial-based, fully integrated sensors and cloud analytics to enable live, remote feedback on structural and performance changes in equipment. The sensors can be integrated, for example, into battery cooling systems for electric vehicles to optimise battery life and range. Continental sees additional potential for remote condition monitoring and predictive maintenance applications for its industrial hoses for the food and beverage industry, for hydraulic and energy solutions complying with safety requirements, and for avoiding unplanned and costly downtimes in manufacturing.

"The investment further paves our way toward digitalisation and brings with it multiple strategic benefits. Sensor integration into both new and existing product lines supports our ongoing transformation toward smart and sustainable solutions beyond rubber. Products such as hoses will be turned into sensitive

detectors and provide real-time information about their condition," explained **Philip Nelles, member of Continental's Executive Board** and responsible for the industry focused business area ContiTech. This technology helps to extend the range and life of batteries in electric vehicles, predicts maintenance and increases safety in manufacturing environments.

Based on an industrial IoT platform for real-time remote sensing of structural changes in mechanical assets, the system serves as an "electronic skin" that sends an alert if it detects critical structural and operational anomalies in advance. Up to 50 times more sensitive than current standard market applications, this technology allows remote condition monitoring and predictive maintenance of industrial assets, like valves, pipes and pumps, and prevents unplanned and costly downtimes of machineries.

"Feelit is a technology-driven startup with an industry agnostic value proposition. In order to simultaneously address multiple verticals with a mature and differentiated solution, we aim to partner with established technology leaders in such fields to accelerate commercialisation. Accordingly, we are delighted to have won Continental as an early backer, partner and investor, providing us with operational and industrial expertise," added **Feelit CEO and co-founder, Dr. Gady Konvalin**.

SPINNING THE ROAD TO SUCCESS

Delving into the world of textiles manufacturing with Indo Count Industries Ltd (ICIL), one of India's leading home textiles manufacturers, that has weathered traditional challenges faced by the sector and emerged as one of the largest exporters. Let's hear it out from **Kailash Lalpuria, Executive Director & CEO** in an exclusive interview with **Kruti Bharadva**.



Textiles in India go a long, long way back- right from the ancient Indus civilisation- wherein excavations have yielded cotton strands woven together. Herodotus, an ancient Greek historian, mentions Indian cotton in the 5th century BCE as “a wool exceeding in beauty and goodness that of sheep.” When Alexander the Great invaded India, in 327 BCE, his troops started wearing cotton clothes that were more comfortable than their previous woollen ones. Strabo, another Greek historian, mentioned the vividness of Indian fabrics, and Arrian told of Indian-Arab trade of cotton fabrics in 130 CE.

Cut to the 21st century, India's textiles industry has contributed as much as seven per cent to the industry output (by value) in 2019-20. The Indian textiles and ap-

parel industry contributed two per cent to the GDP, 12 per cent to export earnings and held five per cent of the global trade in textiles and apparel for the same period.

What's more? The share of India's textiles and apparel exports in mercantile shipments was 11 per cent and the industry has around 4.5 crore employed workers, including 35.22 lakh handloom workers across the country in 2019-20. Exports of textiles stood at US\$ 29.45 billion, as of March 2021. It is, therefore, no surprise that the textiles sector contributes and plays a significant role in the Indian manufacturing scene. The Machinist caught up with **Kailash Lalpuria, Executive Director & CEO of Indo Count Industries** who told us how the consumption pattern has changed along with the point of sales distribution and compa-

ny's strategies to gain deeper insight into the market requirements. Edited excerpts:

Indo Count's performance has been excellent during the last quarter. How do you see this trend going forward and what is your sustainable EBITDA margin guidance?

FY21 volumes stood at 78.17 million metres as compared to 61.8 million metres in FY20, a growth of 26 per cent. Our Q4 FY21 sales volume stood at 21.65 million metres and the order book continues to remain healthy. We are optimistic and expect volumes for FY22 to be in the range of 85 to 90 million metres.

We have strong momentum and acceleration on the order book position and the same is quite healthy for the next two quarters and that made us provide you with the reason that the guidance is 85 to 90 million meters. We are debottlenecking the capacity, which will be coming into play by Q4 FY22. As you can see the

retail sales in the US are growing almost seven per cent to eight per cent. The vaccination drive is also trying to bring in confidence among its consumers. So, we strongly feel that we should be doing good volumes as we have added up some new product categories and some new customers going forward. We expect a sustainable EBITDA margin of 15 per cent-17 per cent as per the guidance provided during our last investor call.

In March this year, ICIL announced the brownfield expansion of existing capacities with a capex of Rs 200 crore. Going forward, how these expansion plans would take the company to a targeted growth?

To address the growing demand, we announced the expansion of our bed linen capacity by 20 per cent from the existing capacity of 90 million meters. We propose to scale up to 108 million meters by debottlenecking and balancing facilities. This, along with the brownfield investments for adding commensurate cut and sew facilities, along with enhancing the capacity for top of the bed products would entail a capex of Rs 150 crore. We are also modernising our spinning units with compact modern technology. This would entail a capex of Rs 50 crore. These investments are expected to increase the revenue by ~Rs 600 crore over the next two years, post-commissioning. The total capex will be ~ Rs 200 crore and will be funded by a mix of internal accruals and debt and is expected to be operational in the second half of FY22.

One of the things ICIL values is its E-commerce partnerships. How have these partnerships evolved into turnkey fulfilment programs as well as customised solutions?

We have continued to focus on growing our branded and domestic businesses. For FY21, branded business stood at 10 per cent of sales, domestic business at one per cent and e-commerce at four per cent. We are embarking on increasing the contribution in FY23 of these value-added segments. We expect domestic business to rise three per cent and e-commerce to eight per cent and set our targets accordingly for FY23.

Can you elaborate on the recent brand launches and developments in the space of health, hygiene, and wellness?

To create a strong B2C and D2C foothold, we have established offices and design studios in key cities of the world to understand customer preferences and create products for the future. Accordingly, we have entered various brands through the launch of 'Wholistic', a health and hygiene brand, 'Sleep RX', which is a performance brand, 'Pure Earth' on the sustainability side, a brand well recognised, 'Boutique Living', mid-market

ICIL's Journey

Established in 1988 and head-quartered in India (Mumbai), Indo Count Industries Limited (ICIL) is one of the leading home textile manufacturers with an extensive product range. Indo Count is a specialised end-to-end bedding provider



that is solely focused on creating all-encompassing sleep experiences. The product portfolio spans across bed sheets, fashion bedding, utility bedding and institutional bedding. The manufacturing skill extends across the entire value chain. The company exports to over 54 countries across six continents and the company's annual capacity is 90 million metres which will be expanded to 108 million meters by Q4 FY 2022.

For over 25 years, Indo Count has been innovating superior quality products that are responsible for its continued momentum and sustainable growth. The company has demonstrated growing volumes, revenues, and profitability due to product innovation through its inroads in new health and wellness category, strong customer relationships, deeper penetration across categories and markets as well as robust balance sheet and financial flexibility.

Indo Count aims to capitalise on India's edge in the global home textile market due to the abundant availability of raw material with India being the world's largest cotton producer, Government's push for Atmanirbhar Bharat for import substitution and capacity building to dominate the global market, access to a skilled, traditional textile labour force, growing global respect for Indian products; dependable long-term partner as well as CHINA + 1 strategy to play out as brands will seek the second source.

aspirational brand in the domestic market and this year, we had launched 'Layers', a value-driven mass brand.

Talk to us about your strategic partnerships, and how they push forward the drive to excel in your product and brand offerings?

Globally, the company has a strong presence and partnership with marquee retailers. Considering the product is positioned in the mid to high segment, it plays an important role in promoting retailers' brands and private labels. Through its (marquee) omnichannel presence, it also addresses the market needs of B2C and D2C brands and retailers, by forming a joint business plan of marketing strategies.

To enhance the domestic presence, Indo count Industries has conducted various campaigns, devised and executed various marketing strategies including Influencer marketing as well as tied up with online platforms. Indo Count is also creating a pan India distribution network through multi-brand outlets (MBO's) and large format stores (LFS).

How important is innovation to your overall business plan and how do you incorporate it in your product offerings?

