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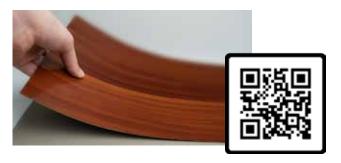
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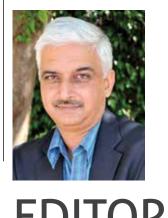
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DHANANJAY SARDESHPANDE

Canadian wood species make India their home

Dear Readers,

In early February this year, we were excited to witness the inauguration of a full-fledged wood home in Mysuru, using the wood frame construction method. Come IndiaWood (27 Feb-02 March) and we got to see two more scaled models of building with wood: tongue-and-groove and post-and-beam. Thanks to Forestry Innovation Consulting India, better known as Canadian Wood, the technology – as well as relevant expertise and suitable material - to build homes from wood has made its mark, and interest in wood in construction has revived to an appreciable extent.

But Canadian Wood in India has done more than that. It has been proactive in education on the use of wood in furniture and interiors; helpful in connecting Canadian suppliers with Indian manufacturers; and generously assisted in setting up interesting technical and business collaborations woodworking across the country. Read on to find out the 'where', 'what' and 'how'!

Off-site construction is gaining ground around the world, and it has solid reasons for its rising popularity. Helping builders set up cheaper, carbon-neutral modular homes are technology providers that are eager to help. This month's Case Study will tell you what I mean. In the continuing battle against the disruptions caused by the Covid-19 pandemic, we have some more industry leaders throwing light (Special Focus) on the challenges, seeking solutions to some of them, and even seeing opportunities in adversity!

In the section on Design, there are more

ideas than you can handle! Do let us know if there are exemplary instances within India that we can highlight in future issues of WoodNews. In our Tech Update section, we have glimpses into water-based coatings and finishes, food packaging from wood fibres, upholstery from recycled marine waste, and (that magical phrase!) water-proof wood!

Correction

In the WoodNews issue of May-June, 2020, we had carried the obituary of Karl Zehnder, who had spearheaded the India Skill Development (ISD) programme. Industry professionals who are interested in this noble initiative can write to Karl's widow, Ms Cornelia Zehnder, at cornelia. zehnder@gmail.com, or WhatsApp her (+78-6478487). The WhatsApp number published previously was incorrect. Any inconvenience caused is deeply regretted.

STAYING IN TOUCH

In keeping with the times and for ease of communication, WoodNews has discontinued the printing of Business Reply Envelopes with each issue of the magazine.

However, we continue to welcome your views and reviews of happenings in the industry, your contributions to and suggestions for the magazine, as well as business proposals via email.

Now follow us on:





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We look forward to hearing from you soon!

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YOUR SOLUTION



Ріх: Adrian Ray Photography

Weinmann makes off-site construction easy

Why should house building be any different to making a car? A productionline built product is far superior in achieving those quality aspects. It all comes down to repeatable quality that can only be achieved on a production line.

In the UK, the government has set an ambitious target to build 3,00,000 homes annually by the mid-2020s – but constraints, such as the shortage of skilled workers, mean it cannot meet that target using traditional building methods alone. Consequently, a significant proportion of homes must be built using modern methods of construction (MMC).

Perhaps the most viable option is to move construction off-site; after all, you wouldn't dream of trying to make a quality car in the middle of a muddy field in winter! Every year, however, the construction industry does the exact equivalent – attempting to build quality homes in challenging and less than ideal conditions.

Off-site MMC deliver a host of advantages, including improved quality, consistency

and speed of delivery. The lack of long-term data on the durability of MMC homes in the UK, however, is a considerable barrier to the expansion of such construction methods.

Financial service providers, including insurers, mortgage lenders and valuers need to have certainty that MMC homes are safe and durable if they are to engage with them.



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To address this, leading companies in off-site construction are utilising digital technology to create databases that record the design, processes and materials used in the construction of buildings.

Creating database

Digital technology makes it possible to create a database that stores and tracks data about every aspect of the build. It can also track repairs and alterations and make this information available to relevant stakeholders.

Mike Williams, Managing Director of ModularWise, a leading UK off-site manufacturer of constructed modular buildings and extensions for residential and commercial applications, agrees: "As a company, we've been manufacturing modular buildings off-site since 2002. We pioneered the introduction of luxury mobile toilets and have gone on to redefine the standards for the quality design and manufacture of modular buildings."

All of ModularWise's products are built to the highest standards to meet individual specifications and all relevant standards and regulations. One of the key reasons the company has been able to achieve what it has, is

down to a decision it made back in 2016 to partner with Weinmann Holzbausystemtechnik GmbH, the world's leading manufacturer of timber frame woodworking machinery and software.

"In 2010, we'd arrived at a point where we were supplying modular extensions to local authorities in London as part of the 'Better Homes' initiative," recalls Mike. "The advantage of off-site modular construction is that the tenants don't have to be moved out of their houses."

The extensions are mounted on helical piles which are installed two weeks before the units are delivered. This means the company can hand over the new extension within 24 hours of it arriving on site!

Tipping point

"The success of the modular extensions gave us the confidence in 2016 to invest in a new manufacturing facility in Powys, mid-Wales. This was in addition to our original factory in Herefordshire which still makes the extensions. At the Powys site, we built a complete modular house as an R&D project," Mike says.

Immediately, there was a huge amount of interest in it and ModularWise was approached by a big housing association. They saw the potential and decided to buy a 50% share of the company to help the business to grow and expand.

Up until 2016 ModularWise had produced all the timber frames by hand, which was not only time-consuming, but also

variable in terms of quality and consistency.

For the new facility in Powys the company knew it had to invest in high quality automated machinery that would deliver the speed, quality, accuracy and consistency it needed for the new venture.

"We had no experience of this type of equipment, so we visited a local specialist in bespoke oak-framed builds. They have always invested in the best technologies and recommended we talk to Weinmann. That proved to be invaluable advice," Mike recalls.

When ModularWise approached Weinmann, Mike was invited to Germany and shown around the manufacturing plant. They also took Mike to three or four local companies that were using their machinery and software to produce timber frames.

"From the outset, it was obvious that they were highly professional and would supply us with machinery and software of the quality and reliability that would give us a good 20-year life expectancy. They clearly understood our business model and we were able to work with them to specify the machinery required for our production line in Powys," Mike says.

Quality assurance

The package included a FrameTeq framing station, a WallTeq M-120 multi-function bridge and a MoveTeq P-300 work and buffer station. At half a million pounds, it was a significant investment for ModularWise. Once its staff had on-site training on the equipment, they were up and running very quickly.

Modular housing for local authorities has to adhere to very demanding procedures to meet the needs of council mortgage lenders. Each company has to go through a very rigorous accreditation scheme, followed up by an extensive quality control system that is open to frequent inspection.

All of ModularWise's timber frames and the way it construct them have to consistently meet a very demanding tolerance of +/-2 mm. "To achieve these



criteria we have 120 quality checks throughout the factory for every module that we produce. This enables us to give a 60-year warranty on our products," Mike informs.

A leading house builder in the UK has recently announced that it would stop all traditional building of homes and look at modular factory-built solutions.

"On our production line, every single piece of wood that's cut or processed is signed off by the individual that does it. Every element goes through quality checks we call 'gates'; before it can go through that gate a supervisor has to sign off the work before it can go to the next process," says Mike.

Each house module goes with a complete pack of quality management system documentation. So, if in 10 years' time there's a failure the builder will be able to see who made it. That level of traceability is incredibly reassuring and gives local authorities real peace of mind.

Software importance

"First-class software is a cornerstone of our production processes. The designers in our office are able to prepare work electronically and send it down to the timber frame workshop, where the supervisor has it on his screen and it's all systems go to produce the work," notes Mike.

"The remote support for diagnostics is fantastic too. We hardly ever have an issue, but when we do it is generally sorted out quickly via the telephone hotline support. We also have a service package which includes annual maintenance to keep the equipment in tip-top condition," he adds.

The 80,000-square-foot Powys factory now makes all the timber frames for both complete modular houses and the extensions that are made in the 20,000-square-foot Herefordshire site.

"In terms of productivity we are now approaching the stage where we will be able to produce one complete house a day off the production line. Currently we're at three a week, but the aim is to raise that to five a week out of this plant in the very near future," Mike informs us.

"Most, if not all, of our work comes from recommendations. We have always delivered what we said we would on time and in budget, a point the local authorities we deal with really appreciate. We've never been late or had any complaints about quality issues which is a real feather in our cap," concludes Mike.

(Courtesy: www.homag.com).



CIFF marches ahead in Guangzhou, Shanghai



The China International Furniture Fair (CIFF) in Guangzhou (27-30 July) was the first furniture exhibition held during the pandemic and met with success. It attracted participation from 1,607 exhibitors and more than 1,45,000 visitors, including foreign professionals.

The Shanghai edition of CIFF is also underway, from 7 to 10 September, 2020, under strict implementation of protocols to guaranteed safety for exhibitors, visitors and employees of furniture manufacturers and technology suppliers.

The CIFF platforms have emerged to provide stability to the supply chain and industry chain, as well as facilitating the recovery of the Chinese furniture industry in the fight against the ongoing Covid-19 pandemic.

CIFF Guangzhou included the entire furniture supply chain under one roof – including home, outdoor and leisure furniture, home décor and home textile, office, hotel and commercial furniture, furniture machinery and raw materials – covering 3,00,000 square metres of exhibition space.

CIFF once again proved to be a partner for companies and buyers and not just a simple trade fair organisation; the effort involved in not cancelling, but simply postponing the 45th edition until a more suitable time, resulted in greatly helping all players in the sector.

The trade fairs have once again reconfirmed themselves as a place of dialogue and culture, with design forums,

exhibitions and events.

Among the many events, two extraordinary design exhibitions stand out: Design Spring (contemporary China furniture designs) International Future Office, both of which were essential for understanding the latest trends in the sector.

The design forums and the Global Conference Industry Trend Conference 2020 were organised to communicate and promote the future development of the sector and the constant dynamic innovation that has always been the driving force behind CIFF.

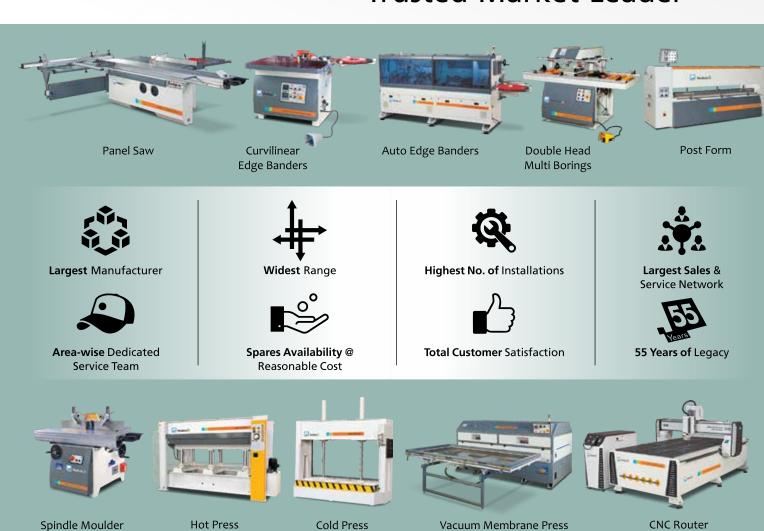
Like its sister in Guangzhou, CIFF-Shanghai is organised by China Foreign Trade Centre (Group) with the aim of creating a very strong integration between the high-level Chinese domestic



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market and international markets, supporting and helping companies to effectively address a rapidly evolving situation.

In light of the sudden surge in smart working and having to reconsider the concept of traditional offices during the Covid-19 pandemic, CIFF-Shanghai hosted brands that offered solutions for living and working in complete safety, integrating work environments with living spaces.

The pandemic also affects the organisation of outdoor spaces, both domestic and public ones, which need to be reconsidered and which we need to make greater use of.

The 3rd edition of the Shanghai International Furniture Machinery & Woodworking Fair, a furniture industry trade fair organised in collaboration with

Hong Kong Adsale, attracted leading Chinese and international manufacturers who presented furniture production technologies and all types of process machinery.

The 47th CIFF Guangzhou will be held from 18-21 March 2021 (home furniture, home decor & home textile) and from 28-March 2021 (office furniture, commercial furniture, hotel furniture, furniture machinery and raw materials).



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Successful reboot for Koelnmesse in China



Suspense and great anticipation accompanied the launch of the first Koelnmesse event since the Covid-19 crisis began: Interzum Guangzhou in China (27-30 July, 2020) demonstrated that trade fairs with strict hygiene rules in place and a limited number of admissions are possible.

"International participation was good and in keeping with the circumstances; thanks to digital business match-making, exhibitors were also able to reach visitors who were unable to travel to the event," according to Mr Gerald Böse, President and Chief Executive Officer of Koelnmesse.

"This corroborates our efforts to begin hosting trade fairs again in

our halls in Cologne (Germany) as soon as possible. The success of Interzum Guangzhou encourages us to set the course for this outcome, together with our customers," he added.

