

# Industry **Outlook**

WOODWORKING MACHINERY MANUFACTURERS

THEINDUSTRYOUTLOOK.COM

DECEMBER, 2021

## VIVID OUTLOOK

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MATTRESSES

## VANTAGE POINT

K S SUDHAKARAN, CHAIRMAN &  
MANAGING DIRECTOR, SANPAR  
INDUSTRIES INDIA

*Venkataramana Gorti, MD & Country Head*

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# EDITOR'S NOTE



## Dovetailing Technology and Craft

**I**ncreasing adoption of automation in woodworking process and growing demand for precise engineering is leading to widening applications of woodworking machinery for making products such as beams, plywood and boards for industries like construction, shipbuilding and others. Being a thriving market, it calls for an exclusive coverage which we have done in this special issue. The cover story of this issue features Homag India which has a wide range of woodworking machinery under one roof and end-to-end solutions are one of its fortes. It is the Indian subsidiary of the MNC HOMAG Group that was established in Germany way back in 1960. The company has teams of specialists with a high level of process engineering expertise for all product segments. It is the only organization in the industry that has the capability to deliver Flooring lines, Modular furniture solutions, Solid wood machinery, and a complete integrated factory right from concept till delivery to customers as a single-window solution provider. Also featuring in this issue is Biesse India which offers sophisticated high-performance machinery that are built in such a way that it ensures high production capacities while at the same time being reliable. Moreover, the company has managed to keep the price of its products relatively competitive. It has grown into an industry leader that produces 2000 machines every year through both of its plants in Bengaluru. What's more, the issue also acquaints you with the other top players in this segment.

After studying this market landscape in-depth, we have zeroed in on Top 10 Woodworking Machinery Manufacturers that have excelled in this domain with their innovative approach. Having proven their dedication to efficiency in order to meet the customer expectations in an end-to-end manner, these companies have stood out from the crowd.

We look forward to receiving your feedback and suggestions.

*Sudhakar Singh*

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# Industry Outlook

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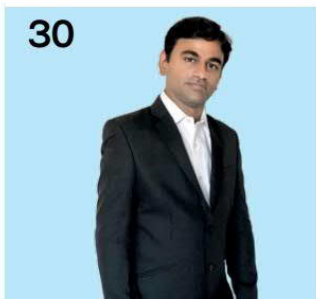
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*Venkataramana Gorti, MD & Country Head*

# HOMAG INDIA

**NEXT-GEN WOODWORKING SOLUTIONS  
FOR THE MODERN WORLD**

# WHERE DOES THE ROLE OF PURE COMPRESSED AIR PLAY IN THE MODERN MANUFACTURING PROCESSES

By K S Sudhakaran, Chairman & Managing Director, SANPAR Industries India

**T**echnology and technology utilisation are the key drivers of the manufacturing innovation and productivity enhancement, pushing the substantial and rapid transformation the business models and market structures. Apart from the advanced materials and digitalisation in manufacturing, automation and robotics play a key role modern manufacturing processes to make the business model competitive which is the need of the hour in this century to achieve sustainable growth.

While we talk about automation, industry relentlessly rely on pneumatically operated machines because of the better productivity, safety in handling, cost effective and the reliability of the automation processes. Efforts by the Research and Development are on devising innovative manufacturing and production machineries which could function flawlessly and continuously for all the three shifts with minimum manpower for machine operation and supervision.

While the market demands the most competitive products along with reliability, the manufacturing processes looks for cost effective automation which in turn depend on the fourth utility called Compressed air.

Compressed air is an important medium for transfer of energy in industrial processes to operate pneumatic cylinders for automation, atomise paint, to power the power tools, air hammers and air bearings.

It is not for no reason that compressed air is known as the fourth utility: the purity of compressed air is so vital that the eventual quality of the product mostly depends on clean and dryness of the air. No processes can afford to have moisture either in the air cylinders or in the painting

guns so much so that in the manufacturing parleys moisture is treated as a menace. Compressed air is vital source of energy in the pharmaceutical and food industries where the quality of the end product depends on the purity of the air as Compressed air come in contact with the end product like antibiotics and milk during pasteurisation.

## WHAT IS COMPRESSED AIR QUALITY STANDARD ISO 8573.1: 2010

Compressed air could be generated with inexpensive process but it would turn out to be the most expensive one if impurities like heat, dust, oil and moisture are not completely eliminated. Certain processes in pharmaceuticals need bacteria free air and Ventilators call for virus free air too!

Compressed air Quality Standard ISO 8573.1: 2010, a group of international standards stipulating the purity and quality of Compressed air provide guidelines for the compressed air that could be tolerated in applications in the industrial use. This standard was reviewed and confirmed in 2017 and this version is current and holds good. Even the smallest possible risk of contamination can impair processes such as material handling, process air and product drying, control valves and cylinders and other tools. These adverse effects can often only be resolved at significant expense directly affecting the profitability.

## HOW TO ACHIEVE ABSOLUTE FILTRATION OF DUST AND OIL

Development of technology in the generation of Compressed air has been an ongoing activity and so is the innovation in the methods of treating compressed air. New materials and methods were devised in filtering and



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drying compressed air since 1970s making the process most effective and superior. Compressed air filters using pleated borosilicate glass fibre have been in use ever since with advent of oil injected Screw Air Compressors, as residual oil from these Screw compressors are mostly in the form of mist and aerosols.

In order to remove these miniscule particles of oil, depth filters were used wherein borosilicate glass fibre in matrix form was employed.

Oil vapours and odour in the compressed air are absorbed using versatile material called Activated carbon.

#### **WHY IS THERMAL ENGINEERING NEEDED IN REFRIGERATION-BASED AIR DRYERS**

Specifications of Compressed air Dryers and testing methods are specified by ISO 8173:2007. It shows the standard rating parameters of in defining the performance of an air dryer, performance tests that need to be conducted and specifies the test set up for measuring various parameters such as Pressure Dew Point, flow rate, pressure drop, power consumption, system air loss, outlet temperature; noise emission.

We could witness the art of thermal engineering in the design of Refrigeration based Compressed air dryers that one would be astonished to see the compactness of the dryers which occupy least footprint and the enhance efficiency with which it operates. These dryers are the most energy efficient as Compact Aluminium brazed plate heat exchangers are used to transfer the heat and then get the moisture in the air condensed. The cold air from the evaporator is passed inside the pre-cooler minimising usage of external source of energy. These dryers are PLC based and can be controlled remotely using communication protocol making the life of the utility engineers at the factory much easy. The functions of the dryers are remotely monitored from the dryer manufacturers from their service stations.

Major innovation has also seen in the Adsorption dryers utilising the heat of the compression of the Air Compressor. Adsorption dryers make use of desiccants where moisture adsorption and desorption are reversible process. The heat of the compression is utilised for the desorption process making the operation cost drying practically nil. Though the capital investment is higher compared to the Refrigeration based dryers, the cost of ownership over a specified period justifies usage these advance featured dryers.

#### **WHY TO BE PRUDENT AND JUDICIOUS SELECTION OF THE TECHNOLOGY**

As the options and choices are aplenty in the market space, one should be prudent in choosing the products on the cost of ownership over a period time and considering the value of



the engineering that it provides. Compressed air as a utility could be of immense value in cost saving provided the selection of the technology is based on the cost of generation of the compressed air and the purity that calls for considering the environment in which the manufacturing unit is located.