The company has established itself as a preferred partner over the years, through its focus on innovation, branding and sustainability initiatives. Our innovation, R&D, knowledge capital and superior quality have helped us carve a niche in building a portfolio of value-added, modern, and functional products. We are in a constant endeavour to understand the evolving trends of our customers. We strive to actively adapt the changes required in our product portfolio and launch

products that resonate with customer demand. This has helped us gain a competitive edge and engaging relations with our marquee global customers.

Digitalisation is key to success and efficiency. Take us through your supply chain management and ERP installations and how they enable ICIL to be agile and accurate?

We are now focusing on creating more visibility through digital marketing channels. We are trying to create a pan India distribution network to MBOs and LFS formats. Globally, e-commerce omnichannels and B2C have become important channels of distribution. Due to this additional channel of distribution, a wider section of people in Tier-II and Tier-III cities have also got an opportunity to buy products, both offline and online. As a company, we have taken the right steps towards adapting new avenues of sales according to the changing customer ecosystems. Our performance during the period has provided us with a renewed confidence in exploiting these new channels of distribution and grow further. We have been investing in digitisation and strengthening our current ERP system so that we can serve our customers with better and quick decisions. The improvements in the supply chain will help us manage our business well and keep pace with technology.

India closely follows China in the home textiles market. In the near term, do you see a change keeping in mind that India is still the world's largest producer of cotton?

As per the OTEXA data, China is losing ground not only in sheet sets but all other categories. China's share in US import of cotton sheets decreased to 13 per cent in FY21 from 18 per cent in FY20. So there is a big opportunity in offering mainly because there are only a few countries in Asia which are supplying textiles to the world. Around 85 per cent of textile is supplied by these five Asian countries. With Bangladesh and Vietnam facing labour arbitrage, and Pakistan's limitation of cotton and short staples, India has got a versatile supply chain of short-staple, medium staple as well as long-staple. That apart, India also has an established spinning segment. So it's a win-win situation for India as the country is well-positioned to capitalise on the same. Meanwhile, our company, our peers have performed well in the last two-three decades and have served brands and retailers worldwide.

India no doubt has a global edge in textiles manufacturing – how do you envision ICIL harnessing the advantages India offers – keeping in mind the government's initiatives to boost domestic manufacturing?

The Home textiles segment has become one of the most

Product Portfolio

The company has a vast product portfolio such as bedsheets, fashion bedding, utility bedding, and institutional bedding. There are ten in-house developed brands which include Wholistic, Layers, Sleep Rx, Boutique Living, Pure Earth, Boutique Living Luxury, Colour Sense, Purity Home, Kid's Corner and The Cotton Exchange. The company has two manufacturing facilities and made-up stitching units at Kolhapur, Maharashtra.



attractive segments in the textiles industry in the recent past. It has also emerged as one of the most fashion-sensitive segments in the textiles industry. India is globally recognised for its extensive variety, exquisite designs in home textiles and furnishing fabrics. The country is on the verge of a big boom in the affordable housing sector, and there is a fair share of growth in employment opportunities, especially in the services sector. Thus, leading to high disposable income in the hands of young consumers. A combined result of these factors has seen the demand for home textile products



growing by a healthy 15-20 per cent per annum. The market for home textiles and furnishing fabrics in India is extremely wide and varied in terms of prices, designs and colours. While the affluent consumers prefer refined international taste in terms of quality and design, with price no constraint, the mid and economy-segment consumers offer huge volumes for reasonably priced products. With the growing awareness towards sustainability, safety, hygiene and functionality, the demand for better quality home textiles with features like stain-resistance, flame retardant and fragrance, among others is increasing. The health, hygiene and wellness segment which has gained importance in peoples lives in recent times, will further boost opportunities in these categories.

As a country we have a competitive advantage; we are recognised by the buyers and the retailers that we have a good supply chain, logistics as well as good raw material support. The regulatory policies in our country - like Make in India or the Atmanirbhar Bharat or the refund on duties/taxes- are all also inclined towards providing the necessary support to the textiles segment.

What was the overall impact of the pandemic on the global as well as the domestic market? Going forward, do you see any paradigm shift?

The consumption pattern has changed along with the point of sales distribution to which the company is adapting quickly through increased communication and gaining deeper insight into the market requirements. Additionally, an experienced management team and a liquid balance sheet strength have kept ICIL in a strong position to navigate through these challenging

times. The company is well-positioned to leverage this opportunity with a strong customer base, capital adequacy, wider geographic distribution, extensive sectoral understanding of product development as well as a relatively underleveraged balance sheet to quickly adapt to the changing customer ecosystem. The company complies with all the government rules and regulations to contain the spread of Covid-19. Measures like social distancing norms, wearing of face masks, regular sanitisation of premises and thermal screening before entering the workplace to ensure the health, the safety of workers and staff at the workplace are implemented.

The world is still battling the COVID-19 pandemic and most countries are in the middle of the second wave; however, vaccine rollouts should play a major role in the next round of economic recovery and up-heaving business confidence.

Do you foresee retail consolidation in your main market – the USA? How will this benefit Indo Count?

We expect the following retail consolidation in the US market:

Structural Shift: Expect the USA market to move to few large players due to a strong balance sheet and increased capacities.

Consolidation: Increased market share gain could be higher for larger players.

Reduced fragmentation: Reduced fragmentation in end markets would lead to an increase in share for organised suppliers.

Organised Manufacturers: Organised manufacturers benefit on the back of increased capabilities.

Increased Efficiency: Consolidation will lead to increased efficiency and productivity in manufacturing.

What are your plans for the fashion/utility and institutional side? What would be the contribution of these segments to your overall portfolio? How big is this opportunity for Indian suppliers?

Our focus on offering an integrated bedding solution with innovation and keeping customer preferences of the future in mind has resonated well with all our buyers. Having entered the largest sub-segment of fashion, utility, and institutional bedding in 2016, we have continued to make all-around efforts in terms of innovation, service, delivery, and capacity to grow our brand equity in these segments. These segments today contribute 15 per cent of our revenue.

The home textile size of the US market at retail is \$28 billion of which bed linen is \$14 billion i.e., bed linen comprises of four major categories in which sheets are \$4 billion in value share. The other three are fashion, utility and institutional bedding which is a \$10 billion market. Currently, India holds around 60 per cent market share in sheet set. The target market of almost \$10 billion in the other three categories can be addressed and capitalised. Currently, China is a dominant player in these three categories and India is still at a nascent stage. The China+1 strategy will help shift these product categories to India. The Indian home textile industry stands to gain on this potential shift of these product categories. Therefore, the fashion, utility and institutional segment is a large 3x opportunity size for Indian suppliers.



The key philosophy that drives your Corporate Social Responsibility (CSR) initiatives is that “Every Smile Counts. Tell us about the activities of the Indo Count Foundation.

Indo Count is committed to creating a larger societal value. It stands as a responsible corporate citizen to serve the greater purpose of prosperity in the society it grows. With a participatory and collaborative approach in CSR, the company continues to improve the lives of the community in the local areas of operations i.e. Kolhapur. The key philosophy of all the Corporate Social Responsibility (CSR) initiatives is guided by the belief “Every Smile Counts.” For 5 years, the company has carried out CSR activities in the areas of education, healthcare, women empowerment and water and sanitation.

Some notable CSR activities revolve around facilitating the educational needs of children in nearby schools, providing CSR medical help to villagers through proactive mobile health check-up vans, skill development offerings for women to empower them financially, as well as promoting sanitation by building and maintaining toilet blocks in the areas near Indo Count facilities.

In the sustainability domain, Indo Count’s CSR program ‘Gagan’ is helping farmers to cultivate sustainable cotton through our Better Cotton Initiative (BCI) project. Indo Count has also taken SMART goals for greenhouse gas emissions reduction through the Walmart Gigaton project. Additionally, the company is also taking crucial steps to creating a better world such as installing renewable energy in the premises, the recycling and reuse of water through a modernized ETP plant, conservation of water resources, reduction in the use of plastic and promotion of sustainable fibre products. It has also initiated ratings for ESG and will be reporting this soon. 