More than 800 exhibitors from 16 countries and nearly 1,00,000 visitors took the opportunity to meet vendors, customers and business partners again in person, building and strengthening relationships and reconnecting as an industry.

"In the current situation, the most important thing is for our customers to feel comfortable and safe at our events," Mr Keith Tsui, Managing Director of the Chinese Koelnmesse subsidiary, explained. "As event professionals, we see ourselves in a position to create conditions that are conducive to trade

fairs, even in times such as these."

As expected, there were fewer exhibitors than seen in the statistical results of the previous Interzum Guangzhou, but there were international exhibitors who made use of the event as well. There was an official German group entry comprised of a total of eight German exhibitors.

For international customers who were unable to travel to the venue due to travel restrictions, Interzum Guangzhou offered 'Offline2Online Live Business Matching'.

International visitors joined in the proceedings digitally from home, virtually meeting with the exhibitors on hand to cultivate business relationships and present new products. Exhibitors' feedback on these virtual meetings and on the event as a whole was consistently positive.





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Bedroom furniture set (L) made with Western Hemlock. A dining table set (R) made with Douglas-Fir.

Born in Canada, Made in India!

Forestry Innovation Consulting India, better known as Canadian Wood, is rekindling interest in wooden architecture in India and supporting furniture manufacturers with knowhow

India has a rich history of architecture with wood. Its heritage is adorned with several awe-inspiring examples of wooden architecture that integrated the use of this natural material in the design and built in the most innovative styles.

These time-tested creations have

withstood diverse climatic conditions and are a testimony to the sheer resilience of wood as a building material over several centuries. The different construction methodologies of these structures adopted by regions to suit varied conditions and local needs are worth noting.

Building with wood is quicker than

conventional materials. It is also an ecofriendly material, thus making it not only good for the environment, but also for the health of the occupants.

Over time, the art of designing and building with wood was lost due to many factors, including excessive deforestation. But many present-day architects and designers, real estate developers and











Spruce-Pine-Fir (SPF)

Western Hemlock

Douglas-Fir

Yellow Cedar

Western Red Cedar

hospitality industry professionals in India are rediscovering wood for its beauty, benefits and ease of working.

FII India

"It is interesting and heartening to see that architects, developers and the hospitality industry are increasingly looking at building country homes, farmhouses and resorts with wood, in addition to emphasis on the use of wood in re-man applications," says Mr Pranesh Chhibber, Country Director, Forestry Innovation Consulting India Pvt. Ltd. (FII India), better known as Canadian Wood.

"It is this trend that encourages us at Canadian Wood to increase our efforts

Canadian Wood largely promotes five wood species in India (L-R) Spruce-Pine-Fir, Western Hemlock, Douglas-Fir, Yellow Cedar and Western Red Cedar. These species are available across India through a network of timber traders, 36 of who act as stockists of Canadian wood species. Each of these species is known for its unique properties and is suitable for a variety of applications, both in re-man and structural categories.

Western Red Cedar lends itself to the construction of outdoor structures such as pergolas and gazebos.





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A single-storey resort-style WFC house displayed at IndiaWood 2020 used SPF in structural framework, including stud walls, floor joists and roof members. The house was embellished with furniture made using Western Hemlock and Douglas-Fir, both Canadian wood species known for their looks, properties and workability.

directed at sharing of best practices, organising seminars, and training workshops for our stakeholders."

All these activities focus on manufacturers and contractors to be able to execute such projects with local skill and expertise, thereby making them commercially viable, he says.

FII India is a crown agency of the government of B.C., mandated to promote B.C. forest products in offshore markets. Established in 2013, it is actively engaged in

educating the wood industry about Canadian wood species through various initiatives, including sharing of best practices in re-man and structural applications of the species.

Canadian wood products are legally sourced certified wood. They are seasoned, sized, and graded, making it almost ready-to-use lumber for the woodworking industry in India.

Technical competence

The team at Canadian Wood is a wellqualified group of professionals. For structural applications, Canadian Wood extends technical support by suggesting The first ever project in India supported by Canadian Wood using curved Douglas-Fir glulam beams, designed in India and made in Canada. It has come up on the campus of CEPT University, Ahmedabad. While the arches were the focal point, the workshop also featured extensive use of Douglas-Fir, Western Hemlock, and Yellow Cedar in a range of re-man applications inside the workshop.









In this WFC (wood frame construction) multi-storey house the exterior and interiors were made with Canadian wood species. Wood frame houses incorporate comprehensive water-proofing measures to protect them from heavy rain and moisture ingress, and are designed to meet local seismic and wind load values. The entire project was supported by Canadian Wood, from design to completion, including advising on materials and technique.

appropriate species and grades most suitable to the type of construction chosen or preferred.

These include tongue-and-groove (T&G), wood frame construction (WFC), posts-and-beams, or even hybrid method – use of wood in tandem with local stones or bricks.

Canadian Wood also assists the woodworking industry in India by providing technical support and suggesting appropriate species and their grades for a variety of re-man applications such as indoor and outdoor furniture, doors and door frames, windows and window frames.

In addition, these experts also guide Indian manufacturers in interior applications such as panelling, handrails and balustrades. Canadian Wood also extends support on other outdoor applications such as cladding, decking, pergolas, gazebos, and even saunas.

Sustainable source

Ease of access to certified wood from the Canadian province of British Columbia (B.C.), harvested from sustainably managed forests, presents woodworking industry in India with an opportunity to make an eco-conscious choice that also resonates with end users, both for structural and re-man applications.

This tongue-and-groove cottage was recently displayed at IndiaWood 2020 and assembled on site in less than 12 hours. The double T&G construction was advised for enhanced durability. The cottage also showcased doors and door frames in Yellow Cedar, a species of Canadian wood known to withstand natural elements very well and being resistant to termites and decay.









In addition to our focus on the re-man industry, we also engage in training and educating the woodworking industry on structural applications in order to develop local skills and expertise required to make projects technically and commercially viable in India.

- Mr Pranesh Chhibber, Country Director, FII India.



Few places on earth can truly match the diversity of Canada's vast forests and long-term source of supply of wood to fibre-deficit countries such as India. Canada is home to roughly 10% of the world's total forest cover and zero deforestation for well over two decades.

In particular, British Columbia is home to 40 tree species and 14

bio-geo-climatic zones. Also, only 10% of the world's forests are certified, whereas Canada has 37% of the world's forest certification.

Canada has 170 million hectares of forests certified to at least one of the two internationally recognised certification programmes: the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC).

This glulam post-and-beam club house showcased Douglas-Fir in structural applications. Yellow Cedar was used in windows, doors and ceiling. SPF was used to create wall framings. Western Red Cedar was used for cladding and decking, while Western Hemlock was used in panelling and ceiling linings. This structure was pre-fabricated in a factory, showcased at IndiaWood 2018, and reassembled at several other exhibitions.















Anuradha Timbers International

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This beautiful private villa, located at an altitude of 7,500 feet in Himachal Pradesh, is a fine example of hybrid style of post-andbeam construction that uses wood in tandem with local stone. Douglas-Fir was used for all structural applications, including trusses, posts-and-beams, and rustic flooring. A 16-foot-long table made with SPF is the highlight of the dining hall-cum-library in the house.

From planting forests to harvesting and manufacturing lumber products, the forest sector in B.C. is a sophisticated and interconnected network involving sustainable forest management and wood processing.

As one of the largest producers of softwood in the world, B.C. Canada's lumber products are used in a wide range of applications around the world, showcasing their aesthetic and versatile qualities that include strength and durability.

Made in India

Canadian wood species have been successfully employed by the best of manufacturers within the woodworking industry in India across a range of applications. Canadian Wood provides basic technical support and hand holding on projects and also arranges technical expertise on fee to pay basis.

"Under the new normal during Covid-19 days, we have stepped in with informative webinars to continue work with our target

The decking in the terrace of an apartment overlooking the sea (L) and outdoor furniture (R) both made using Western Red Cedar.





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(L-R) A carved door and a 12-foot-tall one, both in Yellow Cedar; a stained Hemlock door; and a door made with Douglas-Fir.

audience and stakeholders," says Chhibber.

"We are proud to share here some of those projects undertaken in recent times, including the tworesort style houses displayed at the IndiaWood trade show earlier this year in March 2020," he adds.

Canadian Wood worked very closely with leading manufacturers

in the re-man industry such as Artius Interior Products and EvoWood (Gurugram), MAS Furniture (Mysuru), Bramola Furniture (Faridabad) and Bram Woodcrafting Studio (Mysuru) on doors, windows, door and window frames, and indoor and outdoor furniture displayed inside and outside these demo houses.

"My best wishes to architects and designers, builder and developers, and

manufacturer and contractors, who are working with wood. I assure them of our whole-hearted support," Chhibber signs off.

To know more about Canadian wood species and its extensive applications, visit www.canadianwood.in.

A designer wardrobe lit from within (L), made with Yellow Cedar. The awardwinning interior work of a popular pub (C) is made in SPF. Window frames (R) made with Yellow Cedar.









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force prevents the surface from heating up and the sanding belts from sticking during the processing of lacquered and plastic surfaces. Similar to a cross sanding unit, the lamella belt operates without a control system, retains the full tolerance compensation of the segmented platen, wears evenly, and is economical to replace.

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Maggie's rehabilitation centre in Oldham, UK, offers 'architecture of hope' to its many inhabitants affected by cancer.

Pix: Tony Barwell & Jon Cardwell.



Can American hardwoods be used outdoors?

By Roderick Wiles

It's a common question in markets where American hardwoods are less known and it is especially relevant where indooroutdoor living is so important, such as in India.

However, before answering, I always ask my own series of questions first, as 'outdoors' can be interpreted in many different ways. One side of a front door is outdoors and the same is true for window

frames, while soffits are also outdoors.

But in all these cases, there is likely to be some cover from full exposure to sun and rain and also no ground contact. In these cases, the species of wood used is far less important than the design.

Minimising direct exposure to the elements, reducing water and ground contact and allowing for expansion and contraction must all be considered. It is all too easy to rule out using a particular species of wood in a particular application, when actually the design itself might be the issue.

Furthermore, weather-proofing treatments can also be applied, which will enhance the timber's durability. American white oak, for example, is often used to make windows and doors, with some

manufacturers in Europe using it throughout their entire product range.

Indian examples

There is at least one example in India of a manufacturer doing the same thing. Based in Gurugram, Artius Interior Products has been making wooden window and door systems since 2011 for villas and bungalows all over the country, offering glued-laminated American white oak frames as part of their product range.

In this case, good design, coupled with good technology and a proper understanding of the material has been

The KOA Canvas is a luxury lifestyle project in Dubai consisting of individual residences and a host of top-notch amenities.

the secret to the company's success. Of course, certain species are more durable than others, giving them a higher resistance to the elements and improved dimensional stability, making them better suited to outdoor use.

Teak is a fine example, and centuries of use in India have demonstrated this. Other dense, tropical hardwoods have also been widely used in many extreme outdoor situations and even in permanent contact with water.

None of the American hardwood species (in their natural form) can directly compare with teak, but some do have a greater degree of natural durability than others.

Most importantly, when using any wood species outside (even teak), a degree of weathering or degradation will need to be anticipated. Wood is a natural material and it responds to exposure to ultra-violet (UV) light, humidity and temperature changes, changing colour over time, and developing surface cracks.

Thermally modified

When it comes to decking or outdoor furniture, American hardwoods may not be the best option, unless they have been treated specifically for this purpose.

There is now increasing availability of thermally-modified American hardwoods, which, in simple terms, have been cooked to a high temperature, resulting in their increased durability and improved dimensional stability.

This treatment is available in American ash, red oak, tulipwood and soft maple, and the resultant material is ready to use in a range of outdoor applications, such as pergolas, decking, cladding and window louvres, as well as chunky-style furniture with full exposure to rain and sun.







Thermally-modified American tulipwood was used in the exteriors and interiors in this house in Melbourne, Australia.



Thermally-modified American hardwoods are being imported and distributed in India, most often being used in cladding and decking applications on private houses. Designer's Arcade, based in New Delhi, has been doing this successfully for many years.

Another important consideration when using wood outdoors (and

even indoors) is whether it has been seasoned properly. American hardwoods are used all over the world in a multitude of applications and in climates ranging from hot and dry to cold and damp.

The key is that they are properly dried before they are shipped to their buyer, be they just down the road or on the other side of the world.

Drying timber

Drying of American hardwoods is a complex process, which has taken many years to perfect. A combination of airdrying and kiln-drying is used over a period ranging from a few days to many months, depending on the species and thickness of the sawn timber.

The result is lumber that ranges from 7% to 10% moisture content, which ensures that it is as stable as possible and ready to use upon arrival at its customer.

Side-stepping this process and importing American hardwood logs or lumber that has not been dried as a means of saving costs, is inviting a host of problems.

So, back to the initial question: Can we use American hardwoods outdoors? The answer is yes, as long as we have a full understanding of the material we are working with and the correct way of using it.



 The writer is AHEC Regional Director. For more information and to download the latest publications and industry facts, visit www.

americanhardwood.org.