In a tropical country like India, where the ambient conditions are much higher compared to the western countries, the specifically designed products suiting the Indian conditions would make much more sense compared to a product designed for colder ambient conditions. When it comes to Air Conditioners, the models are different for the same heat load, say 1.5 TR for Indian and the Middle East market.

The same is the case with Refrigeration based Air Dryers as the condensing temperature of the Air Dryers have a bearing on the sizing of the Air Dryer and subsequently on the power consumption which is the recurring cost.

An Air Dryer designed for the European conditions under perform in the Indian environment conditions if one were to follow the Standard ISO 8573.1:2010.

#### **OUR COLLABORATIVE APPROACH TO SPREAD TECHNOLOGY**

Micro, Small and Medium Industries are the drivers of the economy of any country. This fact has been established in different parts of the world it is true in the Indian context as well.

MSMEs are adept in developing smart technologies and they co-operate with other manufacturers who use their machines smart. It could be an OEM (Original Equipment Manufacturer) tie-up that results in bulk manufacturing products at which in turn helps the MSMEs make their products competitive in a fiercely competitive market.

Organisations are looking forward to Industry 4.0 to get the competitive edge in their area of operations by integrating Autonomous robots, System Integration, Internet of Things, Simulation, Additive Manufacturing, Cloud computing, Big Data Analysis and above all Cybersecurity.

The 21st Century business calls for innovative and smart manufacturing processes that would employ sensors and predict failures so that remedial measures can be employed to make the products reliable yet competitive. [In](#)

IndustryOutlook TOP 10  
**WOODWORKING  
MACHINERY**  
MANUFACTURERS - 2021

**COVER  
STORY**

*Venkataramana Gorti, MD & Country Head*

### **One-Stop Shop for Woodworking Machinery**

*It has been 60 years that the Homag Group was established and the company has also recently completed two decades of operations in India. It works as a single-window for all kinds of woodworking machinery requirements, which are complemented by digital solutions for increased profitability and strength. Homag is trusted by customers in India and all across the globe for their experienced after-sales service network, reliable and sustainable products and user-friendly machines, most optimized machines with reduced operational expenses, strong team to provide SaaS support and last but not the least, customized products library for the consumers.*

# HOMAG INDIA

## NEXT-GEN WOODWORKING SOLUTIONS FOR THE MODERN WORLD

BY HRIDKAMAL ROY

**A**s the country recovers from the pandemic's aftershock and regains control of the economy, infrastructure development has gained back its lost momentum. Both urbanization and industrialization engines are running at full throttle. As a result, there is an increased demand for modular furniture and related products made out of wood. The woodworking machinery industry works as the backbone to fulfil this large-scale demand. Moreover, the plans of mega furniture hubs across states have further fuelled the demand for woodworking machinery.

However, very few companies in this industry have the capacity to provide machinery for all kinds of applications. There is also the problem of not getting the desired solution that is suited according to requirements. Meeting these requirements is Homag India which provides the perfect solution to these challenges. The company has a wide range of woodworking machinery under one roof and end-to-end solutions are one of its fortes. It is the Indian subsidiary of the MNC HOMAG Group that was established in Germany way back in 1960.

Venkataramana Gorti, MD and Country Head – India mentions, "In India, we have a very strong and experienced team at our site in Bengaluru where the team size is increasing YOY with increasing business. In addition to a local sales company, we also have our manufacturing and development facilities. This enables us to understand our customers' needs and translate them into market-oriented products on site. In doing so, we can also fall back on the competent network of the HOMAG Group with its several hundred developers at any time. For us, the key driver continues to be VOC (Voice of the customer) and we are continuously working on customer delight through 'go to market products' and recommending the right solutions for the customers for their business growth."

"Our best-in-class business enablers in HOMAG iX and now with Tapio (our internet-based solutions) coming up in India from this quarter, we are sure the customers will have HOMAG as their preferred choice, as always. We are also investing in capacities through our new factory coming up by end of this year, technology-driven demo centre, and focused training for our customer base. Also, we are continuously investing in skill-enhancements of our team, especially on the after-sales support team who in turn can support the customers more and more. We are also working on the skill-development and enhancement to support the industry as it's on a big trajectory of growth," he adds.





## THE NEW OFFICE SPACE OF HOMAG INDIA COMING UP BY END OF THIS YEAR

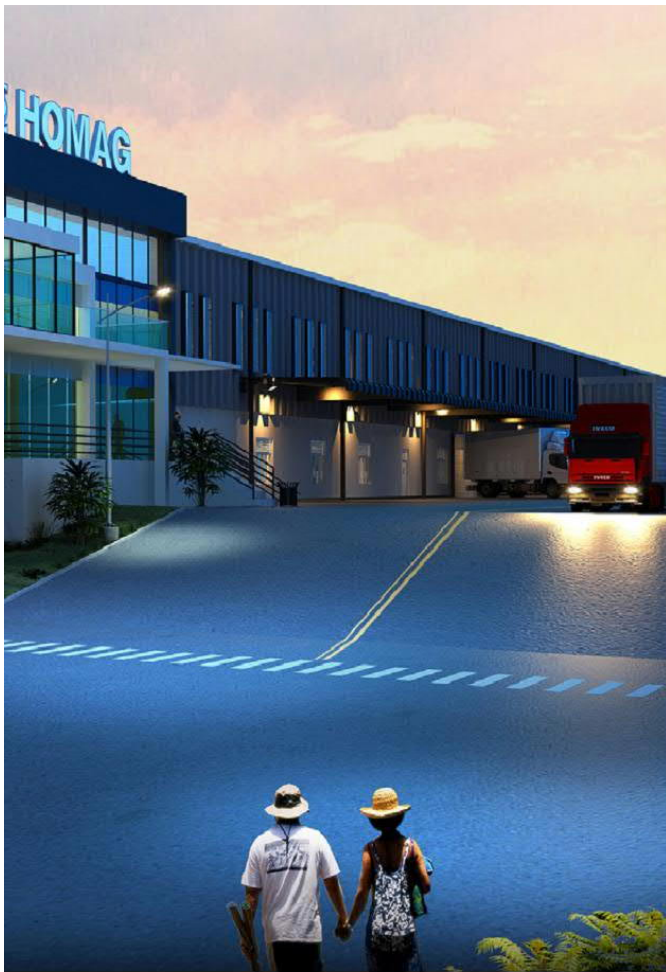
### EXECUTION OF KNOWLEDGE AND EXPERTISE

The industry is divided into large industrial manufacturers and an enormous breadth of craft businesses. Both target groups are served by Homag's competent employees, who have an extremely high level of industry expertise. When it comes to digitalization, Homag is right at the forefront. HOMAG is also strong in the systems business, pertaining to equipping complete factories. But the company thinks that it can get even better. Their goal is to be even faster, more agile, and more flexible. In addition to service and intensive customer contact, the company offers the largest selection of customer-optimized combination options with over 120 machine series and the associated automation and software solutions. By using simulation software, performances can be calculated exactly, and the customers have high investment security and the assurance that the required performances are permanently guaranteed.

Homag India has teams of specialists with a high level of process engineering expertise for all product segments. In cooperation with Schuler Consulting, they can provide customers with comprehensive support—from product

cost optimization to optimal manufacturing concepts and complete networking, from the web store to goods tracking after delivery. HOMAG is the only organization in the industry that has the capability to deliver Flooring lines, Modular furniture solutions, Solid wood machinery, and a complete integrated factory right from concept till delivery to customers as a single-window solution provider.