Awards and Recognitions

Since the last 13 years, Indocount has been exporting and has reached a leadership position in exports in India. The company has been felicitated with numerous prestigious awards to name a few:

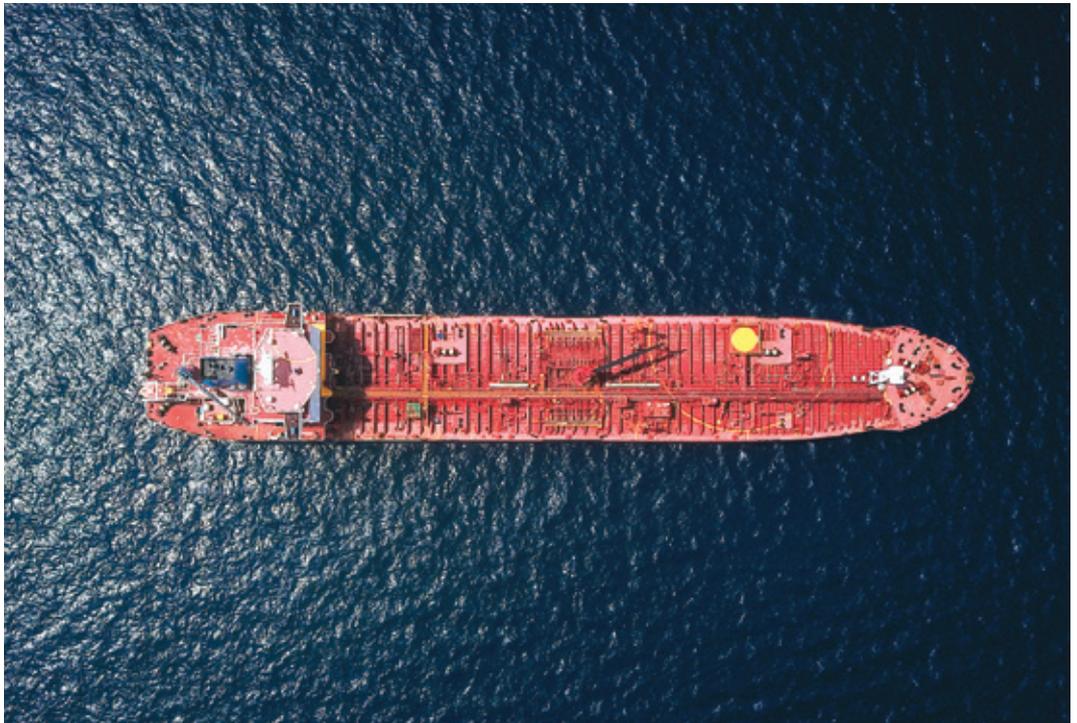
- Honoured with Gold Trophies by TEXPROCIL for highest export performance in bed linen for consecutive two years 2018-2019/2019-2020.
- Executive Vice Chairman, Mr. Mohit Jain, has been honoured with The Economic Times Business Leader - Youth Icon Textiles award 2021
- Pride of Maharashtra Award under the category of ‘Best Company of the year’ in 2019
- Recognized by Walmart Corporation as “Giga Guru” amongst Global Top 20 suppliers

By Rahul Kamat

RECONFIGURE AND REDESIGN

It is hard to understate the importance of supply chain efficiency for large and growing economies, particularly India. An efficient and sustainable supply chain management system is one of the key factors for economic growth. An effective supply chain directly translates into competitiveness across economic sectors through lowered input costs.

The Machinist takes a closer look...



India's supply chain and logistics sector is one of the largest globally, with a logistics industry of USD 215 billion and growing at a CAGR of 10.5 per cent. However, despite its size and criticality to economic growth, India's supply chain is marred by an unbalanced logistics modal mix, high indirect costs, poor infrastructure, fragmented networks, and lack of technology adoption. The COVID-19 pandemic has accentuated supply chain weaknesses, with nearly 75 per cent of companies worldwide experiencing disruptions. Worse still, most companies have reported a lack of any contingency plan to deal with a problem of this magnitude.

One of the biggest revelations of the pandemic

for this sector is the urgent need to leverage disruptive technologies for greater resilience. In India, the pandemic has accelerated digital adoption on the demand side. This stemmed from the unprecedented demand faced by online grocery providers, which forced them to limit access for existing consumers in April and May 2020. These disruptive events pushed decision-makers to reimagine the country's supply chain management.

This is the moment for the Indian supply chain and logistics sector to reconfigure and redesign supply chains with greater thought too disruptive technologies and risk management, especially considering the resilience required in the manufacturing sector.

TECH-ENABLED SUPPLY CHAIN ARCHITECTURE

In the recently concluded ET Supply Chain Management & Logistics Summit the discussion revolved around making supply chain channels technologically driven. In today's world, digitisation is not an option, but a necessity. Most of the panelists in one voice opined the need for end-to-end, real-time visibility to enable quick action in case of disruption. "Having a sustainable competitive advantage and the increased use of technology to automate supply chains will be some of the major trends in supply chain management moving forward," opined **Tamal Das, Head of Sales & Marketing, CriticalLog India Pvt Ltd.**

According to panelists, the entire supply chain needs to be connected by integrating physical networks with digital technology. The latest technology, such as geo-tagging, auto-capture, and big data, enables collaboration, better forecasting, and traceability along with the network, which helps to monitor supply chains. Technology-enabled forecasting helps reduce wastage along the supply chain by allowing organisations to manage demand- and supply-side shocks.

In his inauguration address, **Mansukh Mandaviya, Minister of State (Independent Charge), Ministry of Ports, Shipping and Waterways Government of India** made his

FACT CHECK

- The logistics cost in India stands at 14 per cent of GDP, compared to the global average of approximately 8 per cent. This creates a competitiveness gap of USD 180 billion for India, which will increase to USD 500 billion by 2030.
- Supply chains are transforming globally by adopting Industry 4.0 trends. Organisations are building agile networks, using disruptive technologies, ensuring end-to-end visibility, and moving from risk mitigation to risk management.
- Several emerging technologies are available to enhance supply chain resilience. In mature economies, the use of artificial intelligence, blockchain, and the Internet of Things (IoT) has proved valuable.
- To make India's supply chain competitive, efficient, and resilient, it is necessary to pare logistics cost to 7-8 per cent of GDP, optimize the logistics modal mix, digitalize 90 per cent of supply chain operations, develop Omnichannel, move towards green supply chains and enhance skill development.



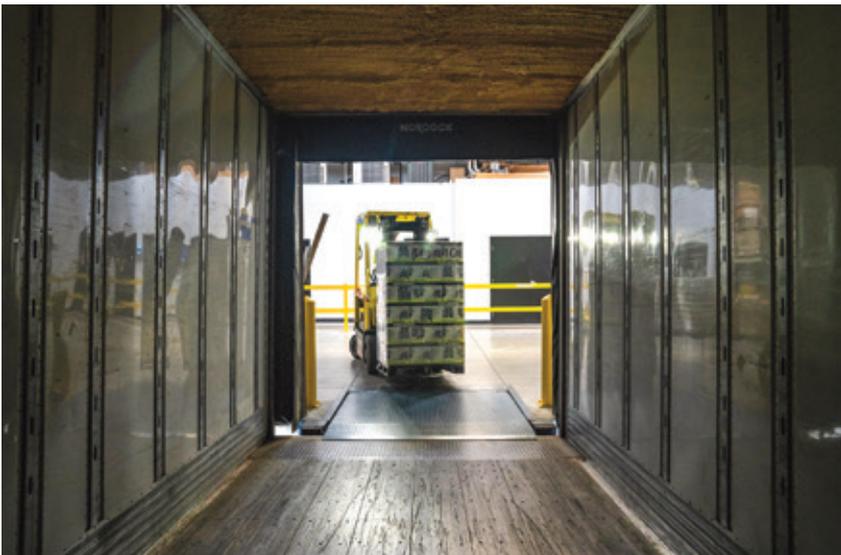
Having a sustainable competitive advantage and the increased use of technology to automate supply chains will be some of the major trends in SCM.

observation on the growing use of IoT in India's supply chain management. "Port shipping, national single windows, and national marine ways are in the process of advancement today. By the end of 2022, we look forward to the process being complete.