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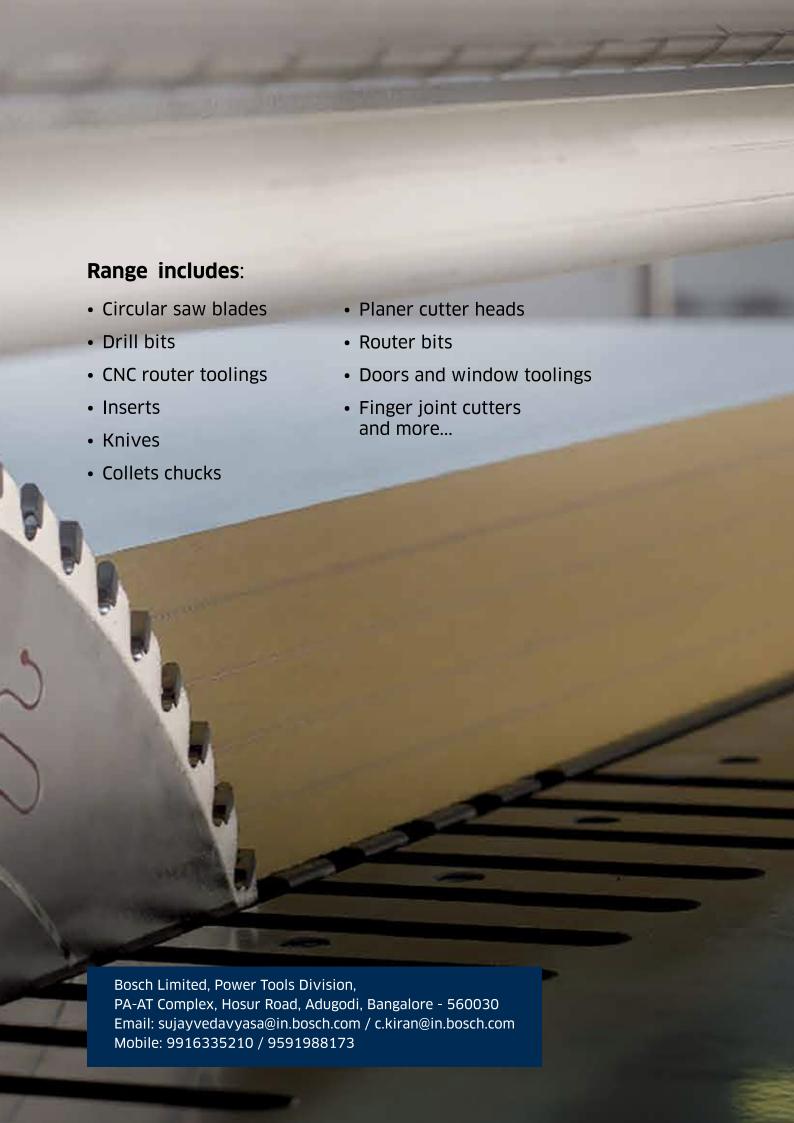




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Train your managers; workers will toe the line!

By Bhawna Sharma

Artius Interior Products is an R&D driven wood engineering company catering to the luxury segment of solid wood windows and door systems for premium residences, post-and-beam construction and timber curtain walls and homes.

Artius ('perfection' in Latin) was established in 2011 by me and my husband, Vivek Sharma. We were making our own house when we realised that despite wood being the first choice of material for homemakers, it is being replaced by alternate materials for various applications.

Our philosophical foundation lies on the impact on environment and harmony with nature, while we advocate 'Wood is good'. We have put into action our proprietary technology in our state-of-the-art manufacturing unit, coupled with unmatched aesthetics and performance of our products.

Operating across India, Artius has witnessed 86% growth in 2018-19. The Artius experience centre is located close to its production unit in Gurugram, with another one is coming up in Hyderabad.

Cautious re-opening

Although non-production aspects of the business were continuing even during the Covid-19 pandemic-induced lockdown, production recommenced in the middle of May. The first 15 days

were dedicated to only maintenance and setting up of higher hygiene standards.

By June end we were at 60% operation, which gradually reached its full capacity by August.

Artius works with high net worth individuals, so revenue inflow was never really the core setback of the pandemic. However, work on residential sites was halted, mainly due to the unavailability of skilled and unskilled labour. Some projects were temporarily stopped while some others, which had an emergency for completion at the site, were expedited.

It was quite an effort to plan and execute factory operations as per the complete change in delivery schedules. Manpower for some specialised work had not returned; and machinery breakdown was extremely difficult to handle as all Artius machines and raw material are imported.

However, Artius was fortunate that our contracts did not provide flexibility for cancellation of partially executed projects – it entailed the ordering of customised materials and back-to-back vendor and export payments.

The explanation was honoured in extremely good faith by such clients, with the Artius assurance of executing their projects without escalated costs and with the same commitment whenever their fund flows returned to normal.

Requests for postponements were also there, mainly because of the labour uncertainty; but we managed it by requesting some clients to pay us higher advances so that we could honour our nocost-escalation commitment.

We were also very fortunate because our employees willingly accepted a 3-month pay cut ranging from 10% to 50%, to cope with the delays. Raw material was ordered cautiously, focusing a lot on pending payments.

Digital initiatives

We deferred some growth plans – such as the opening of an experience centre in Mumbai, even after paying a security deposit and rent – to avoid further expenses and cope with delayed payments and cash flow.

We are regularly in touch with the architects with whom we have built a lot of goodwill through our unmatched quality and unconditional services in the past. They have seen how Artius has put rigorous efforts into research and establish in-house glulam manufacturing for various applications.

Artius is also talking to all architects to consider us for their projects and give more opportunities to an Indian research-based technology partner. We are also associated with ongoing webinars with technical institutions on timber construction to further educate these specifiers.

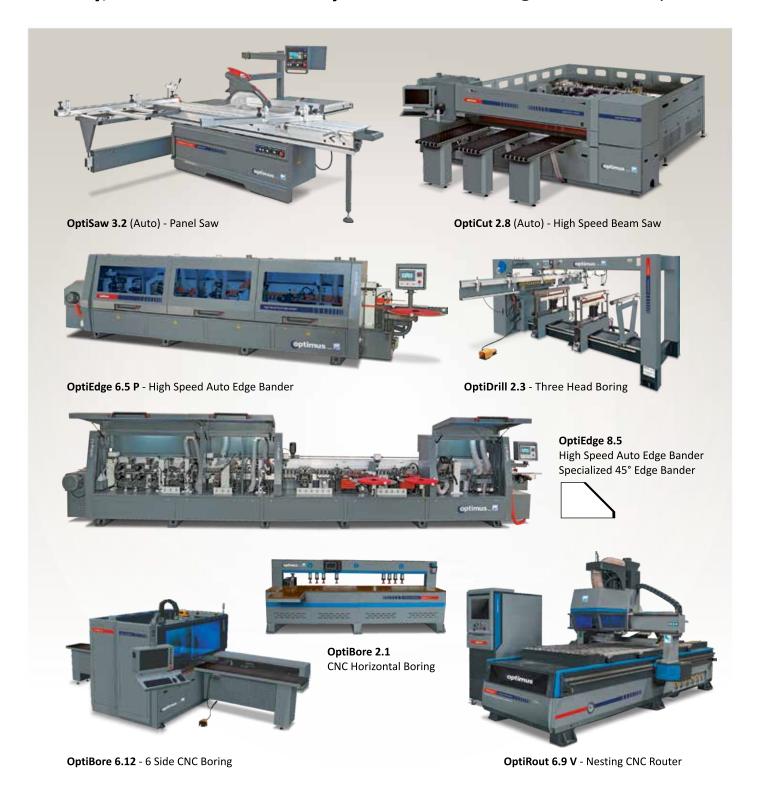
Artius prominently participates in business and trade trade shows, but we anticipate lower footfalls in such future engagements, until the pandemic is over. Thus, we have embarked on our journey in the digital space with our network of celebrated architects and conservationists, who echo the Artius' voice and values of environmental sustainability.

The Indian woodworking and timber trading sectors are very diverse and, as a rule of thumb, it cannot be concluded with certainty that the effects of the Covid-19 crisis are beginning to be seen in lower demand for wood products.

A recent report suggested a rise in demand in the home furniture segment, with the growing culture of remote working. At the same time, bigger and luxury furniture brands, which focused more on office furniture, have taken a considerable hit.

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Since many potential clients are deferring their decisions due to the prevailing uncertainties, it becomes all the more important to have a bigger sales team and reach out to more prospects for a similar size of business.

- Ms Bhawna Sharma, Co-Founder & Director, **Artius Interior Products.**



In my opinion, the challenges for companies that source raw materials and consumables within India, in comparison to companies like Artius - which import a majority of their raw materials and consumables - will be significantly different. Exports will now be complicated, because the impact of the pandemic on different countries is different.

There are a few countries, the industry associations of which have opined that the forest industry, which acts as the base point of raw material sourcing, has been very strongly impacted. The anticipation of reduced tree planting, as well as felling of trees and processing timber, seems to be the foremost reason.

Random Lengths, the lumber pricing guide, reported that the price of framing lumber climbed beyond \$800 per thousand board feet as of August 21. This is a 130% increase since mid-April. If this turns out to be true, then a sharp price rise is anticipated.

There will be new challenges for maritime transport too. The disposal of by-products may become a problem. There are companies that, faced with the

impossibility of disposing of them or reasonably storing them, have had to shut shop.

Health and safety is a part of overall responsibility, which Artius as a brand has always shouldered. We began asking our employees to take a small survey before starting on-site work: confirming that they do not have any Covid-19 symptoms, sharing their travel history since their last shift, and verifying if they understood new health and safety guidelines.

Experiential selling

Artius products, by their very nature, demand an experiential selling. Emerging from lockdown, clients will be more vigilant about health and increase their demands for safety. The first challenge we see is a revamped business strategy towards this experiential selling.

We have defined conditions for a safe experience for customers: wearing of quality masks provided by Artius, temperature controls, hydro-alcoholic gel, and use of contactless methods are now a part of our culture of responsibility.

There is enhanced health surveillance, restrictions on the use of communal tools and spaces, regular sanitisation of equipment, along with periodic deep cleaning of the whole factory and experience centre.

We are arranging client visits with appropriate social distancing - and it is working in our favour that we have our experience centre in our secluded factory premises, not in a marketplace or mall!

We also proactively communicate about measures implemented that may not be visible to customers - such as in back offices, production areas or storage sites. These include minimising human contact, testing procedures across the entire supply chain, traceability of components, and strict application of the highest sanitary standards in our infrastructure.

The second revamp is of sales strategies and minimising costs. Since many potential clients are deferring their decisions due to the prevailing uncertainties, it becomes all the more important to have a bigger sales team and reach out to more prospects for a similar size of business.

We have started inducting more people in the sales team with higher variable salaries as incentives and started crossrole training to back-end teams to avoid additional hiring.

Management lessons

businesses many manufacturing industry, even Artius' working environment was not suitable for remote working for all classes of employees. The flexibility of remote working was the first ethical choice which





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I However, when started interacting with our managers and business heads, it did not take long to realise that remote working is not about employees alone. At the managerial level, remote management demanded a different skill set than face-toface management.

Some managers found their roles more difficult than before, with an inherent belief that remote working is not capable of being implemented in India, and with a trust deficit in their subordinates.

When such doubts creep in, managers can start to develop an unreasonable expectation that those team members be available at all times, ultimately disrupting their work-home balance and causing more job stress. Many of their suggestions, if implemented, would have made their subordinates' lives stressful, thereby impacting productivity.

If autonomy is low and micromanagement high because of managerial distrust, the benefits of remote work are unlikely to accrue. Train managers on how to devolve job autonomy, and to check in rather than check upon.

Sometimes managers confuse autonomy with abdication of responsibility or abandonment of employees. However, frequent and regular communication is even more important when employees have autonomy.

Managers need to check in with

people and provide them with information, guidance and support to work autonomously. They need to learn skills delegation of empowerment to provide their workers with greater autonomy over their work methods and the timing of their work, which in turn will promote worker motivation, health and performance.

Organisations need to move beyond rhetoric about supporting flexible working and enact this support by ensuring workers have the required equipment, allowing extra leave for workers if needed, and giving the training to support flexible working. These changes also give a strong signal about the company's genuine commitment to this work practice.

Leadership crunch

Crisis leadership is a double-edged sword: the same leadership skills that allow you to lead in an emergency may become destructive when you try to return to (something resembling) normal.

The unequivocal determination that made the crisis leader effective at first can develop into uncompromising micromanagement. Constant watchfulness can generate tension and even hypervigilance.

It is crucial to know when enough is enough. But leaders cannot follow the natural impulse to withdraw, lean back and just assume that the team will reset itself smoothly when the situation starts calming down.

In the emergency phase, leaders must move to the frontline and fight the fires. In the recovery phase, leaders must strike a new balance between guiding a smooth return to normal, while keeping up the

> pressure to renew and rethink the future.

> > This is a situation which many of us as leaders have not faced previously. The recovery phase of the pandemic will open new and interesting trends

of leaderships. All of us will have different approaches.