Venkataramana states, "We pursue the goal of covering as many stages of the value chain as possible, from the log to the finished timber house. With our subsidiaries WEINMANN, Kallesoe, and System TM, we cover the process chains for frame construction and CLT/GLT construction. Both construction methods contribute significantly to reducing CO2 emissions compared to concrete. In addition, weather-independent prefabrication of the elements with high precision based on CAD/CAM data is possible. This saves time over the entire production period and also enables multi-storey buildings with more than 20 stories. However, the real boom in this market is yet to come, as the topic is very much driven from the direction of sustainability."



### STANDING OUT

Unlike its competitors, HOMAG is a full-service provider including the networking of machines and plants, e.g., from house design to data preparation, production control technology, and digital assistants such as the sanding belt management system. Customers can also grow with HOMAG from an SME to a group of companies. One of the key differentiating factors is their eco-friendly energy-efficient solutions as they are an organization fully committed to sustainability initiatives, safety, and being compliant to global standards, and irrespective of the 'country of origin' of their machines, they will be HOMAG Global standards as the company never compromises on quality, reliability, safety, and performance.

### LOOKING AT THE FUTURE

Homag India is working to become leaner and faster and to reduce complexity. The company also wants to become more transparent towards customers. In addition, they are driving digitalization forward and also benefiting from the exchange with their Group parent Dürr. They are convinced

that cooperation will become even more important in the future. Homag's commitment to promoting networking and development is evident in Tapio (an open ecosystem for the wood industry. It provides the technological basis for digital applications for carpenters, furniture manufacturers, and panel processors), where they have even gone to the extent of convincing competitors to participate. In addition, the company continues to work on high-performance machines and new technologies, as well as on simplifying machine operation.

Speaking about the future ahead for Homag India, the MD concludes, "We are investing a total of more than 100 million euros over the next three years. This is the largest investment program in HOMAG's history, and therefore, also one of the largest investments ever made in the Dürr Group. With the planned investments, we essentially want to expand our production capacities for further growth, optimize logistics processes and thus production workflows, and thereby increase our efficiency. The investments show that we are firmly convinced of a successful future for the HOMAG Group. In this way, we are creating the conditions for our long-term success. In addition, it goes without saying that we must continue to listen to our customers and develop solutions together with them, and always keep the customer benefits of our products and services in mind in everything we do."



## HOMAG INDIA IS WORKING TO BECOME LEANER AND FASTER, TO REDUCE COMPLEXITY

"As for India, we have invested in a state-of-the-art world-class facility which is coming up by end of this year. India is a fulcrum of activities and is identified as a key growth driver for us. Already we have our software testing team supporting globally and this team is increasing and we will in the future be also having the development teams added. We are already providing the software hotline support to the entire APAC region and will be setting up an APAC after-sales service hotline support too in the coming year. The global sourcing team will be coming up next as well as we will see more and more initiatives coming up at HOMAG India as we move forward," he signs off. [ln](#)

# TAKING A STEP TOWARDS A SUSTAINABLE & HEALTHIER SOCIETY ECOSYSTEM

By Krishan Kohli, *Managing Director, Continental Automotive Brake Systems India*

I am a fiscally conscious & goal driven management executive. In a fast-track career of 29 years, I have measurable impact on business operations, market penetration & key account development in Automotive & CV Industry.

According to Statista, the world oil consumption peaked in 2019 at 100 million barrels per day. While the demand saw a sharp drop in the year 2020, this change may not be sustainable. Moreover, according to the IEA, the global energy-related CO<sub>2</sub> emissions in 2019 were around 33.2 gigatons (Gt). As the world gets back to normalcy, resource consumption will begin increasing again, of course, unless sustainable practices are brought into the picture.

One of the industries that is known for energy consumption and emission production is 'Manufacturing'. The traditional manufacturing practices consume a tremendous amount of resources while producing a lot of waste, which can be harmful to the environment in the long run. The waste generated during the traditional manufacturing processes could play a role in the degradation of the environment.

However, the manufacturing sector plays an important role into the mass production of essentials and goods, creating employment, and contributing significantly in every country's GDP. Hence, the only way forward would be that industries adopt 'Sustainable Manufacturing' processes.

## SUSTAINABLE MANUFACTURING

Sustainable manufacturing can be defined as a manufacturing method that uses renewable or non-fossil fuel energy, minimizes waste, promotes safe production, and limits the environmental impact. Integrating product and process design issues with factors of manufacturing, planning, and control in



Krishan Kohli

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## Why HOMAG

- Experienced After sales Service network across India
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- Enhanced Strong team to provide Software as a Solution & support. HOMAG India is the base for APAC region for Hotline software support.
- HOMAG iX Catalogue services. Data base for customers customized product library

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such a manner as to identify, quantify, assess, and manage the flow of environmental waste to reduce the environmental impact ultimately.

Sustainable practices can be employed within manufacturing facilities, across the supply chain, and through the customer base. Industry 4.0 and the Industrial Internet of Things (IIoT) have opened multiple possibilities for process innovations. This supports developing environmentally friendly materials, decarbonize energy, develop digital methods for doing more with less, and extend the cycle of goods within a 'zero waste to landfill' framework.

The traditional manufacturing journey is linear, from the cradle to the grave, in which the products are made, used, and then thrown away. On the other hand, the sustainable manufacturing journey is cradle to cradle, that is, circular. It has gone beyond the typical 3R approach- Reduce, Reuse, and Recycle to a 5R approach- Repair, Reuse, Refurbish, Re-manufacture, and Recycle.

Along with the Government focus on emission regulations and environment friendly policies, various initiatives within the industry will open new possibilities for job opportunities and revenue. According to an HDFC report, a well-defined scrappage policy in India can help create an industry of its own with a business opportunity of Rs 43,000 Crore a year. With the help of the scrappage policy, approximately 28 million vehicles will go off-road by 2025, mainly comprising of two-wheelers. It would reduce carbon dioxide emission by 17 percent and cut particulate matter in the air by 24 percent. Further, if half the Bharat Stage-II and III vehicles go off the roads, it would save eight million tons of oil a year.

## CREATING A SUSTAINABLE ECOSYSTEM BEYOND MANUFACTURING PROCESSES

### Sustainable Products

Today, merely implementing sustainable practices around manufacturing processes may not be enough. The industry needs to develop long-term sustainability goals that have a greater impact on the whole ecosystem. For instance, the automotive industry is working its way towards electric vehicles and newer fuel technologies. This aims to achieve a 100 percent carbon neutral and 100 percent emission free mobility driving towards 100 percent ownership of responsible value chain.

### Neutralizing Carbon Footprint

It is next to impossible to develop a manufacturing process that produces zero carbon emissions. However, it is possible to balance the carbon footprint. Carbon neutrality means balancing between emitting carbon and absorbing carbon from the environment in carbon sinks. Some leading automotive companies have already announced their plans to

become 100 percent carbon neutral. In the coming times, this step will witness wider acceptability.



## THE TRADITIONAL MANUFACTURING JOURNEY IS LINEAR, FROM THE CRADLE TO THE GRAVE, IN WHICH THE PRODUCTS ARE MADE, USED, AND THEN THROWN AWAY

### CSR

To maintain a sustainable ecosystem, companies must give back to society and the environment. While the manufacturing industry is responsible for creating millions of jobs, it can cause some harmful effects on the environment and the neighborhood. For instance, polluting the groundwater. In such a case, the manufacturing company must take the initiative to provide clean drinking water to the impacted people.