The aim is not only to reduce the logistics cost, build an efficient supply chain management, and increase the speed of cargos but also to upgrade ourselves and the people around us with these advances," said the confident Minister.

INTEGRATING THE SUPPLY CHAIN NETWORK

Building a flexible and agile supply chain requires platforms that integrate the processes involved. The panelists recommended a move towards omnichannel supply chains to provide a seamless experience for consumers, irrespective of the channels used. Simplifying the supply chain will also make it feasible for organisations to function with low inventory. The panelists also suggested a need to in-





BUILDING AGILE NETWORKS

The ongoing pandemic has forced industries to step back and review their strategies, operations, and processes. Organisations have realised that they need to build networks and/or channels that will allow them to navigate quickly and easily in a changing environment. “It’s been a tough year for everyone. Logistics and supply chain management has been on a roller coaster. Right from port congestions to full and partial lockdowns across countries, there has been a COVID impact on demand and supply. As for agility and flexibility in supply chains: We cannot plan what we don’t know, but we can build the knowledge and capabilities and organizational culture that can equip us to keep go-

ing ahead.” said **Adarsh Hedge, Jt MD - Allcargo Logistics Ltd and MD- Gati Limited**

tegrate supply chain planning with execution to ensure a quick response to any disruptions. Organisations will gain from building partnerships of shared assets and services. This will help them reduce costs and create an ecosystem by developing collaborative platforms such as online B2B marketplaces.

According to **Saurabh Jain, Partner - Supply Chain Transformation, PwC India**, a focus on building a more connected supply chain ecosystem and the exception-based system is something that is expected in the future. “Customers today expect product and service personalisation and transparency when it comes to the quality and origin of the product. Real-time data gathering is going to be the key. These expectations apply to B2C and B2B equally and all of this is happening against the backdrop of the 4th Industrial Revolution,” he added.

That said, applications and technology of the Fourth Industrial Revolution, particularly big data, augmented reality, the IoT, and blockchain technology, have created the means to transform supply chains, including configuration, planning, processing, and logistics. Effectively applying these approaches can reduce operating costs by 40 per cent, while building more resilient and flexible supply chain networks. In light of these trends, and of recent supply-and-demand shocks in the supply chain, decision-makers are considering new ways of doing business and bringing innovation into their planning and operations to build a sustainable and resilient supply chain. However, building a resilient 21st century supply chain requires bold steps on three main fronts – building agile networks, digitisation and use of disruptive technologies and ensuring end-to-end visibility.



Customers today expect product and service personalisation and transparency when it comes to the quality and origin of the product.

Panellists thought that building agile networks will require a flexible supply chain ecosystem with production spread across manufacturers. Organisations will have to build systems that can optimise costs, accelerate reaction times, and diversify channels. For networks to adapt quickly and function smoothly, it is also important to build agile teams willing to change and adapt rapidly to the external environment. Swift reaction to disruptions can hasten change and minimise damage. Here, one of the panellists cited a few examples. When the French and Italian production of disinfectants and medical gear proved insufficient to meet the needs of those combating COVID-19 LVMH’s perfume factories started producing hand sanitisers within 72 hours. Designer clothing factories of Giorgio Armani, Gucci, and Prada were producing medical overalls, and the trench-coat plant of Burberry began to make face masks and nonsurgical gowns. Now, what played a key role in this switch? It’s the supply chains’ flexibility to rapidly source raw materials and design, develop and test products and distribution.



DISRUPTIVE TECHNOLOGIES

Increased demand for e-commerce with a surge in online ordering has forced manufacturers and retailers to optimise their supply chain operations to deliver high volumes of packages directly to customers. A robust technological system such as blockchain technology for swift tracing of perishable items can boost the productivity of supply chains. The use of data analytics can ensure just-in-time deliveries. Digitizing the supply chain provides a collaborative platform for sharing information with stakeholders and managers at each point. This also raises the quality and speed of decision-making. There are a plethora of technologies that supply chains can use to their advantage. For example, Amazon uses drones for faster delivery and robots in its warehouses for inventory management.

Among these, the trifecta of artificial intelligence, blockchain and the IoT is set to revolutionize the industry, with applications ranging from self-learning algorithms, data-based decision making, real-time monitoring powered by the IoT, and sensor-based technologies. Blockchain also has a wide range of applica-

tions, from data management and secure transactions to traceability.

Procter & Gamble's strategy to deploy a cloud-based platform for real-time information on production and external demand helped minimise the fallout when Hurricane Sandy hit New Jersey in 2012. The hurricane disrupted production in the P&G factory that made 91 per cent of its perfumes. The use of advanced analytics and quick decision-making limited the plant's downtime to two-and-a-half days. Further, in 2017, P&G used digital tools to predict which suppliers, plants and distribution centres were likely to suffer damage from Hurricane Irma in Florida. This allowed the company to prepare for contingencies and avoid disruption and financial loss.

While, **Kokila Roy, Director - Digital Transformation, GEP Worldwide** believes that new technologies take a long time to become an intrinsic part of our lives. Sourcing and procurement occupy a large segment of the supply chain management process. She also voiced her thoughts on the need for collaboration and visibility across supply chain networks which can be a source of high revenue and savings. "Overall, the journey from level one to level five would yield a 20-30 per cent gain moving a company to a clear competitive advantage," she said.

ENSURING END-TO-END VISIBILITY

Visibility is an important factor in determining the supply chain system's response rate. It enables manufacturers, distribution centres and retailers to respond quickly to the ebbs and flows of consumer demand, without the need for additional labour or resource allocation. For example, the panic-hoarding of toilet paper could have been avoided, had consumers been able to see the toilet-paper inventory level. Digitisation of goods through radio frequency identification or barcodes will provide visibility at each step of the supply chain and help forecast demand and hence availability.

Toyota has created a database to visualise the supply networks for each of its components. Thus, if a disaster strikes, the company knows precisely which parts are at risk. The database also identifies components that are provided by only one manufacturer and, hence, difficult to replace. This helps reduce dependency and arrange alternative suppliers.

To conclude, greenfield manufacturing will remain unviable because high logistics costs are a barrier to entry. High logistics costs will continue to impede local manufacturing and reduce demand for Indian products in the global markets. As the observations of leaders and experts show, India has no choice but to transform its supply chain if it aims to become one of the leading economies of the world. 

By Kruti Bharadva

FROM FARM TO TABLE

An insightful interview with **Thirukumaran Nagarajan, CEO and Co-founder, Ninjacart** as he delves into the intricate world of food supply chain management.

Tell us about the idea behind setting up an agri-tech start-up in India's fragmented supply chain industry?

I started Ninjacart in 2015 with my Co-founders, Sharath Loganathan, Vasudevan Chinnathambi, Kartheeswaran KK, Ashutosh Vikram and Sachin Jose, as a hyper local B2C grocery model. We aimed to deliver fresh produce to consumers in less than sixty minutes. The goal was to move retail produce online, helping grocery store owners expand their customer base as well as making it convenient for buyers to have fresh vegetables delivered to their doorstep. After operating for six months in Bengaluru city, we realised that the demand for online grocery was at its peak, but the supply side was fragmented. It was the farmers and the retailers struggling to meet the demand. Farmers had to sell their food at a low rate to intermediaries, while retailers were forced to compromise on quality, which impacted the end consumers. Considering all these factors, we decided to make a transition from B2C to B2B, where we started engaging with farmers directly to standardise the process at all levels of the food supply chain.

What are the challenges you faced during your journey?

Ninjacart was one of the first agri-tech start-ups in India to identify the pain points of the supply chain. The transition was difficult as we faced various challenges executing the business model as there was no reference or example that we could lookup. It was easier for farmers to work with a known face than an agri-tech business, so gaining trust wasn't easy either. We did overnight visits to mandis (farm markets) to understand the framework because of the complexity in the supply chain management. And it took us almost a year to find an approach that would work. There was a great deal of learning and growth for the entire team. We made ourselves aware of every minor and major difficulty that could obstruct the development of the infrastructure in the long term. One of the first triumphs as an



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To standardise the process at all levels, we use sophisticated algorithms, leverage big data, predictive analytics and a mobile-based platform.

agri-tech start-up in India was leveraging technology to address difficulties and increase efficiencies of the end-to-end supply chain. We can confidently claim that we have successfully eliminated intermediaries in the food supply chain, backed by cutting-edge technology and analytics.