For me it is finding a realistic sense of optimism. What should we change? It is also an inflection point for the way my team cooperates, not a U-turn that leads back to familiar routines.

This crisis had been costly from both a business and personal perspective, but on balance, the benefits will far outweigh the cost. Culturally, we have been catapulted ahead to a future we could not imagined. Strategically, transformation has gained a momentum we could never have created on our own.

Crystal gazing

A central lesson is that the crisis revealed hidden talents and unseen qualities both positive and negative. All teams can benefit from conducting a targeted search for the positive outcomes of the crisis and reflecting on how their relationships with each other and their work have changed.

There will also be new and interesting trends to management. Companies will endeavour to strengthen their abilities to anticipate and meet demand. Among the best practices in this area is the establishment of a "control tower" with end-to-end visibility on different demand scenarios, inventory movements, production deployment, and associated logistics.

Secondly, simplified but increased speed of decision making. A successful restart will require addressing a large number of interdependent issues simultaneously, demanding to go beyond the usual corporate governance framework.

The third trend I anticipate is in the manner in which companies will approach pricing. The aim should be to ensure the material and psychological conditions that enable customers to make their purchases and create favourable business conditions.

We need to avoid a dangerous situation in which simultaneous pressure on prices from suppliers and customers put companies in difficulty across the value chain. Depending on the situation companies will have to finely measure the promotional or discount models they will use.



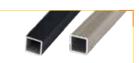
The recovery phase of the pandemic will open new and interesting trends of leaderships. All of us will have different approaches. For me, it is finding a realistic sense of optimism.

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NSR2S - Two Side Connector



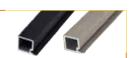
NSR4S - Four Side Connector



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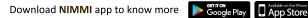
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Region-wise national agro-forestry plan on the anvil

By Ashwini Kedia

Costaa Woods is a multidisciplinary wood enterprise based in Kolkata, with production facilities spread across the width of the country. Our manufacturing units are located in Arunachal Pradesh, Meghalaya, West Bengal and Gujarat.

Our primary principle is to procure wood from sustainable and renewable forest resources only, and then convert it into various products such as veneer, lumber, door frames and flush doors, plywood and blockboard, solid wood flooring, outdoor decking and wooden industrial pallets.

We use approximately 15,000 cubic metres of wood each month to produce various products across different units. All our units have state-of-the-art manufacturing facilities and we strive to grow sustainably together with all our stakeholders: employees, suppliers, clients and service providers.

We also run a sports infrastructure building company called Costaa Sports, where we take up turnkey projects to build courts for squash, basketball, lawn tennis and badminton.

Cautious re-start

All our units commenced business

immediately after the 'Lockdown 2.0' got over on 22 May, taking care to implement all possible precautions against Covid-19 infection. The start was extremely slow with uncertainty looming large on management's and employees' heads; but it has been only upwards since then.

Most of the projects which we had already commenced before the lockdown are getting completed slowly since the unlock process has started. The time lines have changed drastically, but none of the ongoing projects got canceled.

A lot of thinking went into our business strategies to meet the vagaries of the ongoing pandemic and its disruptions across the globe, among them:

- lower credit periods to our dealer and distributor network;
- volumes to remain stagnant but margins to increase;
- standardisation of product lines and shifting fully to certified wood;
- enlisting our products on e-commerce platforms;
- · fresh focus on digital marketing; and
- creating a complete value based ecosystem.

Supply chain

From what we have experienced since business restrictions began easing globally, there has been no major disruption in raw material supply from Europe (Germany, Belgium, France, Belarus or Russia) or from the Americas, or even West African countries.

The volumes are definitely much lower than pre-Covid times; but lower volumes

perfectly offset the lower demand and avoid any over-supply and ruining the market!

Yes, a lot of our panel processing lines and components were imported from China until now. This would definitely change or stop because a lot of Indian manufacturers are stepping up to provide us with required infrastructure here.

One of our main objectives has been to recover money which was stuck due to the unprecedented Covid-19 disruption. However, I must say that money inflow has eased considerably with our trusted dealers and distributors behaving with utmost responsibility and maturity.

We have kept our expansion plans on hold. After a fair and a more clear understanding of how the markets recover, we will decide how and where to take forward our expansion plans.

Support to MSMEs

For organisations and companies that have had a clean track record with banking liabilities, I don't see any challenge in obtaining fresh finance for capacity building or expansion. There are various finance schemes launched by the Union and state governments, especially for micro, small and medium enterprises (MSMEs).

Banks and non-banking financial companies are all loaded with excess liquidity and are looking for good strong new projects to support.

Industry associations – especially the Federation of All-India Timber Merchants, Saw Millers and Allied Industries, which is the parent body of all wood-based industries – has been extremely proactive

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The Transit Pass system for timber/
lumber that is imported or sourced
from 'trees outside forests' must be
abolished. The focus now should be on
plantations of different indigenous tree
species across the country.

- Mr Ashwini Kedia, Director, Costaa Wood.



in representing grievances and requirements to various government departments.

Thankfully, the Centre has taken note of various representations made by the federation and has clearly highlighted that furniture manufacturing in India will be given a major boost and relevant support.

During the Covid-19 lockdown more than 150 scientists and technocrats from leading research agencies Research (Forest Institute, Institute Wood of Science and Technology, Indian Council of Forestry Research and Education, and Indian Plywood Industries Research & Training Institute) collaborated formulate a region-wise national agro-forestry plan. This is under rigorous discussions and deliberation before being adopted.

The focus will now shift to agroforestry for more industrial wood production and consumption. Furniture manufacturing hubs and clusters will be developed all across the country. Our dependence on China for furniture requirements has to go down considerably.

'New normal'

The various legislations on sourcing timber in India, I would say, are broadly adequate; but some regulations need to be relaxed considerably. The Transit Pass system for timber/lumber that is imported or sourced from 'trees outside forests' must be abolished.

In India 95% of wood supply is either through imports or from plantation timber. The draconian Transit Pass system was put in place to check illegal felling of trees from forests; but it amounted to just 3% of wood supply!

Yes, the focus now should be on plantations of different indigenous tree species across the country, thereby greatly reducing our dependence on imported wood and saving valuable foreign exchange.

With respect to consumption of timber I certainly feel optimistic! There will be a surge in single-owner facilities such as work stations for the father and (working from home) mother, children's furniture suited to online classes, etc. Even though offices and commercial properties face a slowdown, in time there will be a demand for furniture re-oriented to accommodate physical distancing!

Market expectations are changing and certainly will change furthermore. People will look for innovation in functionality of

furniture design; and we are already working on creating panel products which have virus-resistant surfaces. So yes, a lot of new and interesting things are lined up for the near future.

Advantage wood

Consumption of wood and allied products will only increase gradually and steadily. After banning wood for 27 years, the Central Public Works Department recently rescinded it order – the first sign that the Union government is recognising the carbon sequestration quality of wood!

According to various reports from Indian and global research agencies, The family of Corona viruses remains very little time on wood surface compared to glass, aluminium or any other metal surfaces. So wood as a raw material for building and furniture making has no major challenge, except its easy availability!

Going forward, our websites will become our business card, showroom and product store; working spaces (offices and workshops) may become increasingly flexible, multi-functional and technologically advanced spaces.

However, furniture that is made from carbon-neutral material, comes from certified sources and is user-friendly will always prevail over others. All we need to do is work smart and make adequate provisions for any unforeseen business circumstances in the future.







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Finance options available

WOODNEWS

FFSC gears up to assist 'Champion sector'

With the Union Commerce Ministry recognising furniture manufacturing among "Champion sectors" for creating manufacturing hubs across India, the timing could not have been better to for the Furniture and Fittings Skill Council (FFSC) to become more structured and organised as an industry and tap its full potential.

The Union Ministry for Skill Development and Entrepreneurship (MSDE) has introduced its second stint with 'Vision 2025', leading to a more promising and demand driven Pradhan Mantri Kaushal Vikas Yojana (PMKVY).

During FY 2019-20, reflecting on

the feedback from industry, the FFSC focused on creating ease of engagement for stakeholders, enhancing the overall participation through awareness campaigns and empowering the existing ecosystem.

The FFSC redefined its core functions under the key heads of Standards, Training Infrastructure, Projects, Assessment and Certification, and Career Management, giving a cleaner and lean structure.

Through its flagship initiatives – such as the FFSC Skill Ambassador Programme, FFSC Skilled India Talk and FFSC Skill Pavilion – the organisation connected with over 30,000 industry participants from across various sub-sectors, and has benefitted over 15,000 people under 'recognition of prior learning' (RPL), short-term training and other programmes.

FFSC certified 117 trainers during FY 2019-20, which takes the overall tally of certified trainers to 267. It also certified 61 assessors during FY 2019-20, which takes the overall tally of certified assessors to 302.

Under the Special Projects component of PMKVY, FFSC initiated training for jail inmates at five locations in Punjab with certification of 130 candidates.

A new structure for FFSC was proposed and adopted at the 17th Governing Council meeting on 23 June, 2020, consisting of a chairman, co-chairman, treasurer and 13 executive members elected from the General Body of FFSC. On 27 August this year, election to the new Governing Council resulted in the following leadership order:



Initiatives for 2020-21

Building upon the success of the FFSC Skill Ambassador campaign for FY 2019-20, FFSC aims to increase the outreach and impact of 'Skill Development Mission' with V.2.

It is more inclusive to factor participation from all the domains and sub-sectors of the industry, to build right occupational standards and training infrastructure, such as centres of excellence, and would benefit professionals from the MSME (micro, small and medium enterprises) associations, institutions, sector, corporates, training and engagement partners.

The FFSC Skill Pavilion is a unified platform for skilled manpower solution that brings together all the stakeholders and provides them growth opportunities through various engagements.

With the overwhelming response of the FFSC Skill Pavilion at ABID Interiors 2020 and IndiaWood 2020, FFSC aims to scale up the initiative in terms of locations and engagement features.

FFSC's 'Skilled India' talk programme is devised to collaborate with industry leaders to conduct multiple knowledge sharing sessions, focused group discussions, workshops panel and discussions. Its beneficiaries include students, career aspirants, budding entrepreneurs and the training ecosystem in India.

The FFSC Skill Competitions Fund aims to break stereotypes by creating aspirational mainstreaming opportunities. Events such as the World Skills Competition are proven examples of how a wider acceptability of various trades is created amongst the youth via skill-based competitions.

According to Mr Jagdish Ahuja (AICA-Sunmica), "To spread the opportunities via skill competitions and empower the participants with world class training, we have started this fund with seed capital."

FFSC's Career Management Cell aims to bridge the gap between learning and livelihood through correct counselling, selfapprenticeship or employment. Its Virtual Placement Drive is aggregating and bringing wide range of career opportunities the for right candidates.







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Solwood partners (L) with Holytek in India, and counts among its customers those that supply furniture and components to IKEA.

Fresh focus now on 'Make in India' brand

Holytek began with exporting woodworking machinery more than 30 years ago. Its goal has always been playing 'made in Taiwan' ambassador to the rest of the world, says Mr George Koo, General Manager-Sales. An India veteran, he adds that Holytek is now a one-stop shop for woodworking machinery and components. Read on...

How has Holytek progressed in terms of manufacturing capabilities and capacities in these past decades?

We insist in the 'Made in Taiwan' quality to ensure our customers are satisfied with machinery, which customers should all receive long service life and European quality standard

products from us. Taiwanese quality equals that expected of European manufacturers, but we have more competitive pricing and better investment

Also, Holytek has been eagerly expanding its machinery services and knowledge. In the last 20 years, we have moved from

single, stand-alone machine services to offering more turnkey production lines products, as well as from hardware to software connection services.

What is the range of machinery Holytek offers to the Indian market?

Solid wood machinery is still our main focus, as it also resembles the growing high quality furniture export demand from Indian manufacturers. However, prefer to be a one-stop shop; so we are offering all ranges of products, including both panel processing, manual and standalone machines to full production lines and CNC-controlled machines.

How has furniture manufacturing in India progressed ever since you first entered this market? What is its potential?

We've been in India market for over 20 years, and we have seen tremendous development in the Indian furniture industry, especially in furniture export to European and US markets.

Many of these furniture manufacturers exporting to EU or the US are aggressively expanding their production capacity and product range. This transformation is more obviously seen in the India market within the past 5 years.

With such transformation, unlike 20 years ago, the requests now are not only for manual machines, but we are seeing a huge increase in demand for semi-automatic to fully automatic production lines and connected system. These will enhance and stabilise Indian furniture to high quality standards.

Who are the prominent companies in India that are your satisfied customers?

We are serving to all areas in India, but I could share one good example. Holytek has been one of the key machinery suppliers to IKEA furniture production chain in several markets over the world, including Russia and Eastern Europe.

Now, IKEA India has been expanding more manufacturing capacity locally, and Holytek is also providing machinery and supporting with our services to the local IKEA production chain.

We serve clients from all areas in India, including the solid wood hubs in Jaipur, Jodhpur and Moradabad, and also panel processing factories across the country. We have very good sales for panel processing in Mumbai, Bengaluru and Delhi, as well as Hyderabad and other emerging areas.





Taiwanese people know trust can only be built on good products and satisfying services.