### MAINTAINING WORKFORCE DIVERSITY

A sustainable society is one that has equal representation from all ethnicities and demographics. Not just manufacturing companies, but companies across the spectrum must develop long-term and short-term goals to promote diversity across various levels of the corporate hierarchy. With the increasing challenges related to environmental pollution and climate change, it is more important than ever to work towards an inclusive society and help creating a resilient world.

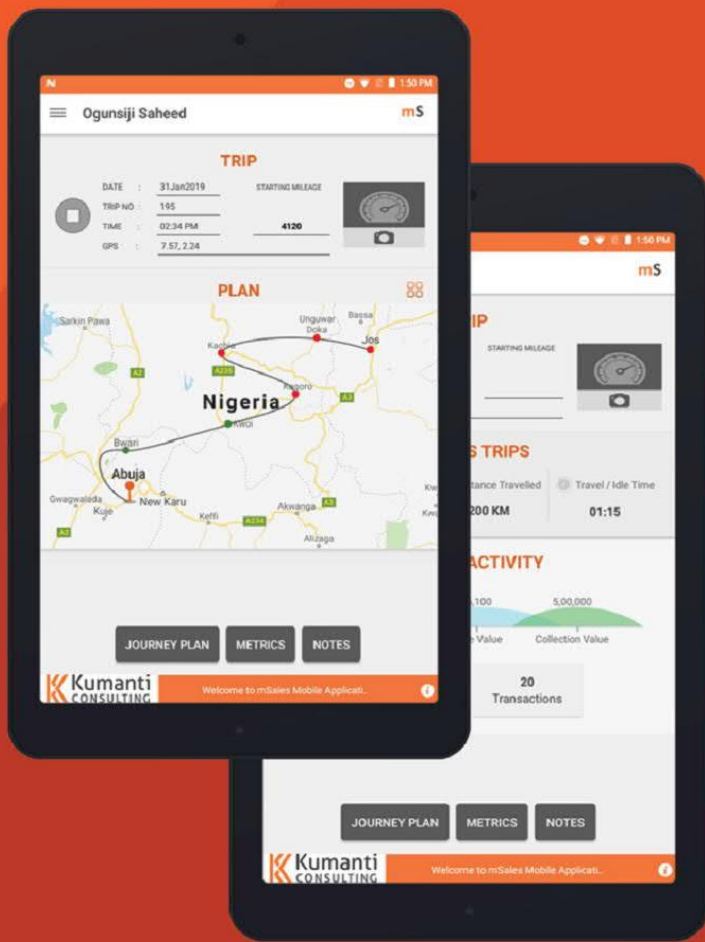
In summary, sustainable manufacturing is an essential need in the current business world. It unlocks revolutionary developments in productivity and efficiency improvement without adversely impacting the planet and environment on a large scale. The notion that economic growth and environmental degradation are two faces of the coin must be changed by adopting sustainable manufacturing processes. Sustainable manufacturing has the power to decouple these two, thus leading the planet towards a low-carbon future. Furthermore, the industry needs to look beyond just sustainable manufacturing. In the past few years, many trends that promote sustainability have emerged, like carbon neutrality, developing sustainable products, maintaining workforce diversity, etc. These steps are critical in creating a sustainable ecosystem, a sustainable society. [In](#)



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# WHY PET IS REPLACING GLASS FOR BEVERAGES



**T**he PET preforms market is anticipated to reach \$23.35 billion by 2022, according to MarketsandMarkets Research. A major factor bolstering the PET preforms market growth is owing to the increasing consumption of carbonated drinks that are largely available in PET bottles. Therefore, this has resulted in increased demand for PET bottles preforms. Preforms are manufactured using polyethylene terephthalate which is known as PET preforms.



## THE RTD BEVERAGES ARE OBSERVING A HUGE RISE IN THEIR POPULARITY OWING TO THE CHANGING AND IMPROVING LIFESTYLES OF PEOPLE

While Preforms can be single or double layered, their weight usually depends on the end container's desired volume. PET preforms are used for packaging, transporting, and storing drinking water, mineral water, carbonated beverages, dairy products, edible oil, cosmetic products, ketchup, and other applications. Furthermore, companies that are into the manufacturing of domestic goods are utilizing PET preforms in the packaging of edible oils and cleaning

solutions.

Manufacturers use PET preforms in manufacturing bottles that are mostly used to store their produce and this process is known as the hot filling process, which is very common in the developed economies. This does not involve the use of any kind of preservatives and hence requires a very low capital investment.

While one of the major industries that are anticipated to remain a key end-user of PET preforms, the expansion of the ready-to-drink market is bolstering the PET preforms market, internationally. Furthermore, what is predicted to help the market expand have an accelerated growth is the availability of products in the local grocery markets and departmental stores.

The RTD beverages are observing a huge rise in their popularity owing to the changing and improving lifestyles of people. Also, in the US, 30 percent of the entire coffee consumed by the citizens accounts for RTD coffees. In addition, manufacturers are ensuring that products are packaged using stunning designs, with target customers in mind. The market for these single-use beverages is bigger than ever, with a large range of beverages in the product offering right from iced teas and coffee to cocktails and wines, which are packaged for immediate consumption on purchase. Therefore, most of the beverage brands are joining to earn using this opportunity and are providing some of the most innovative Ready to Drink beverages.

However, there is a surge in the demand for functional

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drinks with clean labels, owing to a large number of consumers who are health-conscious demanding for such kind of drinks. And this is also one of the major factors driving the market growth. Therefore, the PET preforms market is anticipated to reach 1.4 times the current market value by 2030 owing to the Ready to Drink beverage industry.

#### **SURGE IN DEMAND FOR BOTTLED WATER**

Another important fact about the PET preforms is that the surge in demand for bottled water is increasing at an accelerated rate, and this is anticipated to make the market grow more than half of the total beverage market. Since the bottled water is nourishing, calorie-free, and comes without any additives or added sugar, this type is expected to be the most consumed drink.

As per studies conducted by the European Federation of Bottled Water (EFBW), over 48 percent of people prefer consuming bottled water rather than buying packaged non-alcoholic beverages such as sparkling or still water, water with either low mineral content or high mineral content. Therefore, water remains the most favored by consumers. Furthermore, this is one of the major reasons why big beverage manufacturers are investing hugely in premium water bottle manufacturing. They are doing this aiming to grow or increase their dominance in the international beverages market.

#### **CHALLENGES FACED BY THE PET PREFORMS INDUSTRY**

One of the major challenges faced by the PET preforms industry is the ban on single-use plastics. This is due to the demand for banning single-use plastics made by most governments across the globe. Not just the governments, but also the Non-Government Organizations and Environmentalists. Post-implementation of measures intending to decrease the use of plastic has been impacted plastic bottle usage to a greater extent. Furthermore, the growing trend towards sustainable as well as recyclable materials has resulted in huge demands.

#### **PET RECYCLING**

Since we live in an industrialized affluent society today, we have started to rely more on plastics. However, recycling must increase significantly in order to stop or minimize the usage and large production of new plastic products. Therefore, this can be achieved only through the effective and high-quality recycling process, and this can help us move towards a circular economy approach. Therefore, it not only protects the nature

& environment, but also helps in conserving them for the future generations. Owing to an increase in public awareness and significant effectiveness in recycling operations, recycling rates are increasing.