At present, we operate in all 11 metro cities, transporting fresh produce within 12 hours across India. Furthermore, we conduct farmer outreach programmes throughout networks to identify their existing expertise and provide up-skilling ways to keep them up to date with recent market trends. We also provide retail outlets with a one-stop-shop for all of their supply needs, allowing them to eliminate the burden of dealing with many intermediaries by accepting safe payments.

What have been major growth hacks in the early days of Ninjacart?

Ninjacart is India's leading B2B fresh produce supply chain company, a pioneer in the tech-driven supply



chain space for fresh vegetables and fruits in India. To standardise the process at all levels, we use sophisticated algorithms, leverage big data, predictive analytics, and a mobile-based platform. We ensure that high-quality fresh produce gets delivered without compromising the efficiency of the food supply chain.

We carry tons of fresh produce every day and connect farmers with stores, restaurants, and small business owners directly. Everyone at Ninjacart is given an app and stakeholders must follow the directions in that app. Our communication with farmers is absolutely transparent. We have developed specific apps to aid farmers with demand predictions, harvest planning and determining the value indent. We assist them in finding the most appropriate ways of farming and we inform them about better varieties of seeds and suggest sustainable harvesting practices.

Ninjacart's paperless supply chain also connects farmer produce to retailers. Technology is utilised to reduce the needless intermediary cost of middlemen, lowering the risk of quality deterioration in fresh produce. It contributes to increasing the value and providing consistent delivery at the right time and the right price to the consumer while also paying the farmers a fair price.

We also provide convenience to restaurants and retailers by allowing them to inspect the quality and freshness of vegetables and fruits without having to go to the market. Our just-in-time logistics system prioritises speed and reliability in all processes. The infrastructure we developed has decreased the time it takes for produce to go from farm to store, allowing farmers to generate more revenue and build a better economic life.

As a supply chain company, what roles do technology and data play in your end-to-end delivery solutions?

Ninjacart's food supply chain management relies heavily on technology. The company focuses its efforts on transforming data into useful information. Our technology is intelligent enough to anticipate patterns and potential risks in the food supply chain. We use data to

plan our daily operations and to aid in our business decision-making process. For example, we use generative models and programming to create a recommendation engine and a prediction model. We look at the customers' purchase history and order frequency to determine the type of goods that needs to be procured. We notify farmers about what is expected of them for that month by distributing the 'Harvest the Farm' calendar which includes weather forecasts.

The Ninjacart supply chain is based on vehicle route planning to get tonnes of fresh fruits and vegetables from farmers to stores in less than 12 hours. Algorithms are used to save orders placed by retail consumers the day before. Based on the customer's location, tonnage, crate count and delivery time window, it determines the ideal delivery route. The algorithm also precisely maps out the route of the vehicle to the customer's location- simplifying logistics planning and optimisation by mapping 1,000+ routes for vehicles.

Furthermore, we use RFID (Radio Frequency Identification) to provide transparency across the food supply chain, allowing us to trace the farm produce as it passes through various facilities. The product is tracked throughout the supply chain with the help of Food-Print. Everything is meticulously recorded, from the farmer's information to that of the collection centres.

What are the best practices and techniques you follow to decide what goes into a farm to grow a particular crop?

Facial Recognition: The software quickly captures the entire face, then fragments it into small pieces and converts it in the form of data streams. To mark attendance, 90 per cent accuracy is required each time. This data is used to track the productivity of employees from start to finish and at various points in the supply chain. It is even required to solve many common problems that arise; ensuring orders are delivered timely and without hiccups.

Constraint-oriented modelling: Constraints include distance, vehicle, cost, capacity and time. After defining these constraints, we use a metaheuristic optimization technique (Guided Local Search) to maximize objective

function and reduce supply cost

Future-ready ERP: Mobile-ready ERP removes all paper used in the supply chain

Demand Forecasting: Leveraged deep machine learning to perfect forecasting to 97 per cent and reduce the overall wastage to 4 per cent [Traditional supply chains have wastage up to 25 per cent]

Farmer apps: Ninjacart also has specific apps for the farmers wherein they help them not only in demand forecasting but also with harvest planning and determining the price indent

Connected Logistics: Speed and price can make or break any supply chain. Ninjacart's indigenous route optimization and utilisation keep the load factor at 92 per cent. It puts fresher vegetables on the plate at a cost that is 1/3rd of the traditional supply chain.

What are your views on the overall food supply chain in India? What are the areas where technology can make a difference?

The food supply chain in India is incredibly complicated and it is being standardised at each level, to ensure that food is fresher and safer across the country. Post-harvest research and food produce testing are at a very nascent stage, but it is gaining traction due to the adoption of healthier foods following the pandemic.



Given the vastness of the supply chain, technology plays a critical role in quality control and process administration. It helps to reduce post-harvest losses by standardising inefficiencies, distribution capacities and pre-harvest planning

On the other side, new technologies are generating disruptive breakthroughs, and the agri-tech sector will only continue to evolve with the addition of new players.

Given the vastness of the supply chain, technology plays a critical role in quality control and process administration. It helps to reduce post-harvest losses by standardising inefficiencies, distribution capacities, and pre-harvest planning. Simultaneously, technology is involved in supporting farmers with suitable harvesting tools, equipment, and training. Long purchasing processes, poor quality control, and aggressive pricing are also solved through innovative management and new technologies.

At Ninjacart, the use of Artificial Intelligence (AI), the Internet of Things (IoT), sensors, and GPS tech-



nology help us extract information like weather conditions, soil humidity, demand, and cost. Furthermore, the data is accurately used to predict the productivity for the farmers. Technology that analyses and monitors data on soil humidity, pests, and crop conditions is expected to advance rapidly.

How has the company navigated the pandemic, being a provider of essential service solutions?

We were all caught off guard by the outbreak. Operations came to a halt due to a lack of labour and restricted movement. During the first several days of the lockdown, it was unclear which parts of the supply chain were operational. The main concern was transportation, which hindered Ninjacart's operations at all levels of the supply chain. To address this, we collaborated with government bodies, obtained access passes for our truck drivers, and bore the cost of transit from farm to fork.

As we were only allowed to work for a few hours, it was extremely difficult for many retailers to secure fresh produce and process to conduct business. The farmers' community was anxious about their harvested produce. Regulated markets, where farmers sell their produce were intermittently closed and no merchants or consumers showed up to make the purchases. They reached out to us to seek our help in selling their fresh produce. We analysed the situation and started working closely with them. Partnering with various NGOs, we deployed several initiatives allowing them to have a direct relationship with the end consumer.

To assure a continuous supply, we temporarily switched our model from B2B to B2C- home delivery mode for all consumers. The rapid surge in client numbers put a strain on our customer care and service staff. So, to keep up with the sheer volume, we implemented new workflows, created apps, and effectively managed several procedures to improve operations and address the issue of the labour crunch.

Every initiative launched by Ninjacart was to support the various stakeholders that are directly as well

as indirectly affected by the organisation's operations.

With 'Harvest The Farm' we aimed to protect the interests of our farmers, by establishing a direct channel between them and the end-users ensuring that their produce does not rot in the farms. To further our efforts, we tied up with platforms such as Zomato, Swiggy, and Dunzo. All this was managed by leveraging our existing supply chain while working overtime to help farmers and end consumers in an ongoing lockdown situation

What was the rationale behind the launching of FoodPrint?

The launch of 'FoodPrint' was to drive home traceability, consequently achieving the goals of food safety and 100 per cent transparency. It helped us meet the health and wellness demands of our consumers

Apart from delivering products to various apartments and buildings, we supplied fresh produce to orphanages, old age homes, and slum areas at subsidised rates. Such steps helped us in supporting the under-privileged sections of our society in times of dire need

The pandemic has altered the way we obtain, manage, and deliver fresh fruit. But we were able to quickly adapt and incorporate a strategy that enables heightened transparency, enhanced resilience and intelligence within the supply chain, with recovery operating capabilities in the event of a disruption. We see this as an opportunity to re-design the supply chain through technology and long-term strategies.