- Mr George Koo, General Manager, Holytek.

In fact, our new sales partner in India, Solwood, has set up sales and service network even in Punjab, Pune, Chennai, Indore and Nagpur.

How is 'Made in Taiwan' a reliable label?

Quality assurance in Taiwanese products originates from our peoples' nature. Taiwan is an island country and has been doing foreign trade for over 100 years. We know the importance of trust, and we know trust can only be built upon good products and satisfying services.

Besides, Taiwan is small and lacks abundance of natural resources, so we know the value if being diligent. Holytek, since the founding year, has been insisting to use our own brand until now. It's the same for our marketing strategy in India: we aim to promote "Holytek trust" and "Made in Taiwan" image by providing good and reliable products to our customers.

What is the USP (highlight of services) of Holytek?

Best machines, best services, high and quick investment return for customers.

Who is your new representative in India?

Since 2019, we have established a joint venture and partnership with Solwood in India. The Solwood team is famous for its better and faster services and we've already received very good feedback from our customers on our services from 2019 and from the IndiaWood 2020 show.

The Solwood team is also very strong in delivering a streamlined process from sharing their woodworking production knowledge and feedback to Holytek. It is working together with Holytek in customising suitable production lines. This is one of the top strengths in our joint venture.

Also, Solwood only focuses on delivering a full range of Holytek machinery, so customers can be assured to receive good quality machinery. In short, Solwood is Holytek's long-term partner and a good friend in India.

How was IndiaWood 2020 for Holytek?

We received very good results from IndiaWood 2020. We appreciate very much the efforts PDA Trade Fairs in building up this mega show in India. It's really the largest woodworking show in South Asia. And now Nuremberg Messe is expanding this show further.

Not just old clients us, but we also saw many new clients from different regions in India and even from neighbouring countries! It was an important platform for Holytek to announce our new partner, Solwood.

With Covid-19 and its crippling effects, what are your major challenges?

Demand has slowed down as factory production is currently on pause. Now is the time for every company in making their strategy facing the new business situation that might be forever different from 2019.

India has been one of the fastest growing markets in furniture manufacturing, though India now also suffers from the Covid-19 pandemic; but we expect India to pick up manufacturing and business sooner than later.

What would you advise your Indian customers to do to emerge successful through the crisis?

Manufacturing focus has come to stay on India, meaning more opportunities to the 'Made in India' brand! As more inquiries and orders are seen in our semi-automatic and automatic production lines, Indian furniture manufacturers are also focusing on giving higher quality, providing more range in products and better services to be able to sell furniture to the worldwide markets.

The pandemic might be a trouble to all countries at the moment, but we still believe that 'Made in India' will be the future trend.



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When functionality meets innovation





Western Hemlock, a Canadian wood species, was used as it makes the product portable and entices the viewer to touch and feel it.

The percentage of urban population in India, which currently stands at 35%, is rapidly increasingly and will continue to rise exponentially. This in turn creates tremendous pressure on space.

Urban planners are constantly looking at ways to mitigate the ill effects of crowding and all the attendant problems that come along with living in such cramped spaces.

Furniture might not be top on the priority, but it is definitely something that is worth applying one's mind to. Interior designers are now focusing their attention on modifying furniture as a way to mitigate such space constraints inside a home or office.

Madhur Sharma, a 21-year-old student of architecture from the Apeejay Institute of Technology, School of Architecture and Planning in Greater Noida, found his hostel room was so small that it could not accommodate all the furniture he wanted.

'Necessity is the mother of invention', goes the adage. Being of a creative bend, Madhur saw this as an opportunity to set about designing furniture that could serve many purposes.

In his first year, encouraged by the faculty at the Architecture School, Madhur conceptualised the design of R.poid (Responsive Anthropoid), the wood 'cube' that transforms itself into 14 types of furniture.

The intention was to create a product for urban users that could provide maximum functions with minimum space requirement. The eventual design has achieved multi-functionality and space efficiency – a study table, chair and coffee table that fits into a corner when not in use.

Design concept

Responsive anthropoid has evolved from an analogy between human body with its bending joints to its overall structure and bending lines. The human body comprises of three joints longitudinally – at the shoulders, pelvis and knees.

Madhur's product has three turning points placed accordingly. The functions

are influenced by the father and child relationship, as the father moulds himself for the child to play with him and comfort him.

"Similarly, our product flexes itself to comfort the user," says Madhur. The sleek battens of 35x45x550 mm resemble the bones of the human skeletal system, reducing the visual weight and augmenting workability.

"Wood has a good strength-to-weight ratio, making the product portable. The product appeals to the five senses and is visually very attractive and a perfect example of beauty in simplicity," gushes Madhur.

Western Hemlock, a Canadian wood species, was used as it has very nice grains and the wood, which has good strength-to-weight ratio, makes the product portable user-friendly and entices the viewer to touch and feel it.

Smooth curved joints and its modular nature is space efficient, dynamic and adapts to various moods of man and his requirements by bending into different



Madhur Sharma has designed 10 more furniture pieces with some surprising character, aesthetics and functionality.

forms. In today's world of singular people, it is a soul mate and travel companion, enhancing life and becoming a part of the family.

In several ways it is just like a Rubik's cube, generating a sense of play. It is interactive with scope for further exploration and creativity - the user can work permutations and combinations and create a design of his/her own.

Future plans

As sustainability is the main aspect of Madhur's designs, he follows the basic principal that furniture should not be designed just as a functional strategy but as a comprehensive part of nature.

than Rather environmental and economical sustainability, his aim is to develop the idea of social acceptance among the users for sustainable and multi-functional furniture.

R.poid was Madhur's first experience. Subsequently, he has designed 10 more furniture pieces, seven of which are multifunctional. Shape-transformable furniture with some surprising character in aesthetics and functionality is his first preference.

Minimum use of material with maximum shape transformation is the USP and the hallmark of all his furniture designs. This multifunctional piece of furniture has won many awards including the 'A3 Foundation Interior Design Award' (2018-19) and Smart Habitat Foundation Award (2019-20), and is already gracing the rooms of eminent designers and architects.

The designer (Madhur) credits much of his work to the support and knowledge given by the faculty of the institute and his mentors who helped fine-tune and hone his skills and channel them into out-of-the-box thinking.

You may write to him at madhursharma4599@gmail.com

> The sleek battens resemble the bones of the human skeletal system, reducing the visual weight and augmenting workability.





Hemp boards 20% denser than wood

Hemp is harvested every 6 months, soaked in protein-based glue and heated to a proper temperature in large presses to make boards.

It can be used in furniture, flooring, and other woodworking projects, including musical instruments and acoustic speaker cabinets. Fibonacci's 15,600-square-foot factory opened for business in Kentucky (US) in August 2019.

Hemp wood is available in blocks, presawn boards, flooring, and finished products such as cutting boards and skateboards.

"We're taking something that grows in 6

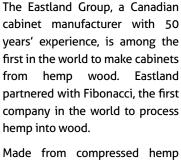
months and we're able to able to replicate, if not outperform, a tropical hardwood that grows in 200 years," said Fibonacci leader, Mr Greg Wilson.

Eastland Group President, Mr Karim Bhibah, was quoted as saying that the company's hemp wood cabinets don't take primer or paint like other woods, which gives them a rustic look. Eastland is currently pursuing exclusive licensing to press hemp wood in Canada.

According to Woodworking Network, hemp wood is a reverse-engineered wood substitute. The hemp is grown and harvested, turned into bushels and then soaked in protein-based glue. It is then placed in a large press and heated to the proper temperature.

The customer is left with a lumber board that may be used for any interior purpose. Industrial hemp production has sparked massive interest around the world, and new associations are being formed in the US.

The boards can be used in furniture, flooring, making musical instruments and acoustic speaker cabinets.



Made from compressed hemp stalks and sealed with a soy-based adhesive, hemp wood offers significant advantages over traditional lumber: higher availability, quicker growth time of 6 months, and a 20% higher density.





Premium seating for gaming buffs

Sweet alert for gaming enthusiasts: a US-based furniture manufacturer recently released a range of gaming chairs under the brand name, Forma.

For Maingear this is an expansion of its products into gaming chairs, designed for enthusiast PC gamers and PC builders, and a culmination of 15 years of in-house research and design experience.

The Forma range features hand-selected premium materials, as well as a robust design for even the most aggressive gamers. The chairs are developed for maximum comfort and flexibility, featuring a wide range of ways to customise the position and fit to a gamer's liking.

The Forma range is available in the

standard sized Forma-R (in black/ red or limited edition white/black) and the larger Forma-GT (in black/ red). All chairs come with a 5-year warranty.

The Forma chairs feature supportive cold-cured molded foam; foam covered rigid tubular steel interior and durable external materials; aluminum alloy base; ultra-quiet nylon wheels; class-4 hydraulic piston; 4D adjustable armrests; 165 degrees of reclining; and full-tilt capability.

The chairs are clad in soft and supple leatherette and smooth, water-resistant synthetic suede, and use precision-dyed threading. The micro-fleece is breathable, and memory foam is used for the headrest and lumbar pillows.

Maingear is a high-performance PC system integrator that offers custom desktops, notebooks and workstations. It has won multiple product awards across magazines and retail chains across the US. (www.maingear.com).



Norway designs a futuristic furniture factory



Norwegian public opinion is highly sensitive to environmental issues, and there is a wide range of laws regulating various aspects of environmental policy and the use of natural resources, including specific laws on building regulations, pollution controls, environmental protection and more.

Awareness of environmental issues – such as climate change, protection of the ozone layer, biodiversity and hazardous waste – is very high and the country's environmental policies are

deemed to be among the best worldwide.

As a consequence, Norway has initiated a series of measures and commitments to address environmental challenges, and it is now world-leading in sustainable energy. Norway's electricity production is 97% renewable, and by 2020 the government aims to reduce the emission of green-house gases by 30%.

Highly sensitive to ecological concerns, the country has a well-developed environmental regulatory system with a strong focus on renewable energy production.

As part of this effort, several firms are

attempting to reduce the impact of their operations with factories and offices using clever design, interesting materials and renewable sources of energy.

Eco-friendly factory

In July this year, designs for a new furniture factory in Norway were released that designers hope will be sustainable, aesthetically pleasing and technologically advanced.

Conceived by Norwegian furniture manufacturers Vestre, the proposed factory, known as The Plus, is a 6,500-square-metre building that will be located in Magnor and is surrounded by

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trees. The project is located just over 100 km east of Oslo and is the largest single investment in the Norwegian furniture industry in decades.

With an investment of close to 300 million Norwegian Kroners (NOK), the state-of-the-art development project is being designed by renowned architects Bjarke Ingels Group (BIG), a Copenhagen and New York-based group of architects, designers, builders and thinkers operating within the fields of architecture, urbanism, research and development.

Work on the project is said to start in August with a completion date of late early 2022.

Sustainability factor

Thanks to the 1,200 solar panels situated on its roof, Vestre's new factory will produce 2,50,000 kW of renewable energy. It will reduce greenhouse gas emissions by 50% compared to a conventional factory and will set a new benchmark across the industry worldwide.

In addition to functioning as a factory, the site will also house a visitor's centre and 300-acre park, making the location a popular destination for many.

More than 90% of the water used in production will be recycled and the factory will use driverless electric trucks and "self-learning industrial robots" that use artificial intelligence and "object recognition" technology.

Vestre, producers of urban furniture for over 70 years, has continued in its push to raise the bar and set new standards within the industry with its third-generation CEO, Mr Jan Christian Vestre, collaborating on projects across the globe and taking an uncompromising stance on sustainability.

"Vestre will be the world's most sustainable furniture manufacturer," says

Jan, "and building The Plus will be an important step in reaching this goal. By using cutting-edge technology and Scandinavian collaboration, we can produce faster and greener than ever."

Materials were carefully chosen to fit the concept and include local timber, low-carbon concrete and recycled reinforcement steel. Here, automation will meet nature, as accessible green roofs (where employees and the public are invited to stroll and hike) blend with smart robots and digital technologies inside.

The Plus is set to become the first industrial building in the whole Nordic region to achieve Bream Outstanding, which is the highest environmental certification of its kind.

The Plus could shift global mind-sets towards the urgent need for change and it is hoped that the project will act as a global and optimistic frontrunner, inspiring and encouraging many more to follow.





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The Cederhusen in Stockholm, Sweden.

The first country in the world to pass an environmental protection act in 1967, Sweden also hosted the first United Nations conference on global environment in 1972.

Since then, Sweden has not looked back, managing to grow its substantially while economy reducing carbon emissions and limiting pollution. The forest sector (including wood industry and pulp and paper industry) contributes about 5% to Swedish GDP.

The country's forest industry has reduced its emissions by over 60% since 2005 and uses almost no fossil fuels in its processes about 96% of the heating energy used by the forest industry is bioenergy.

However, the average carbon footprint per person and year in Sweden is 10 tonnes, which is significantly higher than the targeted 2 tonnes per person. In an effort to reduce its carbon footprint, the Swedish National Board of Housing, Building and Planning (Boverket) has put forward legislation requiring a climate declaration for buildings.