PET recycle is set to become highly significant owing to numerous factors. Roland Goggel, Sales Director for Germany, Austria, and Switzerland at Stadler explains, "Until recently, there were no specifications for the use of recyclates in manufacturing new products, but this is not the case anymore. The EU has introduced new regulations stipulating that beverage bottles must contain 25 percent recycled content by 2025 and 30 percent by 2030. At least as important as the appearance of new collection and recycling routes for plastic packaging, which together with changes in consumer behavior will give recycling an enormous boost. The plastics manufacturing and processing industry are now showing great interest in recycling, which was not the case in the past. However, the targets set by the EU regulation can only be achieved if all sectors involved in the process work together".

#### **PET RECYCLING & ITS ENVIRONMENTAL BENEFITS**

Recycling decreases the environmental impact of the PET industry in numerous ways such as helping reduce the use of raw materials. A further improvement has come through more efficient use of materials for the preforms. "Today, the preform for a 1.5 liter PET bottle only weighs around 26.8g – considerably less than the 38g of five years ago. The use of regranulate and the more efficient use of materials has resulted in a 66 percent reduction in raw materials in the last five years," explains Roland.

Furthermore, the PET industry is also maximizing transport by converting the preforms into bottles at the filling plant, and this helps in decreasing the number to a greater extent, and the number of truck trips from the recycling plant as well. While each truck is capable of transporting 700000 preforms, only 15000 finished PET bottles can be transported using a single truck. The result is a significant cut in fuel use and emissions.

#### **THE WAY AHEAD**

While East Asia is expected to observe the highest growth trajectory registering a CAGR of 4.6 percent, it is also anticipated to capture a market as huge as Europe by 2030. Also, the developing economies are in the process of joining the race, intending to make their presence felt in the international market. Change and improvement in lifestyle is further expected to boost the market growth in the region of East Asia. [In](#)



Industry Outlook TOP 10  
**WOODWORKING  
MACHINERY  
MANUFACTURERS - 2021**

**T**he global woodworking machinery market size was \$4.53 billion in 2020. Even though it witnessed a decline of 0.4 percent in 2020, the market is back to track. The market is projected to grow from \$4.62 billion in 2021 to \$6.05 billion in 2028 at a compound annual growth rate (CAGR) of 3.9 percent. The increasing adoption of automated woodworking machines and precise engineering in manufacturing process will drive the market further. India's furniture and luxury furniture markets are expected to witness a tremendous growth in the coming years. This will in-turn enhance growth of woodworking machinery market.

Growth of construction sector will enhance the growth of woodworking machinery market. Major economies like US, China and India are expected to invest significantly in infrastructure developments. Rising innovation in wooden aesthetic and trends in DIY is nourishing the market. The new innovations are filling the market with pleasing wooden designs that are less prone to termite attack and water spoilage. Further, the new trend of designing house floors and walls with wood is also adding to the growth of the market. European countries and US are already wide users of prefabricated wooden houses to reduce material usage and increase production efficiency. Lack of skillful workers and health hazards are hampering the growth of the market. Health hazards such as exposure to unguarded machinery, wood dust, noise, toxic finishes, and non-ergonomic handling will negatively impact the health of workers, leading to serious concerns.

Industry Outlook in this issue presents a list of 'Top 10 Woodworking Machinery Manufacturers - 2021' that have leveraged their extensive industry expertise and experience in bringing innovative solutions to the market. The following list has been prepared after being closely scrutinized by a distinguished panel of judges including CXOs, analysts and Industry Outlook editorial board. We recognize their valuable contribution to the ever expanding & competitive market and their ability to sustain themselves and emerge as top contestants through their reliable products and services.

## TOP 10 WOODWORKING MACHINERY MANUFACTURERS- 2021

COMPANY	MANAGEMENT	DESCRIPTION
<b>Biesse India</b> Bengaluru biesse.com	Sayeed Ahmed, CEO	Aspiring to be standard bearer in the global woodworking machinery manufacturers industry
<b>Caple Industrial Solutions</b> Ahmedabad caple.in	Richa Bajpai, Founder & Co-CEO	Facilitating machines for woodworking & consumables of world-class quality
<b>HOMAG India</b> Bengaluru homag.com	Venkataramana Gorti, MD & Country Head – India	Provider of topnotch manufacturing facility integrated with quality solutions & machines for the woodworking industry
<b>JAI Industries</b> Ahmedabad jaiindustries.com	Niranjan Shah, Founder	Renowned for offering Combi Planer, Surface Planer, Double Side Surface Planer, Thickness Planer, Two Side Thickness Planer, Four Side Moulder Machine, Rebato'Mould Machine and more
<b>Master Exports</b> Ludhiana masterexportsindia.com	Jatinder Pal Singh, CEO	Offers woodworking machines including lathe machine, drill machine, tool room machine, sheet metal machines, shearing machines and more
<b>Nihar Industries</b> Ahmedabad niharindustries.com	Rudvik Patel, CEO	An excellent provider of wood crafting machineries with manufacturing unit for Wood Cutting, Polishing, Pressing, Fabrication and Engraving
<b>Ramu Machinery</b> Bengaluru dan.com	V. Ramarkishnan, CEO	A recognized importer of thermocol cutting machine, hacksaw cutting machine and offset cutting machine
<b>Shree Umiya F-Tech Machine</b> Bengaluru shreeumiya.com	Jignesh Patel, Owner	Offering latest technology machines such as Beam Saw, Panel Saw, Auto Edge Bander, Dust Collector, Manual Edge Bander, Post Forming, Hydraulic Cold Press, Hydraulic Hot Press, and Roller Press of world-class quality
<b>Trident Machinery Corporation</b> Bengaluru tridentmachines.com	Sandeep G. Shah, CEO	Providing wood working machines including surface planner, automatic edge branding machine, three-head boring machine and a lot more machines
<b>Woodtech</b> Bengaluru woodtech.in	Shyam Bhadrecha, Owner	Recognized for providing Four Side Moulder, Double - Side Planer, Multi - Blade Rip Saw, Four Side Planer Cum Rip Saw, Double Side Planer Cum Rip Saw, Four Side Planer Cum Slicer and more

# Biesse India

Industry Outlook TOP 10  
**WOODWORKING  
MACHINERY**  
MANUFACTURERS - 2021

## CREATING UNIQUE STRATEGIES TO STAY AHEAD OF THE CURVE



Sayeed Ahmed  
CEO

The woodworking machinery manufacturers industry is a booming market segment in India and the recent developments in the housing segment in various cities across the country have helped the industry to clock an impressive growth, driven by burgeoning furniture industry. This growth is expected to continue in future also, though COVID 19 could alter the trajectory in the short and medium-long term. According to a BCG report to FICCI, India has a great opportunity to become one among the top three exporters of furniture to the world and to unlock this potential, strategic decision will have to be taken. The Government of India has identified the furniture industry as a key enabler to expand the reach of 'Make in India' goods across the globe. Rapid mechanization of woodworking industry in India is the key to meet the teeming demand for furniture and wood working in India. In this scenario it is imperative concurrent technologies must be brought to the doorstep of entrepreneurs to trigger required growth rate in India. Biesse India has been play-

ing a key role in the woodworking machinery manufacturers industry and with over five decades of industry experience, they have been able to develop into a pioneering name in this stratum. The company offers sophisticated high-performance machinery that are built in such a way that it ensures high production capacities while at the same time being reliable. Growing from humble beginnings in India with a production capacity of 13 machines per year in 2007, now with over 700 employees, Biesse India has grown into an industry leader that produces 2000 machines every year through both their plants in Bengaluru, India.