What is Ninjacart's 'Sustainable Food Traceability Infrastructure'?

Ninjacart has taken important steps in the last three years to ensure 'Safe Food for Billion People' which was the ultimate vision, and which has become our raison d'être. We have introduced 'FoodPrint', a traceability infrastructure to track fresh produce at all levels of the supply chain till they reach the shops. The implementation of tracking infrastructure has enabled us to adopt residue-free agriculture technologies. Residue-free veggies are grown to fulfil expected worldwide food safety standards by optimising farm inputs. Overall, we have consistently made efforts to streamline the supply chain and adapt and incorporate technological developments into the agricultural sector and are pleased to make a difference in the lives of people.

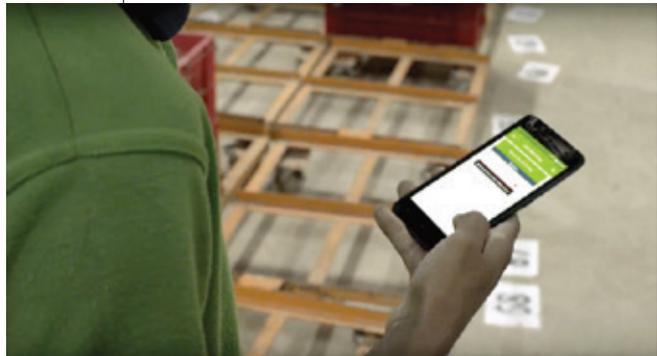
The traceability infrastructure not only guarantees 100 per cent traceability but also serves the purpose of safe food till last-mile delivery. The infrastructure developed by us traces down right from who is the farmer,

when was it harvested, the truck that carried the produce, the warehouse that processed it, the helper who handled the merchandise at the warehouse, a retailer who bought the merchandise, and the mode it was delivered through to the consumer's doorstep. In that manner, we can hold everyone accountable for the way produce is handled, carried, and transported.

With the assistance of cutting edge technology like RFID tags, produce is mapped right from the time a farmer brings the produce to the gathering centres and therefore the same foodprint ID is kept intact till it reaches the retailer then the buyer. All this is possible by entering the order number that one receives on the real-time Footprint Viewer.

What are your growth plans for the next five years?

Ninjacart aims to assist retailers in taking their inventory online, encouraging ethical farming by bringing more farmers into the Ninjacart network and expanding its customer base, all while employing technology to solve complicated supply chain blind spots and difficulties. There are inefficiencies in traditional farming



practises, and via our collaboration with Kilofarms, we are working to build a community of farmers who are well-versed in innovative agricultural technologies. Apart from that, there is a movement in consumer behaviour towards healthy eating and the need for transparency in the fresh food supply chain is imminent. Ensuring food safety to billions of people with the launch of FoodPrint remains our priority.

Furthermore, we want to strengthen the supply chain such that it adds value to all stakeholders, Utilise our expertise and resources to equip farmers with technologies such as sensors, data analytics, software, and a variety of other tools that can help them achieve greater results.

We are happy with the positive difference we've been able to make to the industry for others to understand the potential it offers, pushing them to contribute to the overall success. 

By Birender Siwach, Head of Purchasing & Supplier Quality, Continental Automotive India

SUPPLY CHAIN 4.0

A look at how Industry 4.0 concepts are being used to transform supply chain management in the 21st century

As per the recent Fortune Business Insights report, the global Industry 4.0 market is projected to grow from \$116.14 billion in 2021 to \$337.10 billion in 2028, at a CAGR of 16.4 per cent in the forecast period 2021-2028. This transformation towards Industry 4.0 technologies has also provided the required agility to continue operations in the past few months.

Manufacturers who had adopted Industry 4.0 practices were in a better position to handle COVID-19 induced challenges.

As per the McKinsey survey published earlier this year, 56 per cent of respondents that had not implemented Industry 4.0 before COVID-19 found themselves constrained in their ability to respond to the pandemic.

The usage of huge data applications, collaborative robots and automatic transport robots has increased as companies begin to implement Industry 4.0 technologies at their plants. Implementation of Augmented Reality (AR) for remote assistance and problem-solving, AI for facial detection of quality inspectors, Automated Guided Vehicle (AGV) for material movement in the workplace and Cobots to undertake repetitive tasks, are slowly becoming a norm.

TRANSFORMING SUPPLY CHAINS

Under the gambit of Industry 4.0, the smart factory is the step towards moving current supply chains to the autonomous supply network. Within modular structured smart factories, cyber-physical systems monitor physical processes, create a virtual copy of the physical world, and make decentralised decisions. Over the Internet of Things (IoT), cyber-physical systems communicate and cooperate with humans in a synchronous manner and time, both internally and externally. Future factories shall see humans and robots working in tandem with each other.

Here are a few SCM 4.0 trends that will transform the way we envision supply chains.



Artificial intelligence

A key reason why AI adoption in the supply chain is becoming popular is the realisation by companies of its potential to solve the complexities of running a global logistics network. Implemented correctly, AI helps companies to make smarter and more agile decisions and anticipate problems.

AI and ML (Machine Learning) can also be used in decision-making for obsolete inventory management. The ability of ML to decipher trends and patterns from data across the supply chain makes it ideal for optimisation.

In the same way, predictive forecasting techniques are helping supply chains to come out with intelligent demands and reduced inventories. A smart warehouse, within a smart factory, and with AR, VR, and AI techniques shall dramatically change how warehouses used to operate in the past. Moreover, AI-powered chatbots have been instrumental in redefining Customer Relationship Management (CRM).

AGVs

Automated guided vehicles play an important role in the material flow in a digitised factory. They reduce manual activities such as driving forklift trucks, speeding up transport, making it clear exactly what goods are always available and where and making processes more predictable in general.

Smart Sensors

Smart sensors enable digital insights that are used to create new value across the supply chain. Managers now have real-time information about their inventory, machinery and purchased materials; smart sensors create visibility across the supply chain and fuel analytics. This information can be used to understand and anticipate demand, optimise sourcing and drive high-value manufacturing decisions.

Smart sensors could improve the supply chain by increasing operational efficiency, lowering production costs, and providing critical insights into customer behaviour. With smart sensors, predictive maintenance and inventory management will become easier. It also helps in improving labour productivity and performance accuracy. Management can also gain insights into future product development and after-sales offerings.

Digital Tools and Integration

Many global organisations are also taking the initiative of integrating all the different SAP and ERP systems used worldwide with standardisation of the business processes across the globe.

For instance, 'SPIRIT'- Strategic Process Integration Rolled out In an International Template-integrates all the ERP systems and business processes in one system, which entails end-to-end supply chain planning-from customer demand planning to suppliers' orders with planning up to customer order fulfilment.

All the processes in the organisation can happen through SAP – APO (Advanced Planning Optimisation). Complete planning cycle includes Customer Demand Planning, Monthly Volume Review Planning, Suppliers Scheduling and Production Sequencing and Scheduling (PSS) with Customer Order Fulfilment through SAP SD module.

These tools in demand planning and supply management and the release of weekly MRP schedules to the company's global supplier base also help secure the global and local suppliers' capacities and fulfil customers' demands in the JIT environment.

This ensures that the company has the right products, components and goods at the right place, at the right time, in the right quantities, and of the right quality manufactured at the most technologically advanced and automated production lines. Also, tools like Automatic replenishment, TOMS (Transport Order Management Systems), GPS enabled vehicles (outbound logistics) are making the SCM processes more efficient.

POSSIBLE CHALLENGES

Technological advancements in supply chains are bound to optimise the function. However, if they are not implemented in the right way, it can cause chal-

lenges. For instance, the changes in SCM technologies will also create new job roles on the shop floor while making some roles obsolete. To address this, companies must run various reskilling, cross-skilling and side-skilling programs.

Another challenge that can arise is cybersecurity. While making the SCM processes more insightful and productive, connectivity and smart technologies can also open the doors to cyber threats and vulnerabilities. A 2019 report by Kaspersky Lab, for instance, indicates that nearly 50 per cent of industrial systems display clear evidence of hackers attempting some form of malicious activity. As more and more bad actors target the industrial internet, the manufacturing industry should understand that cybersecurity concerns must be at the top of the mind.