This will come into force on 1 January, 2022, making the developer responsible for producing a climate declaration for a finished building and submitting it to Boverket.

The proposal is for the legislation to apply to all new buildings and their structural elements, building envelope and internal walls. Practical digitalisation based on existing tools and processes can show how industrial wood construction on a large scale enables faster development with less of a climate impact and lower costs.

Housing project

Within Folkhem's Cederhusen project, Stockholm's first inner-city district to be built in wood, a collaborative group of experts in various fields has been put together, with members from the industry body Swedish Wood, Folkhem, Veidekke Eiendom, Veidekke Entreprenad, Zynka BIM, Bjerking and Vertex Systems.

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The aim is to make serious advances in the development of quality assured and active climate work through every phase of a construction project by using a current, real-life project.

"We have high ambitions for this project on every front; and in terms of the climate impact, we want to find out how choices made early on in the process can cut emissions," says Ms Anna Ervast Öberg, head of project development for wooden buildings at Folkhem.

"It's also about finding systems and methods that prepare us for the imminent

legal requirement that buildings must come with a climate declaration, but it's at least as important to gather correct climate data as a support for decisionmaking in our processes," she adds.

Mr Johan Fröbel, Head of Technology and Distribution at Swedish Wood says, "Our job is to help our member companies develop their own knowledge and tools, and so help to educate the whole construction sector. The next stage of development is to focus on standardising data and systematising information."

Swedish Wood is an industry body that

aims is to increase the size and value of the market for Swedish wood and wood products in construction, interior design and packaging. It represents the Swedish sawmill industry and is part of the Swedish Forest Industries Federation.

The aim is to develop active climate work through every phase of a construction project by using a current, real-life project.



CenturyPly unveils virus-free panels





Century Plyboards, one of India's largest manufacturers of plywood and decorative laminates, had been relentlessly working throughout the lockdown period and has come out as a pioneering solution in the wood panel industry.

The brand has announced the use of nano technology in manufacturing of its plywood and laminate products. The highly activated and energised nanoparticles physically rupture and kill viruses coming in contact with it.

This has been tested and certified under anti-viral efficacy test as per ISO 21702:2019 international standard, by Biotech Testing Services (BTS) in Mumbai. The certification declares an efficiency of 99.99% in killing viruses.

The nano-particles are effective throughout the lifetime of the furniture as those are embedded in the polymer matrix system.

Currently CenturyPly is using Virokill technology in manufacturing of Architect Ply, Architect Plus, Club Prime/710 plus, Bond 710/Pro710, WIN MR, IS:710 Marine for plywood range, Club Prime, Bond 710,

Win MR for Block boards, Century Laminates (1 mm), Natural Veneer (Natzura woods) and its entire teak range.

Mr Keshav Bhajanka, Executive Director, CenturyPly said, "The addition of this technology adds another feather to the already existing expertise of CenturyPly as a provider of innovative solutions in home decorative space."

To know more about detailed conditions of nano technology visit www.centuryply. com/virokillbycentury.

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> 15 x 15 x 2.5 x 30° 15 x 15 x 2.5 x 37°

> 30 x 12 x 1.5 x 35° 30 x 12 x 2.5 x 35°

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Alder wood among the best



The primary hardwood of Western North America, Alder grows in abundance within the southern British Columbia to Northern California region. It is a relatively small tree that only reaches about 100 feet in height at its 40-60 year maturity, with a trunk diameter of less than 2 feet.

But don't let Alder's small size fool you. What it lacks in size, it makes up in usability, workability and beauty. Northwest Hardwoods has been an industry pioneer in recognising and utilizing this viable and valuable hardwood species as a prime lumber source.

Decades ago, Northwest Hardwoods pioneered the use of Alder as a viable and sustainable species for commercial use. Today, Alder's popularity continues to grow and offers a host of benefits, most important of which is the species' versatility and workability.



Alder is very easy to work with using both hand and machine tools. It sands easily and has excellent turning, gluing, staining and finishing properties. Natural consistency and beautiful colour can give it the visual appeal of cherry, maple or birch at a competitive price.

Alder dries to an even honey tone with little colour variation between the

heartwood and sapwood, making it also ideal for light or natural finishes. Alder is available in a host of proprietary grades that allows the product to align closely with the customer's application to maximise yield and minimise waste.

Northwest Hardwoods is represented in India by Bhagwan Sawmill (hitesh@bhagwansawmill.in)

MACHINERY & SUPPLIES NEW DEVELOPMENTS

A Complete Solution for Woodbass Industry

Vertical Band



Sliding Table Panel Saw



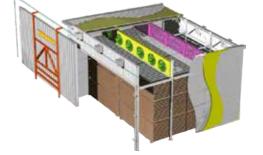
Seasoning Kiln



Spiral Cutter Heads



Wide Belt Cum Profile Sander



Straight Line Rip Saw



Multiple Rip Saw



Gang Rip Saw



Double Side Planner



Heavy Duty Automatic Copy Shaper





Rectangular Tenoner DAD-115



Four Side Moulder



Clamp Carrier



Oscillation Mortiser MOM-130



Hydraulic Hot Press



High Frequency Edge Glue Press





Jagadhri Road, Yamuna Nagar - 135 001 (Haryana) INDIA Tel.: +91 - (1732)-223694, 260682, Fax: +91-(1732) 260203 Website: www.kalyanindustries.in, www.plywoodmachines.in E-mail: info@kalyanindustries.com





Next-Gen vertical ovens from Cefla

Flexpro, the innovative Omnidry range of vertical ovens from Cefla Finishing, is able to manage the entire cycle of drying without operator intervention and without stopping production.

It has the unique ability to recognise the characteristics of incoming pieces and adjusting the passage height automatically, and represents the final frontier in vertical drying.

Flexpro shows extreme operating flexibility and versatility in response to logistical requirements and makes Omnidry perfect, not only for very high output lines, but also for robotic application lines, where greater flexibility is required.

This new generation oven maintains all the outstanding characteristics of the standard Cefla vertical oven, since it can carry out flash-off, drying and



cooling all in one (even for paints that need longer drying times), while minimising the use of floor space.

It is the perfect blend of productivity and flexibility. The system can be equipped with a roller conveyor system combined with "rack" trays for piece collection and cyclic transportation inside the oven, or with conveyor belt systems, combined with motor-operated "belt" trays.

Application fields include flat panels, raised or curved panels, cribs, internal matchboard, flat and raised doors.

Other features include a drive system at the bottom of oven, extreme modularity with the ability to expand the system with additional 2, 3 or 4 sections, flexible system layout, and independent ventilation for each section that can also be used for flash-off, drying or cooling.



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Model WA 8X



Boring System 21 Prestige



Hot Presses









We provide specialized consultation for turnkey projects in:

- **Door Production Plants**
- **Solid Wood Furniture Plants**
- **Panel Processing Plants**

We also provide Taiwanese and European machines as per customer requirements.

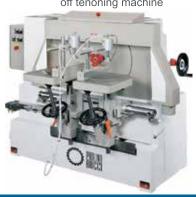
FC4





MOD Mortising Machine TSG2T

Double automatic rounding off tenoning machine





Award-winning stacker from CombiLift

Combilift is a winner at this year's IFOY Awards 2020, one of the most prestigious and hotly contested international awards in the materials handling industry which honours the best products and solutions of the year.

The Combi-CS is the only pedestrian counterbalance stacker that can operate in a conventional reach truck aisle for space saving and productive storage and handling. It features Combilift's unique, internationally patented and award-winning, multi-position tiller arm which

can be turned to the left or right of the unit to position the rear drive wheel.

This allows the operator to remain in the safest position — at the side of the machine, rather than at the rear, as is the case with other pedestrian stackers. This ensures optimum visibility of the load and surroundings, as well as guaranteeing maximum safety in areas where other personnel or members of the public may be present.

Due to the current circumstances, the hundreds of people that normally attend the IFOY ceremony could not get together personally, so the organisers rolled out the virtual red carpet for the winners on the Internet on July 13 at www.ifoy.org.

Finalists' products underwent stringent IFOY audit and innovation checks by industry experts and journalists from leading logistics media from 19 countries also tested and evaluated the equipment for qualities such as technology, design, ergonomics, safety, marketability, customer benefit and sustainability.

The Combi-CS is a really compact smart pedestrian operated truck and a nice hands-on solution. It offers significant added value in terms of narrow aisle operation and safety in confined environments. (www.combilift.com).



Ready-2-spray paint robot from Dürr

The German manufacturer, Dürr, is offering a pre-installed, ready-to-paint robot as a professional solution for automated paint applications. This enables fully reproducible coating layer thicknesses in the μ range that are absolutely essential in the development of chrome-effect paint systems.

The chrome-effect paint that can be used, amongst others, for vehicle interiors and is a new product that gives components made from plastic – such as window lift switches or decorative trims on the steering wheel – a deceptively realistic chrome look.

This effect is achieved using paint systems consisting of one, two or three coating layers. Without using a robot, it is not possible to develop these new paint

systems as a chrome-free alternative for shiny, silver-coloured surfaces.

The challenge is to apply the coating layers of the chrome-effect paint very evenly. And the three-layer paint system in particular needs very thin, reproducible coating layers of 2 to 3 μ m.

The automated painting solution from Dürr consists of the compact six-axes robot, EcoRP 10 R1100, with state-of-theart application technology including mixing and dosing technology for two-component paints (2C), paint supply systems, and controller.

The robot system's automated spray program eliminates any deviations, and thus delivers maximum reproducibility. This starts with dosing the components in the exact same ratio every time.

Mixing the tiny quantities of just a few mg by hand poses too great a risk of inaccuracies. The painting result is also influenced by the application speed and the distance from the object to be painted. The robot works completely uniformly and, as a result, also produce identical coating layer thicknesses.

Normally only sample panels and speed shapes are painted in the paint manufacturers' labs. However, the decision to opt for the six-axes robot gives paint manufacturers the flexibility to respond to customer requirements and the robot lets them paint 3D objects with complex geometries without the limitations of a 2D spray system.

Since the application technology is already pre-installed, the Dürr robot system can be set up, installed and ready to paint within just a day. Its compact dimensions enabled it to be integrated into the existing painting booth despite the space constraints.



State-of-the-art panel handling

Eurotech, a leading handling and transport solutions provider in the field of vacuum tube lifters, has come out with two new versions of the eT-Lift tube lifter for quickly, easily and flexibly lifting, stacking or moving wood panels.

The versatile lifting and positioning devices can be used for almost any application. They are easy to handle and equipped with an ergonomic one-hand

control system.

Thanks to their quick-swap system, changing tools takes only a few easy steps. The graded carrying capacities range from 20 kg up to 250 kg in two varieties, a pneumatic 90° turner and a manual 180° turner.

The eT-Hover-univac line has a two-circuit system and four suction plates arranged in line – hence the name.

It is suitable for lifting and moving large-

surface loads made of glass, wood, metal, stone or plastic. In vertical mode, the lifting device can lift loads with a weight of up to 360 kg; in horizontal mode, up to 500 kg. It is suitable for all applications that involve lifting and moving narrow loads.

These loads can have dimensions of up to 2,500x1,000 mm. Multiple security and warning systems designed as per DIN EN 13155 prevent operation errors and hazards.

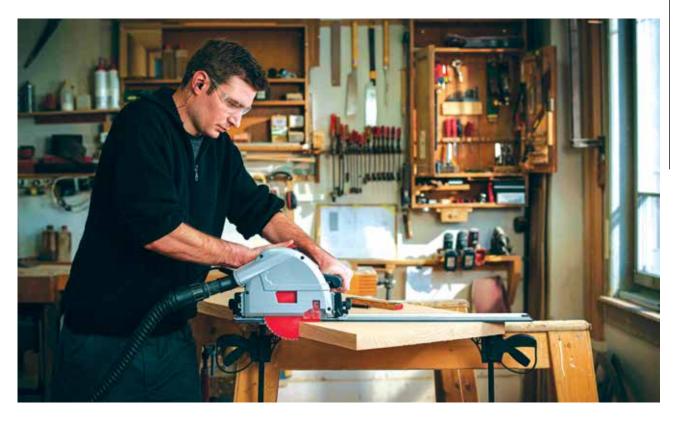
The portable, electric vacuum hand-held grabber, 'Nemo', is another promising product in Eurotech's portfolio. The handheld device can attach itself to virtually any surface and achieves a holding force of up to 170 kg, allowing it to move and securely place down any material.

An integrated vacuum meter with red/ green area is used for monitoring. The vacuum pump installed in the handle generates the necessary vacuum. Once the vacuum is established, the pump turns off. If the vacuum in the suction device drops, the pump automatically switches on again.

The 'Nemo' handheld grabber is a pioneering system for lifting and transporting flat items. It can lift virtually any surface, from smooth to structured. The device is the perfect addition to the tool kit for a wide range of professionals, from warehouse staff and construction professionals to service and garage employees.

The modular construction system ensures that the components can be flexibly adjusted to meet customer requirements and spare parts can be installed in a quick and cost-saving manner.