Biesse India has been not only able to maintain a steady flow of business during the pandemic and they have been working around the clock to enhance production to meet the increasing demand for their machinery in India and abroad. With over 10,000 machines produced and exported across 60 different countries and over 3000 machines already installed in India is a testament to the quality of the machines made here and trust of its large base of Indian and global customers. This has helped the company to not just create but also maintain an impressive clientele that includes some of industry-leading brands from across the globe. To cater to their client's increasing needs, Biesse India is foreseeing automation in the furniture industry and the same is being translated into their Products and consistently improving the quality



In fact, 'Think Forward' is one of our taglines and this further shows our drive to be a pioneer that wants to be a flag-bearer in the woodworking machinery manufacturers industry

and reliability of their machines which shows the company's commitment towards Innovation.

Adding more on how they are able to stand-out from the rest of the competition and their future aspirations, Sayeed Ahmed, CEO Biesse India adds, "More than just offering machines, we offer our customers a complete end-to-end business consulting services such as understanding their furniture business plan, products that they want to produce, study their production needs, define factory layouts, set-up machines which are a few to mention". This is also down to the fact that we are not just offering them products, but we hand hold them through the entire process. We have 2 world-class fully integrated manufacturing units in Bengaluru this gives us an edge over the rest of the competitors as well. The fact that 80 percent of our products are exported showcases the quality of our products and our commitment and passion for consistent improvement helps us to constantly stay ahead of the curve and be a front runner when it comes to innovation. In fact, 'Think Forward' is one of our taglines and this further shows our drive to be a pioneer that wants to be a flag-bearer in the woodworking machinery manufacturers industry. Going forward, we have got elaborate plans for our development and that includes plans to increase our team size as well as increasing our manufacturing capacity, Biesse India is intensely focussed on future, relying on technology enabled Product Innovation with agile manufacturing and strong supply chain all prudently managed by its talented team developed alongside experts Italy are the enabling factors in the success story of Biesse India. And with all this, Biesse India is aiming to be the epitome of the global woodworking machinery manufacturers industry".

# NEW INVESTMENTS & GROWTH IN THE MANUFACTURING INDUSTRY

By **Rajesh Khosla**, President & CEO, AGI



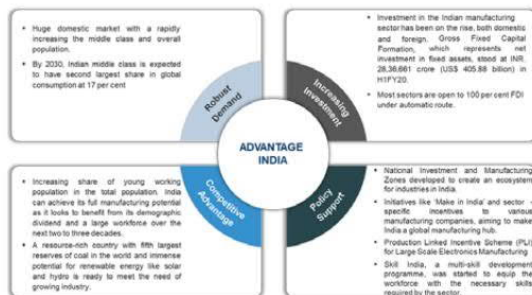
Rajesh Khosla

**C** OVID-19 has revealed the fragility of the global medical and health, food, electricity, cars, telecommunications equipment, electronics, and numerous other products' supply chains. Some businesses have started to set up more locations to reconfigure their procurement and production facilities and achieve more reliability and durability in their supply chains.

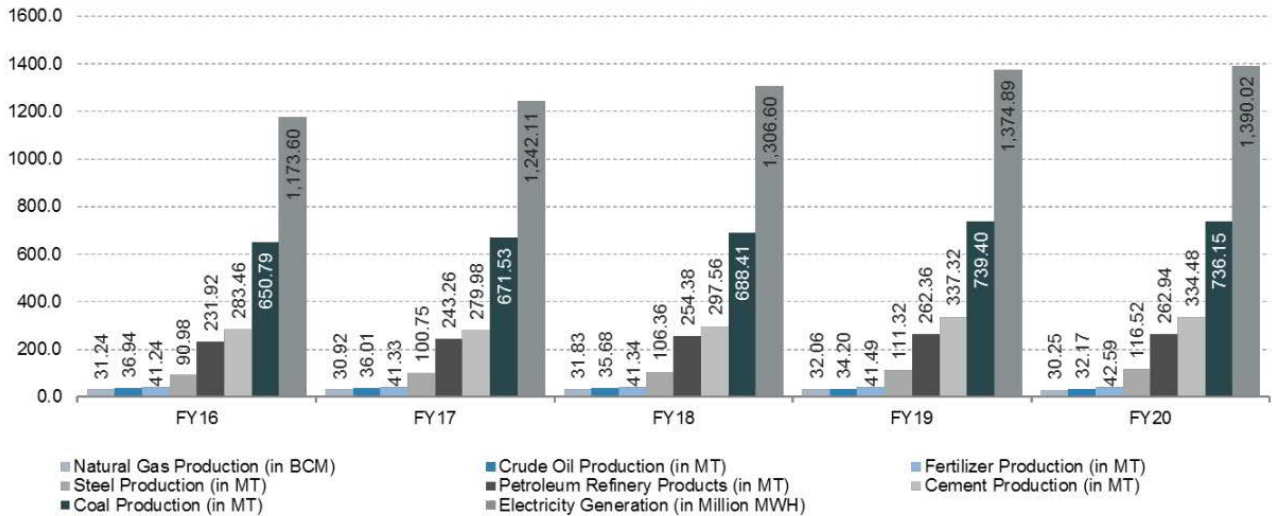
Manufacturing is one of the high-consumption industries in India. India's initiative 'Made in India' positions India

on the world map and pays global attention to the Indian economy. The government plans to create 100 million new jobs by 2022. The GDP manufacturing sector expanded by an average of 9.5 percent per year between the fiscal year 2006 and fiscal year 2012. Then growth decreased to 7.4 percent over the next six years. Manufacturing accounted for 17.4 per cent of India's GDP in the fiscal year 2020, compared to 15.3 percent in 2000. In the past 13 years, India's manufacturing share of the jobs sector has increased by just one percentage point over the past 13 years compared with the five- point growth in the services industry.

Germany will either be establishing or developing production facilities in India attracted by the Indian market of more than a Milliarden of customers and growing buying power. India is now attractive to the world's giants such as GE, Siemens, HTC, Toshiba and Boeing. India was among the top 10 Foreign Direct Investment (FDI) rewarders in South Asia in 2019, receiving \$49 billion, a 16 percent improvement on the prior year, according to United Nations Conference on Trade and Development (UNCTAD).



## Production Performance of Eight Core Industries



From April 2000 to March 2020, cumulative foreign direct investment (FDI) crossed \$89.40 billion in the Indian manufacturing sector. In May 2020, the Indian government increased defence FDI from 49 percent to 74 percent under the automatic path.

During the FY20, the IIP output component was 129.8. The output of basic metals (10.8 percent), intermediate (8.8 percent), foodstuffs (2.7 percent) and tobacco products reported strong development (2.9 percent). The Eight Core Industries Index of India was in FY20 at 131.9.



## INDIA HAS THE CHANCE TO INCREASE ITS PROFITABLE COMPETITIVENESS AND BECOME A SUPPLIER OF CHOICE NOT ONLY FOR ITS WIDE CUSTOMER SEGMENT BUT ALSO FOR INTERNATIONAL MARKETS

India's government has encouraged the development of the industry. It has developed Electronic Hardware Technology Parks (EHTPs), Special Economic Zones and has created a climate of FDI (FDI). The government has also stepped-up liberalisation and reduced tariffs to encourage sector growth. Furthermore, the central government has

given the Updated Modified Special Incentive Packs Scheme (MSIPS) a boost to the electronics industry in the coming five years for up to Rs. 11,881 crore (\$1.7 billion). According to the plan, the investment subsidy is given to the sum of 20 percent of the SEZ investment and 25 percent of the non-SEZ investment.