Existing within a supply chain ecosystem requires diligence toward proper vendor management. Any third parties that have authorised access to the company's network can become unwitting avenues of attack. A bad actor who steals any login credentials of the third party could potentially gain access to the company's network by pretending to be an authorised user.

Moreover, the manufacturing setting needs to be considered as a fully integrated setting, even if some processes are not integrated into the Internet. Although many breaches start in IT networks, the hackers or attackers may jump into other parts of the setting through connected devices. Furthermore, some connected devices may include information about the non-connected process.

SUMMARY

Supply Chain processes are becoming digital, smarter, and connected. AI, smart sensors, AGVs, digital tools are some examples of how the industry is embracing the transformation. This will help in optimising costs, increasing productivity, and identifying areas for improvement in the process. However, effective implementation would be critical to reap benefits.

To summarise, the full potential of SCM 4.0 will be realised through maximum digitisation in the coming years. The COVID-19 pandemic has further acted as a fuel to speed up this transition internationally. 

ABOUT THE AUTHOR

Birender Siwach is the Head of Purchasing and Supplier Quality at Continental Automotive India. In his role, Siwach is responsible for defining the India-specific purchasing strategy to meet Continental India's growing business needs. Siwach manages the India level Purchasing SQM efficiencies, team development, resource planning, budgeting, and operational expenses. He also leads, coaches, and mentors different Purchase SQM teams.

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By Kruti Bharadva

LONG LIVE TOOLING

ISCAR, an innovative tooling solutions provider, shares insight on live tooling and its applications

Live tool (also known as a driven tool) is the term used for tools that clamp on a lathe turret or a tool post with rotation capabilities. In a traditional lathe, a workpiece rotates, but the tool does not. Multitasking CNC machines with turning, milling, and drilling capabilities have significantly changed process planning principles. It was a major leap forward to the one-setup machining of a whole part – the dream of every manufacturer.

Commonly, Swiss-type machines have one or two sub-spindles. Therefore, it was no coincidence that the Swiss-type machine adopted the live tool concept very quickly, which has considerably increased machine functionality.

Such noticeable changes in machine tools were bound to influence appropriate tooling, so the development of live tools turned into a specialised sector for tool producers. When referring to live tooling, it is often assumed that the emphasis should be on the tool holder that carries standard round tools with relatively small dimensions. Indeed, a rich variety of turrets, sub-spindles, and milling spindles in multitasking machines and live tool lathes results in a wide range of tool holding systems with different adaptations. These systems are intended for clamping diversified standard cutting tools.

In many cases, limited working space and various designs of tool posts, turrets, and sub-spindle units, which reflect every imaginable concept of a machine tool builder, require customised tool solutions. This is usually correct when it comes to small dimensions, mainly related to Swiss-type lathes and small to



Fig. 1 - Integral collets with FLEXFIT threaded adaptation for mounting various cutting heads with indexable inserts.

medium multitasking machines, but are less common in powerful heavy multitasking machines, which are intended for large, complex parts and consume a lot of large-size standard tools.

Increased capabilities of multitasking and Swiss-type machines form new requirements of cutting tools and have an impact on tool development. The metalworking industry is primarily interested in new versatile cutting tool solutions that can easily be

incorporated into various tool holding systems.

How do industry requirements reflect a toolmaker's portfolio? A quick look at ISCAR's new product lines, particularly the recently launched NEOLOGIQ, can help answer this question.

VERSATILE COLLET

ISCAR's MULTI-MASTER line features a broad selection of integral shanks with different types of taper adaptations, for example, an HSK taper (DIN 69893) or a polygonal taper (ISO 26623-1). In addition to providing maximum rigidity, another advantage is that the shank can facilitate connection to a sub-spindle without an adapter.



Fig. 2 - NEOCOLLET tools with exchangeable carbide heads expand the field of milling applications.

Typically, the connection to the spindle is still made using an adapter. One of the most popular adaptation systems for tools with a shank is the ER collet, specifically for Swiss-type lathes and small to medium multitasking machines. This simple, flexible, reliable, proven overtime system is suitable for almost every tool with a round shank for indexable or solid carbide. Therefore, the ER collet is more commonly used in multitasking machines and live tool lathes.

ISCAR developed a wide

range of modular tools for ER collet chucks. The main element of these tools is the integral collet – a tool with a tapered shank for mounting on an ER chuck. When compared with a typical spring collet, an integral collet provides better accuracy and higher rigidity. The integral adapter acts as an intermediate clamping link that is inserted into a collet chuck and enables mounting various cutting heads that are clamped into the collet, for example, a FLEXFIT styled collet has an inner thread and centring bore for drilling and milling heads with carbide inserts.

In the MULTI-MASTER line, there are many integral collets for ER collet chucks in sizes starting from ER11 to ER32, which ensure perfect tool securing. The shank series varies in protruding from a collet chuck that enables minimising a tool overhang and finding an optimal tool configuration according to the shape of a machined part. If necessary, the configuration may be adjusted with the use of numerous extensions and reducers. As a result, such a shank turns into an additional adapter, which is suitable for carrying the widest variety of MULTI-MASTER exchangeable heads. This unique line supports the “No Setup Time” principle and there is no need to remove the shank from a chuck when replacing a worn head – the head replacement can be done when the shank is in the sub-spindle machine.

ISCAR has also extended its family of integral collets with shanks that have internal coolant channels for accurate coolant supply to the cutting edge to improve chip evacuation and increased tool life.

One more symbolic step in the development of the integral collet was the introduction of NEOCOLLET – a family of tools with tapered shanks for ER16 ER40 chucks that carry disc-type exchangeable heads from cemented carbide in diameters of 32, 40 and 50 mm. The heads belong to different milling families and are intended for various applications such as milling slots and grooves, face milling, and forming milling gears. The NEOCOLLET tools also feature an internal coolant option.



Fig. 3 - NEOGRIP assembled parting and grooving tools designed specifically for SWISS-type lathes.



Fig. 4 - SWISSCUT tools with extra-long inserts provide a deeper depth of cut in parting and grooving.

IN SWISS STYLE

Swiss-type lathes and multifunction machines are primarily designed for turning operations. For this reason, great attention is given to the constant improvement of turning tools. Even though many of these tools are products of our standard line, some designs are worth considering.

Recently, ISCAR introduced the SWISSGRIP – a system of assembled tools for parting and grooving with narrow widths of 0.6 to 1.2 mm. A typical SWISSGRIP tool comprises a prismatic holder for mounting in a machine tool

post and a double-pocket blade (adapter) that carries cutting inserts, which are secured in the blade by a self-clamping mechanism. The blade provides high repeatability and position accuracy, while the ergonomic design enables easy and fast adapter indexing from both sides of the holder. In parting, the new tools facilitate cutting-off bars in an up to 16 mm diameter. The narrow width of cut, in this case, results in significantly saved waste

of raw materials.

The SWISSCUT XL, another tool family, is designed for deeper depths of cut in parting and grooving of up to 10 mm and is also suitable for turning. A SWISSCUT XL tool carries an extra-long indexable insert with two cutting edges, which is securely mounted by two screws. Front insert insertion and extraction enables indexing the insert on a machine while maintaining a minimum overhang from the machine gang tool post. When insert indexing, there is no need to remove the screws. A stopper plane beyond the insert cutting area ensures using the second cutting edge of the insert, even if the first used edge is completely broken.

Turning tools with a multipurpose 55° rhombic insert are very common. For cases where tools are applied to cutting with high-pressure coolant (HPC), ISCAR developed a square-shank tool with a rigid screw clamping mechanism for the insert. 

Source: ISCAR Cutting Tools

NEXT GENERATION TUBE LASER CUTTING MACHINE

LVD Company nv has introduced the TL 8525 to its line of tube laser cutting machines. The new generation tube laser, designed from the ground up, comes equipped with several high-performance features to optimise tube cutting for even the most complex of applications. With a large 8500 mm infeed length, the TL 8525 can process tubes up to 250 mm round or square. Standard machine features include a 45-degree 3D tilt-axis cutting head for bevelling, 6-position front loader, and a wide X-axis cutting head range of 1190 mm to maximize material usage. A substantial 400 mm Z-axis permits the cutting of larger profiles.