Titanium-Cobalt carbide saw blades from Freud

With more than 55 years' expertise and manufacturing know-how, the Italianheadquartered Freud is a worldwide leader in the cutting tool industry. It has what is considered one of the most modern product development research centers for cutting tools in Europe.

Freud is known for its offering into woodworking, panel processing and metal cutting solutions and its extensive product portfolio includes circular saw blades, cutter-heads, router bits and CNC tools. However its core competence, unique worldwide, is the 100% in-house production of carbide that ensures maximum precision and long-lasting sharpness of the cutting edge of all its tools.

Freud's advanced technology is finally now available to all professionals users that look for premium performances and desire just the best solution for their

work. All sawblades are specifically designed to achieve greater results in all applications and materials like wood, wooden composite, laminated panel, aluminum and fiber cement, covering all main power tools.

A specially formulated, highly compact Titanium-Cobalt carbide, engineered and manufactured in-house, provides a sharper edge and flawless finish with a dramatically longer cutting life.

The excellent wear resistance of poly crystalline diamond and its remarkable toughness provide the best cutting edge sharpness and outstanding lifetime even in tough applications like fiber cement.

A non-stick coating formulation (Perma-Shield) provides thermal insulation and protects from corrosion while eliminating resin build-up, and reducing downtime for cleaning.

Additional features include antivibration slots that enables smooth running and minimizes noise, for a first class cutting experience.



Freud is part of the Bosch Group and leverages on the global network of the world-leading technology supplier.

74

Imos to launch VR for factories, stores



The integrated 3D viewer allows users to zoom or measure the furniture designs in their entirety.

Imos will shortly be coming out with its new digital solution, which is the enhanced version of iX 2019. The new design software has improved functionality and handling, thus paving the way for paperless working.

The new responsive web design allows operators of the online sales systems of the iX NET product line, and prospective potential buyers and customers can enjoy the online shopping experience on tablet and smartphone.

iX Share incorporates a digital assistant which shows information and data of individual orders, including all design details on standard tablets, if these have previously been loaded onto the iX Cloud.

The integrated 3D viewer allows users to view, zoom or measure the furniture designs created with iX CAD on the tablet, in their entirety. This way details can be reliably compared with the situation on-site and change requests can be communicated quickly and easily via an integrated chat function of the order preparation.

The intuitively designed user interface is optimised for tablet operation and is almost selfexplanatory. The application is web-based and can be started via a special App offered in Android and Apple stores.

VR interface

The digital assistant structures and accelerates the exchange of information between order preparation, workshop and installation, resulting in a more efficient and secure processing of set-up orders.

One of the main functions of Imos iX is the automatic generation of NC programs for the common woodworking machines. With the new iX CAM Edit add-on, these can be subsequently modified if necessary.

In this way the NC program generated with iX CAM can be opened, visualised and, if necessary, adapted in iX CAD 2019 without having to change the CAM machining rules.

This module of a tool simulation can also be used to track and check the exact direction of machining and the work preparation department can check the output independently of the machine and, if necessary, make changes.

Designers can look forward to shorter work steps and improved intelligent design aids that further simplify and accelerate their daily work with iX CAD. In

addition to improvements in the cut dialogue and cut-out articles, the automatic drawing output allows the designer to export all his drawings.

Introduction of the QR code principle allows the replacement of the barcode which supports a limited number of characters. Much more information can be accommodated in the QR codes, which are now integrated in iX CAD 2019.

In the new VR interface, iX VR Link, planning can be easily implemented in VR and, starting from iX PLAN or iX CAD, finished plans or even prototypes can be visualised.

Presentation documents can be created directly from VR as well as photos, renderings and panoramic images. Additional objects are easily inserted and animated via drag-and-drop, moving people, flickering candles, running water and light and shadow settings.

Operators of the web-based planning and sales application, iX NET, benefit from optimisations in mobile output and userfriendliness. Furniture can then be conveniently purchased online at any time and from anywhere.





The Bima Px80 from König & Neurath shows the possibility of integrating adapter units with integrated data chips in the new IoT and service platform, Zimba.

Schelling's gantry router is vastly flexible

The customised Bima Px80 gantry routing machine from IMA Schelling is used for the fabrication of desk panels and other components combines all technically feasible drilling, routing and edge processing operations in one machining centre.

Hence, it reduces the complexity of manufacturing to a minimum and simultaneously offers maximum flexibility for custom productions and product novelties.

Its special features include a 6-axes robot, the load pick-up device of the robot with integrated part orientation recognition ("vision technology") and a high-power laser unit for producing a perfectly seamless joint.

By using a fixed-gantry CNC machine of the Bima Px80 type, the furniture office manufacturer, König & Neurath, replaces miscellaneous pre-fabrication processes, some of which are very complex.

The machine is suitable for vertical and horizontal through-milling, as well as for automatic edge banding and fine finishing. It is also capable of performing drilling and grooving operations, each both vertical and horizontal.

On the gantry machine, equipped with two alternating work tables (automatic setup table), each fitted with four consoles (support bars), mainly desk panels will be processed.

The work cell has two 12-reel vertical magazines and is designed for an average production rate of 530 finished parts per day – with order peaks of 690 parts per day.

The Bima Px80 at König & Neurath has been prepared for integration in Zimba, the new IoT and service platform of the IMA Schelling Group, and is equipped with two special adapter units: an IMA 90° saw integrated in the machine control

The gantry machine from IMA Schelling is fitted with the patented high-power VTL 54 laser unit and a 6-reel vertical magazine.



system and an Atemag Duo unit for Clamex P biscuit-shaped connectors enabling furniture assembly without dowels.

Both units use data chips. These chips are used to record technical data that allows, amongst other things, performance optimisation, wear inspection and remote maintenance, as well as the monitoring of service intervals.

In addition to this, the integrated data chips allow this data to be transmitted to the Zimba IoT platform and to be evaluated via the platform.

The 6-axes robot performs multiple component handling tasks: calibrating the parts, feeding, turning over and stacking

The gantry router is equipped with a movable 6-axes robot that performs multiple component handling tasks.



the parts and base boards. The robot takes the finished parts out of the cell and makes them available for quality control by the checkpoint operator.

The IMA Schelling Group is a reliable provider of solutions for sophisticated and innovative wood processing plants and a leading supplier of batch-size-1 work cells for a digital, fully automated networked production.

State-of-the-art wood machinery from Jai

Jai Industries offer an unparalleled array of products that include woodworking and processing machinery and electric motors. It is well known for its engineering quality, technology and innovation.

Its range of machines are products of R&D backed, high-end precision engineering and have the best possible features and are made of the topmost quality material and components. All the products are backed by dedicated service and guidance.

Jai currently manufactures 30,000 machines a year in its seven plants spread over a total floor area of 4, 00,000 square feet. Its machines are specifically produced to suit Indian working conditions that performance operating comfort.

The Optimus and Modula series are a range of solid wood machinery premium in the segment and have high-end features that are specially developed for units engaged in solid wood-craft business.

MODULA RANGE

J-2100.in (2.0) Single Head Multi Boring (Semi Auto)



J-2100.in (2.0 has a boring head with pneumatic tilting system horizontal / vertical & 45° movement that is suitable for vertical boring applications.



Boring head with pneumatic tilting system horizontal / vertical & 45°



For vertical boring application

Salient Features

- Heavy-duty frame to hold boring heads with quick-change spindles chucks.
- Pneumatic cylinder for head tilting of the head assembly from 0-90%.
- Elegantly designed, electro-pneumatic control panel.

J-2500.in (Semi Auto) Curvilinear **Edge Bander**



J-2500.in is an extremely flexible machine for application of PVC/ABS or veneer on straight or shaped panels. The Edge Banding is a semi-automatic machine for curvilinear workpiece, wherein the predefined length of PVC/ ABS to be glued to the laminate can be set for repetitive work piece and the digital temperature control.



Hylum surface working table with 45° tilt



Gluing & bonding system

Salient Features

- · Pneumatic cutting device for predefined length, with foot switch.
- Glue rollers apply glue on board & tape for perfect bonding.
- Easy regulation of variable speed 4 to 16 m/min.
- Working table with specially designed hylum surface for heat insulation and frictionless movement of work piece.
- Tilting working table from 0° & 45°.
- Electronic digital temperature controller with safety circuit, which allows starting the drive motor only when the hot glue has reached the set temperature.

J-4750.in Auto Edge Bander



Salient Features

- Sturdy built heavy-duty machine for entry level mass production work.
- Feed chain & conveyor system with German gear box for effective pressure on panels. Low maintenance machine, easy available cost effective spares, best service support.
- High-performance machine with precision engineering that has all electronic & pneumatic parts from well-known international brands.
- High-frequency compact motors sliding on prismatic guide ways for perfect finishing with trouble free performance.
- Automatic lowering of the glue temperature after a temporary nonuse of the machine.

J-5150PRc.in Auto Edge Bander



J-5150PRc.in has features for carrying out pre milling & round cornering activities. The Model without pre-milling features are also available.

Salient Features

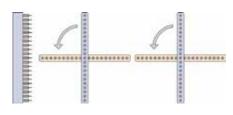
- Sturdy built heavy-duty machine to suit Indian working condition for precise application of edge banding material.
- Pre-Milling unit with set of diamond cutters, as standard supply with machine (applicable for model J-5150PRc.in).
- Robust feed chain & conveyor system

- with German gearbox (with long life synthetics lubricant) for effective pressure on panels.
- Three edge banding pressure rollers actuated by pneumatic cylinders, gives adequate pressure on edge for effective banding.
- Overall meter run (OMR) of edge band tape is display in PLC.
- Project meter run (PMR) is to calculate total usage of edge band tape in a particular project.
- High frequency compact motors sliding on prismatic guide ways for perfect finishing with trouble free performance.
- Automatic lowering of the glue temperature after a temporary nonuse of the machine.
- Easy accessible, user friendly Smart Touch PLC control panel positioned at machine infeed, for quick operations.
- All electronic & pneumatic parts are from well-known international brands.
- Low maintenance machine, easy available cost effective spares, best service support.

OPTIMUS RANGE

OptiDrill 2.3 - Three Head Boring





The OptiDrill 2.3 offers multi-operational boring functions with flexibility & high productivity.

Salient Features

- Sturdily built heavy duty boring machine with two vertical and one horizontal boring head units designed to execute holes in a line as well as holes for panel matching.
- The vertical boring units slide on rolling guides for a prompt & easy positioning with digital read out and can be turned 90°.
- With cast iron boring head base gives highest accuracy & sturdiness.
- Low maintenance m/c, easily available cost effective spares, best after sales service support.



Vertical boring units can be turned 90°



The Aluminum fence with support rollers

OptiEdge 6.5 P - High Speed Auto Edge Bander



Salient Features

 Edge Bander is quick, simple, and powerful with maximum productivity & superior finish for growing industrial requirements.

WOODNEWS

- · Complete stability even at maximum feeding speed of 25 m/min due to robust machine structure.
- Easily accessible, user friendly Smart Touch PLC control panel. The Corner rounding unit is controlled from the control panel, with the option of choosing the shape of panel.
- · Motorized up-down movement of pressure beam for easy thickness setting.
- · Pre-Milling unit with diamond milling cutter for chip free glue joints.
- · Safety air tank provision for non-dropping of air during process.
- · Low maintenance m/c, easily available cost effective spares, best after sales service support.

Two heavy duty high frequency motors supplied with set of diamond cutters, as standard supply with machine. (Applicable for Model - OptiEdge 5.5P & 6.5P machines)



Gluing, Banding & Edge Cutting

Glue spreading roller provides precise & consistent glue application. Perfect adhesion to the applied edge with heavyduty pressure rollers. Heavy-duty knife with pneumatic pressure cuts the edgebanding materials smoothly.



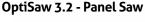
2 Motor Round Cornering

Compact and powerful high frequency motor round cornering unit guarantees perfect finish on edge. Trimmer 2R cutter for PVC/ABS gives perfect round cornering on edges of straight, chamfered and post formed panels.



Pre-Milling







Salient Features

- Sturdily built heavy duty machine that gives precise cut with burr free cutting.
- duty top quality Heavy precision sliding table with long lasting accuracy.
- Easy accessible, user friendly control panel with electronic digital readout of saw unit tilting.
- Motorized up-down movement of saw unit from control panel and tilting movement of saw unit by means of hand wheel.
- Vertical movement of the saw unit is linear with maintenance - free guide bearings & allows the whole unit to move easily.
- Easier & quick scoring unit up-down movement & lateral adjustment.

- Ripfence cutting width up to 1250 mm with fine adjustment.
- Central lubrication system circulates lubrication to the required parts of the machine, ensures efficient operation and increase life of parts.
- All electronic & pneumatic parts are from well-known international brands.
- Low maintenance machine, available cost effective spares, best after sales service support.



Smooth-running and powerful saw unit



Researchers have compared water-based paints with conventional solvent-based paints using standard characterisations, including rubbing/scrub resistance. cross-hatch test, pencil hardness, colour, gloss and haze measurement. drying time, stacking test, and chemical resistance.

Study gives 'Thumbs Up' for water-based finishes

The College Centre of Technology Transfer for the Cabinet and Woodwork Industries in Quebec (Canada) recently completed a study on water-based wood finishes, the *Woodworking Network* has reported.