Capital supply is the largest barrier to India's GDP manufacturing. The India manufacturing sector will require investment totalling \$1-1.5 trillion over the next seven years to double its gross national product, provided that India increases its Gross Value Added (GVA) stock of these value chains by 25 percent. The investment ratio will increase from \$1-1.5 trillion over the next seven years.

Financial reforms can attract low-cost domestic capital from long-term savings pools, such as pension funds and insurance. However, these savings pools alone cannot provide as much capital as Indian manufacturing companies would need. Other outlets must also be tapped. Many of the larger domestic manufacturing companies produce sufficient profits and are therefore likely to draw investors. FDI could provide between 25 percent and 30 percent of the capital Indian fabricators need in the next seven years if India's recent FDI growth continues and manufacturing doubles its share of FDIs.

India has the chance to increase its profitable competitiveness and become a supplier of choice not only for its wide customer segment but also for international markets. The specialization approach that focuses on eliminating roadblocks in the chosen value chains holds great promise for bringing together manufacturers and, with government support, raising productivity, securing superior know-how, and generating higher returns on capital. ||



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# IMPACT OF COVID-19: A CHALLENGE OR AN OPPORTUNITY FOR THE INDIAN MANUFACTURERS

By Uttam Malani, Executive Director, Centuary Mattresses

India is witnessing a newfound, insatiable demand for Indian brands and their home-manufactured products. The country is inching forward in the global manufacturing landscape and is attracting attention thanks to its manufacturing potential, which was earlier untapped. India accounts for only two percent of the global manufacturing, clearly underutilizing its potential. Several factors and government initiatives are now helping in promoting manufacturing in India. Initiatives like Atmanirbhar Bharat or Make in India or Vocal for Local gained momentum because of the sheer national sentiment and as the immediate reaction of the recent pandemic and the cause for it. The dislike for Chinese products fuelled by anger and the national sentiment is kindling the popularity of Indian made products. The corrective measures taken by the Government of India have eased a bit on the economy and steps taken for sustaining GDP. But the bigger challenge placed in front of Indian manufacturers is maintaining the supply vs demand and cost-effectiveness, in which China is in a stronger position. Moving from our service-oriented nation to the indigenization of products can prove to be highly rewarding.



Uttam Malani

It is imperative that all the manufacturing organizations need to keep a healthy bottom-line, it is also important to streamline the capital to ensure a proper fund flow. During this crisis time, we need to have service level improvisation and meet the demand vs supply for smooth functioning. Companies need to have robust inward and outward inventory management systems. However, we feel that it may take some more time for the retailers to adapt to the changing environment.

Coming to the preference, Indian products are not only favored due to the national sentiment but because the products and services provided by major players in the industry are gradually proving to be of international quality. Stating that Indian talent is now strong enough to compete with global players is no understatement. A lot of companies have wisely used the lockdown to upskill and train their pool of talent. Those who have seen this opportunity to globally benchmark and elevate their workforce will stand far ahead of the rest of the pack – when the air clears and the consumer sentiment stabilizes.

We need to simplify and adopt relevant and effective policies and ensure that all the states in India accept and follow

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the guidelines laid by the Central Government. When we have a One India and One trade policy, things will work effectively and efficiently. From what we have observed pre and during COVID-19, the Indian Government has done relatively well in allowing the free-market enterprise to help water find its own level post-pandemic, with strategic nudges now and then to keep things moving in the right direction. It is up to the manufacturing executives to make the best of this unfortunate crisis and rather use it as an opportunity to excel in the global competition. We have everything we need including a talent pool and what the previous manufacturing powerhouse, China, lacks - a young labour force.



## ” THE PANDEMIC, UNFORTUNATE AS IT IS, PRESENTED THE INDIAN MANUFACTURING REALM AN OPPORTUNITY TO OPTIMIZE ITS POTENTIAL AND OFFER FUTURISTIC PRODUCTS TO RISE GLOBALLY

### OPPORTUNITY TO EXPAND INTERNATIONALLY

Recently, we have observed a strong Swadeshi sentiment that the bulk of the demographic is displaying; and the time may be ripe for Indian manufacturers and brands to proudly wear the 'Make In India' tag on their sleeve. However, it must be noted that at the same time - it is incumbent upon the Indian manufacturers to upgrade their products, processes, and infrastructure to live up to the expectations of the digital-savvy consumers. Not only is

it economic and profitable domestically, but it is a huge opportunity for Indian manufacturers to expand internationally with global companies looking for alternatives to minimize their dependency on China.

If you take an example of our industry i.e. the comfort and bedding industry, it has seen a shift towards the organized segment right from demonetization to the implementation of GST. Now with the COVID-19 shock, this shift has only been accelerated as the unorganized players have found it hard to keep up their supply chains.

Consumer Durables is one of the key sectors that can help realize the Atmanirbhar goals of India. On the demand and consumer behaviour front, there has been an increased emphasis on the 'trust' aspect which a brand provides. Additionally, consumers are now more mindful and aware than ever before regarding the 'health & wellness' offering of any product. This is where the comfort and bedding industry has seen a huge boost in the demand for quality products. Players in the manufacturing segment must anticipate and prepare for contingencies and step up the offerings with the most innovative product line combined with state-of-the-art technology.

Also, e-commerce and omnichannel retail have played a major re-Commercepansion and establishment of the industry. Brands such as Centuary have invested in enhancing their digital footprint, and also bring health-related innovative value additions to the product mix to connect better with the consumers.

In a nutshell, the pandemic, unfortunate as it is, presented the Indian manufacturing realm an opportunity to optimize its potential and offer futuristic products to rise globally. Now it is up to us how we convert the challenge into an opportunity. ||

# NAVIGATING THE TRANSITION FROM RECYCLABLE TO BIO-COMPOSTABLE PLASTIC

**Mukul Sareen**, Director of Business Development at HiTech Group in an interaction with Sudhakar Singh, Editor, Industry Outlook, shares his views on the opportunities and challenges in manufacturing bio-compostable plastic. Hi-Tech International is the first company in India to manufacture a plant-based bio-polymer – Dr. Bio.

**DEPLETION OF PETROLEUM RESERVES IS PROVIDING AN IMPETUS TO THE GLOBAL BIOPOLYMERS MARKET AND THE MARKET IS EXPECTED TO GROW AT A CAGR OF 19 PER CENT TILL 2025. HOW DO YOU SEE THE CURRENT EVOLUTION OF THE BIOPOLYMER MARKET IN INDIA? WHAT ARE THE MAJOR FACTORS CONTRIBUTING TO ITS GROWTH?**

The biopolymer market is at a very nascent phase in India primarily for two reasons - one is the production capacity of biopolymers in India and secondly it is the awareness or the cost implications. One has to really understand that the acquisition is still taking place. More and more work has to be done to reach out to the brand owners and organizations. More regulations have to be brought in to support the industry.

Today, a lot of the biopolymers are mostly imported from different countries around the world. There is hardly any substantial production happening in the country. As a biopolymer company, we've just launched our product line wherein we have a capacity that goes to around 7000 tonnes per annum right now. We are going to make around 31,000 bags in this financial year.