A completely new design, its welded steel structure provides high rigidity and dynamics. The pre-mounted chuck and steady rest facilitate quick and easy machine installation and start-up. Because loading and unloading is handled on one side, the machine can fit in a small space or against a wall. To provide versatility for the widest range of use to cut round, square, rectangle, or other profiles, no matter the complexity, the TL 8525 is equipped with key features typically offered as options on comparable tube laser cutting machines. A 45-degree 3D tilt cutting head is standard. The multi-axis cutting head delivers high-precision bevel cutting in round, square, rectangular and irregular-shaped tubes, cuts complex profiles and channels, and can be used for weld-preparation cuts in thick-walled tubes.

A 6-position front loader is also a standard feature. This semi-automatic loading device provides a high level of material loading flexibility. It handles up to six tubes and offers six positions of even the largest diameter 250 mm tubes. The system can be loaded with different types of tubes in different sizes and can be interrupted during processing to add a new tube. Unlike a bundle feed system, there is no waiting to rebind the bundle in the loader, remove it from the machine and



then reload a new bundle. The flexibility of material loading efficiently handles the needs of both small batch and long-run production. A generous 1190 mm X-axis cutting head range permits processing along a greater length of the tube, including behind the steady rest unit. The capability to process more of the tube and waste less material makes tube cutting operations more productive and profitable.

Other key features include a programmable table in the out-feed zone. The servo-controlled table features a tilt function for smooth part release and is integrated to a 3 m part evacuation conveyor. The conveyor uses multiple compartments to

securely separate and hold parts – even round or longer tubes – as they move along the conveyor.

The TL 8525 incorporates a high degree of automation with automatic tube loading, automatic tube centring and automatic set up and adjustment of the chuck and steady rest. A high-power fume extraction system integrated to the chuck automatically removes approximately 4000 cubic meters of fumes hourly from the cutting area. It also comes equipped with a 2 kW IPG fiber laser source capable of cutting a range of ferrous and non-ferrous materials. A 4 kW laser source is optional. For more information, contact Tom Verhaeghe, tom.verhaeghe@lvdgroup.com

ALUMINIUM CUTTERS BRING EXTRA DIMENSION

Dormer Pramet has launched a new range of solid carbide end mills for aluminium and non-ferrous materials. The additions within its Dormer S6 assortment includes three and four-flutes cutters, along with several smaller diameters to its existing two-flutes offer.

The S6 assortment is particularly suited to precision and high-speed machining of aluminium and its alloys. All geometries provide high quality surface finish, making the range suitable for airframe assembly, automotive and die and mold applications, particularly for prototyping.

All three-flute designs (S650, S614 and S654) offer smooth cutting action and reduced stress on the spindle.



A four-flute option (S662) includes various corner radius designs, reinforcing the end teeth for a stronger performance.

A differential pitch option is available on select cutters, reducing vibration, maximizing productivity and tool life, while a positive rake angle enables a smooth cutting action, reducing the risk of work-hardening.

The S654 cutter features a neck recess to help avoid contact with the wall in shoulder operations and an NRA profile to break swarf into manageable smaller pieces, reducing spindle load and increasing metal removal rates. For more information visit www.dormerpramet.com

WORLD'S FIRST DIGITALLY CONNECTED ELEVATOR

KONE India launched the world's first, ground-breaking class of digitally connected KONE DX Class Elevators, which will redefine the elevator experience. With built-in connectivity for improved people flow, KONE DX Class promises an experience that connects at every level.

Speaking at the launch, **Amit Gossain, Managing Director, KONE Elevator India**, said, "We are thrilled to present the world's first fully digital connected elevators: Our DX Class! This new generation of elevators come with built-in connectivity to future-proof your building and deliver a redefined user experience. This leap in technological advancement is what people are expecting from their normal everyday products as well. And elevators are no exception. A decade down the line, almost all our gadgets will be voice-enabled and IOT driven. Thanks to the advancements in artificial intelligence, the smartest homes will be able to truly learn about their owners or occupants, eventually anticipating their needs."

"Developments in robotics will give us machines that offer a helping hand with cleaning, cooking and much more. New sensors will keep tabs on our well-being. Central to all of this, will be the data that smart homes collect, analyse and act upon, helping to turn the houses of the future from a mere collection of gadgets



and accessories into truly "smart" homes. With KONE's 24/7 connected services I believe you are already aligned with the Smart world for the future", Amit added.

Features:

- Built-in connectivity
- KONE SoundLight™
- Open application programming interfaces (APIs)
- KONE Information Solu-

tion and Services

- The option for customers to activate digital services easily and remotely when they need to, including KONE 24/7 Connected Services,
- Touchless signalisation for healthier and safer people flow

KONE offers best Green Building Partner Solution and KONE Tools Support to plan and design the best people flow solution. The new KONE DX Class elevator is also ideal for customers looking to modernize existing equipment with enhanced eco-efficiency, performance and aesthetics. KONE DX Class will not only future-proof your building with market-leading elevator technology, but also inspire, inform, and delight with an elevator experience - above and beyond anything you have experienced so far.

THE NEEDS OF THE INDIAN MACHINE TOOL CUSTOMER

– BY TUSHAR NARWADE, STRATEGIC MARKETING, INOVANCE TECHNOLOGY INDIA

According to a recent report from market research company Technavio, the Indian machine tool market will grow by \$1.9 billion between 2020 and 2024 – representing a CAGR of 13 per cent. India hosts many small, medium, and large users of CNC technology, in particular machine tool OEMs, and the country's SME (small and medium sized enterprises) scene is particularly vibrant. Of course, Indian machine tool builders have needs that are specific to the Indian market. Many are focused on cost, but Indian machine tool manufacturers also need a technological edge.

What's in a good CNC product

A significant portion of the Indian market builds smaller machines or needs CNCs for use in cabinets. This results in a requirement for compact products. Additionally, harsh working environments are not uncommon. Our PA9000 compact series is an ultra-small and lightweight EtherCAT CNC, with a passively cooled and rugged design containing no rotating parts. The product is cost-effective, reliable, and compatible with cutting and milling solutions.

Additionally, we offer the MTIO interface – a com-



pact, all-in-one, cost-effective solution that makes it as easy as it can be to build a milling machine due to onboard spindle and handwheel interfaces, as well as digital and analogue I/Os. Finally, the PA9000 panel is an all-in-one CNC for milling, and includes a screen, a keyboard, and a machine control panel.

Here at Inovance Technology India, we have a strong CNC offering based on our established Power Automation technology. Power Automation was originally a German CNC company founded over 25 years ago in 1993 and acquired in 2018 by Inovance. But the Power Automation brand, and the R&D knowhow that lies behind it, lives on in our product range today. Power Automation is a proven German technology. It is an open PC-based CNC system where one piece of hardware can fit all applications, and where all relevant features are included in the package. Today, as part of Inovance, the combination of Power Automation's CNC technology and Inovance's advanced servo package has resulted in a market-leading real-time machine control solution with a range of benefits, such as EtherCAT communications and the ability to back up or restore the drive from the CNC.

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The Vertical BTA Boring machines, from WIDMA, is tailored for deep hole boring of “front fork outer tube”.

The machine features CNC controls, two spindle for increased productivity and VFD for spindle speed control.

The BTA Boring Machine is built on years of WIDMA's expertise in deep hole machining and is available in horizontal and space saving vertical configurations.

BTA Boring Machine delivers consistent, high quality inner bore finish of front fork outer tube.



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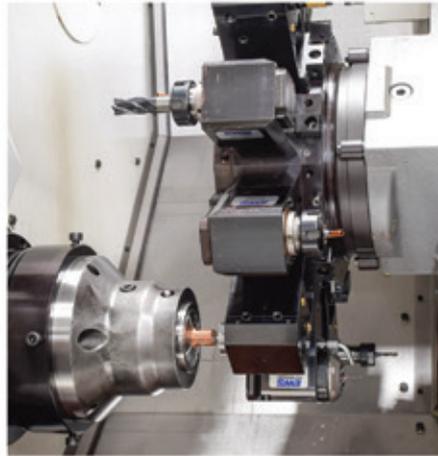
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