**HOW DO YOU SEE THE INDIAN PLASTIC INDUSTRY MOVING FROM RECYCLABLE TO BIO-COMPOSTABLE PLASTIC? COULD YOU ELABORATE MORE ON THE PLANT BASED BIOPOLYMER WHICH YOU ARE MANUFACTURING?**

If you look at the macro market scenario right now, India consumes close to around two to four kgs per capita per



Mukul Sareen

annum, which is a very big number of plastic consumption per person. And we all know that we have generic problems of non-recycling system and we don't really have a very big ecosystem to recycle the plastic. We need more modern recycling systems that are available in different parts of the world. The government of India has also made some regulations on industrial process where 20 percent of the plastic needs to come from a recycled source. However, this is still a potent challenge looking at how much of the waste is already out there.

Today, we are buying everything prepackaged. Our vegetables, fruits, grains, chips, everything that we are buying, we're buying in disposables now. Moreover, use of paper is depleting our water resources. We now have alternate solutions that need to be made bio-compostable that can be laminated with paper so that coffee can be sold or water droplets can be pulled in this and that will not hamper the quality of paper. There are many types of biodegradable plastic. One of the biodegradable products is called Oxo biodegradable, which means that a plastic bottle will break down in the presence of sunlight. But with the Oxo biodegradable we will be eventually having another potent process of selecting one set of classes which will be even harder.

Second type is enzyme based biodegradables which start disintegrating after a long period of time. Now the third kind of plastic is the one we are talking about. It disintegrates



within three months to two years or three years depending on the conditions and the environment around it.



**TODAY, A LOT OF THE BIOPOLYMERS ARE MOSTLY IMPORTED FROM DIFFERENT COUNTRIES AROUND THE WORLD. THERE IS HARDLY ANY SUBSTANTIAL PRODUCTION HAPPENING IN THE COUNTRY**

**IF WE LOOK AT THE GLOBAL MARKET, THE FOCUS IS MAJORLY ON THE BIO-BASED CONTENT OVER BIODEGRADABILITY. HOW DO YOU SEE THIS FROM THE INDIA MARKET PERSPECTIVE?**

Bio-based and biodegradable are definitely two different terms. Biodegradable does not necessarily mean that it is bio-based. Bio-based is basically a product that comes

100 percent from natural plant based materials. Bio-based obviously means that it has gone through the lifecycle of a plant and as a delivery mechanism, which has now been polymerized and converted to a biopolymer. It is what is coming from the ground and going back to the ground, from a seed to a plant to a polymer and then back to the soil as a nutrient. Plastics made out of polyethylene or polyester like PET bottles or PVC can also be made biodegradable, and that biodegradable plastic can break down into small shapes. So, for instance, a normal plastic bag may take between 500 to 1000 years to degrade. But this material takes only a few months or a couple of years to degrade.

**HOW DO YOU SEE THIS MARKET EVOLVING IN THE NEAR FUTURE AND WHICH NEW TECHNOLOGIES DO YOU FORESEE BEING IMPLEMENTED?**

Primarily, we are working on applications that are of essence and simple to use, which is where most of our emphasis is generated. At the end of the day, it will all go through a recycling system and a junkyard. And if we have a compostable plastic in place, we should be able to get more value to our system by using such plastic. Moreover, the strength of our bio polymers is almost the same as the normal plastic that's in various different grades suited for different applications that can be utilized in the marketplace. And it offers an advantage to the users because it sends a message to customers that they are contributing to sustainability. It is actually taking us on a path of sustainable change. **||**



# BASELINE IT TRANSFORMATION IN DIGITAL ERA

By Shibin Chulliparambil, Head of IT, Mafatlal Industries Limited

The buzz word going around is Digital Transformation. Many of us are already part of such initiative or in process of beginning one. Not only the large enterprises or MNCs are moving towards this regime, even the small and medium sectors are adopting and changing their digital landscape. Amongst the technologically advanced or fairly matured organizations we still find organizations who have missed the bus and still are way behind in times as they had not felt the need to advance digitally earlier. Now with the world moving towards digitization the need is generated as they see business impact and serious discussions taking place in the top management on the topic. Vendors/partners who are interacting with the CxO community in various forums are showing the big picture on the advantages for going digital or benefits of IoT, AI, etc. The management feels the need to have a CIO who will be

able to take these decisions and lead the company in the right direction. They welcome an IT veteran as the CIO. The responsibility of the CIO is to look at the AS-IS state and build a roadmap for the organization which will put them on the map with others. One side the legacy issues which is impacting business as usual needs to be fixed immediately and the other side is the transformation journey and newer initiatives. CIO gets into action and starts the ball rolling. The end users, now used to a typical working culture suddenly feels deprived of the privileges available



The responsibility of the CIO is to look at the AS-IS state and build a roadmap for the organization which will put them on the map with others

to them earlier and sees the CIO as some alien speaking a Martian language of Compliance/Security/Privacy/etc. Most of them have to now move out of their comfort zone and are shaken on policies and controls being implemented. More

interestingly are the responses from the IT team who themselves are now suddenly finding jobs which never they had executed or experienced in the past. The CIO starts the transformation from the very roots which is his own department and puts a clear expectation from each of his team member to move into a more proactive role of business partnering rather than a toolkit technician. Many of the team members suddenly find themselves glued to their systems making productive meaningful data vs running around with toolkits in hand to fix broken end computing devices. Early success with some low hanging fruits sets the pace and builds some confidence within the team and senior leadership, however much difficult tasks lie ahead. Change management becomes the most critical aspect of the transformation rather than any transformation journey. Introduction/implementation of new systems are much simpler to getting the people to accept it and start leveraging it. The CIO is in luck as the transformation journey is backed up by the CXO community and is driven and supported by the top management. The top management get actively involved into the new initiatives and starts driving them too. This is very important as in top-down method, the acceptance and success rate is much higher. Driven by the confidence, the CIO surges ahead and continues with the responsibility assigned to him for which time will tell the tale. ■



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- Process Safety Management

**Project Solution**

- On Site Project Management
- Cost Estimation
- Project Close Out Audit
- Contract Management / Administration
- Quality Assurance/ Quality Control
- P&ID Preparation

**OUR SERVICES**

**Training**

- Virtual Safety Induction
- Genral EHS Training

**Fire Protection Services**

- Fire Safety Audit
- Fire Load Calculation
- Fire Protection System Design

**HSE Management System**

- HSE System Development
- GAP Analysis

**Monitoring**

- GAS Dispersion Modelling
- Heat Dispersion Modelling
- Industrial Hygiene Service

**OUR CLIENTS**





- Precision finish boring cartridge with high accuracy repeatability.
- Facilitates precision adjustment with least count of 1 micron (0.001mm) radially.
- Practically Zero Backlash.
- Minimum diameter for finish boring 20mm.
- Standard products available for ID boring, back boring, OD turning and undercut machining applications.
- Standard product catalogue is available on [www.renukatools.in](http://www.renukatools.in) Customization option available.

**For Customization, kindly provide following details:**

- Component Drawing / 3D Model.
- Component material grade & hardness.
- Clamping / Fixturing details.
- Detailed machine information.
- Sample Inserts & spares to be sent to us for manufacturing.

## OUR OTHER PRODUCTS

**ECCENTRIC FINE BORING TOOLS**



**BCA BORING BARS & FINISH BORING CARTRIDGES**



**BORING KIT**



**DUO BORING BARS**



**COMBINATION BORING BARS  
ANTI-VIBRATION BORING BARS  
SPECIAL CARTRIDGES**



**U-DRILLS  
TREPANNING TOOLS**



**MILLING CUTTERS**



**TURNING TOOLS**



**SPECIAL ADAPTORS**



**RENUKA TOOLS**

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