Researchers decided to take a closer look at the pros and cons of water-based finishes because an increasing number of furniture and woodworking companies have made a transition toward more ecofriendly practices. Many others had not done so because of perceived barriers to implementation.

The researchers said that the two major reasons cited by companies that had adopted water-based technology were health hazards associated with high-VOC paints and regulations that limited the level of VOC emissions that could be released in the environment.

To better understand the implications for

wood product manufacturers to transition to water-based finishes, the centre partnered with one of the biggest manufacturers of Quebec's wood industry. The company had some concerns with many aspects of water-based finishing technology that included drying times and product performance.

The researchers said many of the fears associated with waterborne coatings were dispelled using standardised tests to help characterise the overall performance of waterborne coatings.

Among the results, they compared water-based paints with conventional solvent-based paints using standard characterisations, including rubbing/scrub resistance, cross-hatch test, pencil hardness, colour, gloss and haze measurement, drying time, stacking test, and chemical resistance.

The results showed that not only had water-based coatings moved closer to solvent-based paints in terms of performance but in some cases are even better.

All testing was conducted during summer with relative humidity over hovering at 25°C. All 12 different systems used in the test got better drying time from 5- to 20-minute differences. These results were, however only true when using drying technologies suitable for waterborne paints like IR radiation.

According to the researchers, the test results have proven that most fears come from older water-based technologies. Newer ones have overcome issues limiting their implementation.



Coming soon: Water-proof wood!

The lumber on the left has been treated using atomic layer deposition, resisting absorbing water even when submerged. The untreated lumber (R) readily soaks up water, causing a colour change within seconds.

Atomic layer deposition – which is already frequently used manufacturing micro-electronics for computers and cell phones – is now being explored for new applications such as wood.

Like pressure treatments, the process is performed in an airtight chamber, but in this case the chamber is at low pressures to help the gas molecules permeate the entire wood structure.

Pressure treating, which involves putting lumber inside pressurized watertight tank and forcing chemicals into the boards, has been used for more than a century to help stave off the fungus that causes in wet environments.

Now researchers at the Georgia Institute of Technology have developed a new method that could one day replace conventional pressure treating as a way to make lumber not only fungal-resistant but also nearly impervious to water.

The new method was recently reported in the journal Langmuir and involves applying a protective coating of metal oxide that is only a few atoms thick throughout the entire cellular structure of the wood.

Wood has pores that are about the width of a human hair or a little smaller. The researchers used these holes as their pathways for the gases to travel throughout the wood structure.

As the gas molecules travel down those pathways, they react with the pore's surfaces to deposit a conformal, atomicscale coating of metal oxide throughout the interior of the wood. The result is wood that sheds water off its surface and resists absorbing water even when submerged!

The researchers took finished pine 2x4s and cut them into 1-inch pieces. They then tested infusing the lumber with three different kinds of metal oxides: titanium oxide, aluminum oxide and zinc oxide.

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Lumber treated with this new process can translate to savings of 2 million BTUs of energy per dwelling per year.

With each, they compared the water absorption after holding the lumber under water for a period of time. Titanium oxide performed the best by helping the wood absorb the least amount of water.

This is likely because of how the precursor chemicals for titanium dioxide react less readily with the pore surfaces and, therefore, have an easier time penetrating deep within the pores of the wood. By comparison, untreated lumber absorbed three times as much water.

The same phenomena exist in atomic layer deposition processes used for micro-electronic devices. The same titanium oxide precursor chemistries are known to better penetrate and coat complex nanostructures in micro-electronics.

Yet another benefit of the new process: vapour-treated wood was far less thermally conductive compared to untreated wood.

"A lot of attention is paid in home building to insulating the cavities between the structural components of a home, but a massive amount of the thermal losses are caused by the wood studs themselves," said Shannon professor in the George W. Woodruff School of Mechanical Engineering with expertise in thermal systems.

"Lumber treated with this new process can be up to 30% less conductive, which could translate to a savings of as much as 2 million BTUs of energy per dwelling per year," he added.



WOODNEWS

WoodNews thanks the various companies that have submitted information. For any editorial submissions, please contact Mr. Dhananjay Sardeshpande, Chief Editor, at dhananjay@pdatrademedia.com. The information published in Notes and News and Products & Processes is as per the details furnished by the respective manufacturer/distributor. It does not reflect the views of WoodNews or of the management of PDA Trade Media.



AXCENT AIR FLOW TECHNOLOGIES

MANUFACTURERS OF AIR POLLUTION CONTROL AND AIR HANDLING EQUIPMENT







PORTABLE DUST COLLECTORS

MODULAR DUST COLLECTORS



CENTRALIZED DUST COLLECTOR

PAINT BOOTH

AXCENT AIR FLOW TECHNOLOGIES

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Thermo-plastic packaging material (L) demonstrated at VTT; and its processing.

Food
packaging
from wood
fibres?

Consumers and companies alike are interested in environment-friendly and recyclable packaging made from renewable materials, such as wood. Using cellulose and fatty acids, two completely renewable substances, VTT, a Finnish research, development institute, has developed a material that can be used in food packaging similarly to plastic due to its thermo-formable properties.

The development work is currently underway in cooperation with Arla Foods, Paulig and Wipak, a company with a long history and extensive know-how in the

development of innovative and sustainable materials.

The final application of the Thermocell material that has been developed will depend on how companies want to use it. It is suitable for many purposes for which fossil-based plastics are currently being used.

Thermo-plastic cellulose (cellulose that can be moulded using heat) can be processed in conventional plastic treatment processes. Like plastic, the material can be refined into packaging films and bulk commodities.

The next step in the development process is to produce hundreds of kilos of the

material and process it into various packaging prototypes with companies. This is done to verify the functionality of the material in industrial processes and in real application conditions.

Cellulose is the most abundant natural polymer. Due to its hydrogen bonds, cellulose has formed a resistant microfibril network, making it strong. To achieve thermo-plasticity, cellulose must be tailored without significantly affecting its natural properties.

In the new technology the molar mass of cellulose is first adjusted in a controlled manner, followed by chemical treatment, which eventually produces a thermoplastic material.

Krutik Mistry named Director, Felder-India



Felder, the leader in solid wood and panel processing machinery, has named Mr Krutik Mistry as Director of Felder Group India.

The manufacturer of saws, high-end edge banders, multi-boring machines, planerthicknessers, spindle moulders, CNC machining centres and robotic solutions said the leadership change and enhanced vision was in keeping with the dynamic changes of the business environment and challenging situations.

The group has also made several improvements, both physical and in its IT infrastructure, in order to keep up with the dynamics and evolving needs of its customers.

Mistry said, "We in Felder Group have been trendsetters for generations globally. This legacy is carried forward to our team here in India. Our products are best suited for the Indian market and customers. Product quality and reliability. along with training and development, will continue to be our prime focus."

This focus helps Felder's customers make the right decision through product knowledge, deep understand of the production process, and the resulting advantages while investing in a Felder machine, he added.

Mr. Arthur Lux, Regional Director (America, Asia and Oceania), who has been a part of the Felder Group for 23 years and has been actively involved in the development of the Indian market, said: "While our team in India is striving towards making your experience with us exceptional, we in Austria are working constantly in the direction of developing products that are relevant to the Indian market."

"Our new leadership, constant focus on training development, engaging customers with relevant machines and woodworking technology, is now all set to take the next big leap in the direction of growth," Lux added.



IKEA in expansion mode in India

IKEA, the world's largest furniture retailer, will raise Rs 5,000 crore in India to open more stores in a country where it has a single outlet so far, the Economic Times reported recently. This will be IKEA's biggest investment in India since its entry 2 years ago and covers nearly half of the Rs 10,500 crore FDI allowed.

The company said it will issue debentures up to Rs 5,000 crore during a period of one year and the funds will be utilised for construction of the stores and other general corporate matters. IKEA's Rs 10,500-crore investment proposal is for

the opening of stores in the country.

It has currently invested in four land sites: Hyderabad, Mumbai, Bengaluru and Gurugram. About three-fourths of India's furniture industry is controlled by standalone stores and neighborhood carpenters.

Plastic from wood?

The bio-polymer, lignin, is a byproduct of paper making and a promising raw material for manufacturing sustainable plastic materials. However, the quality of this naturally occurring product is not as uniform as that of petroleum-based plastics.

A study by Mats Johansson from the Royal Institute of Technology (KTH), Stockholm, which has been

published in the journal ACS Applied Polymer Materials, provides an approach for a systematic understanding of lignin as a raw material to allow for the production of lignin-based bio-plastics with different properties, depending on the specific application.

According to the principle author Marcus Jawerth, up to two-thirds of the lignin produced during the paper production process could be turned into polyesters

and serve as a starting material for making plastics.

"Along with cellulose and chitin, lignin is one of the most ubiquitous organic compounds on Earth and offers enormous potential for replacing petroleum-based plastics," says the scientist. "It's far too simply burn it." valuable (https://phys.org/)

Timber associations appeal for planting trees

Timber sector associations in India have appealed for the planting of trees that are the raw material for the wood products sector. A large number of mills in India are dependent on imported hardwood and softwood logs, and the associations are asking that planting be focused on species that can substitute for imports.

The suggestion is that domestic species, such as pali (Palaquium ellipticum), poon (Calophylum tomentosam), bijasal (Pterocarpus marsupium), laurel (Terminalia

tomentosa), rosewood (Dalbergia latifolia), sissoo (Dalbergia sissoo), mango (Mangifera indica), jamun (Eugenia jambolana), neem (Azhadirachta indica), arjun (Terminalia arjuna) and teak (Tectona grandis) should be planted.

Over 80,000 sawmill and handicraft enterprises are ready to use domestic resources to give a boost to self-sufficiency calls by the authorities. Plywood mills are meanwhile making efforts to identify domestic log sources.

In some states, plans are being made to expand the number of wood processing plants to support India's self-sufficiency drive. Mills are also busy trying to automate operations as much as possible to overcome the persistent problem of labour shortages.-ITTO

New book on using wood 'waste'

The United States Department of Agriculture Forest Service, in partnership with the Baltimore Wood Project, has created the Urban Wood Workbook designed for woodworkers, municipal managers and other potential users to rethink the value of what many consider to be urban wood 'waste'.

The authors state that the workbook "is designed to be a practical reference for practitioners," including municipal managers, tree care professionals, sawyers, woodworkers and other urban

wood stakeholders.

Specific and real-world examples of how different types of stakeholders can approach planning and expect to benefit from using urban wood are included in the section, 'Applying the Urban Wood Flows Model.'

The model examines the urban wood supply chain including identifying sources of salvageable urban wood materials through using them to produce value-added wood products. The workbook also includes tips for finding local sources of urban wood.

The core strategy of the Baltimore Project is diverting wood that is often wasted and

capturing its value. This includes wood from the deconstruction of abandoned row homes and "fresh cut" wood from urban tree operations.

"The value of most urban wood is based on characteristics not found in rural forests: species diversity, large diameter, or character flaws," notes the foreword to the workbook.

Wood harvested in Baltimore is primarily valued for its story and aesthetic and is being used to create excellent furnishings and architectural enhancements. In this way, the wood captured in these efforts compliments the wood being produced in rural settings.

Nadeem Patni to head Blum India

Blum recently announced the promotion of Mr. Nadeem Patni as the new managing director of Blum India, covering business operations for the company across South Asia including India, Nepal, Bhutan, Sri Lanka and Bangladesh. Mr. Patni comes with over 16 years of professional experience in the software and woodworking

industries and is keenly customer-centric in his overall business approach.

He has a strong connect with business clients and aims to expand Blum India as a subsidiary in the coming years, with a strong customer focus.



VOODNEWS

Livspace raises \$90 million

for expansion

Livspace, a Singapore-headquartered home renovation platform, said it has raised \$90 million to fund its expansion plans, invest in technology, and bolster its supply chain.

Switzerland-based Kharis Capital, Venturi Partners, Singapore's EDBI and Peugeot family holding company FFP were among the investors in the round, the company said.

The Series-D funding also included backing from existing investors Ingka Investments, the investment arm of IKEA's owner, TPG Growth, Goldman Sachs and Bessemer Ventures.

The company, which was hit by the Covid-19 pandemic and related lockdowns, is now seeing a recovery as consumers increasingly turn to the internet to purchase goods and services

that is almost back to prepandemic levels in terms of demand.

Livspace expects to turn profitable in India, currently its biggest market, in 2021, followed by Singapore.

It is considering Malaysia, Indonesia, Australia as well as West Asia as its next markets and is planning to more than double its staff in Singapore and is ramping up hiring in India.

Dieffenbacher ready with longest

continuous press

With the construction of an 80-metre-long CPS+, Dieffenbacher will set a world record for the longest continuous press used to produce wood-based panels. The press is the core component of an MDF plant ordered by Chinese wood-based panel manufacturer, Guangxi Lelin Forestry Development Co. Ltd.

Earlier a high-speed THDF plant in Nanning that produces up to 1-mm-thin boards, was ordered by Guangxi Lelin in June 2018 and commissioned in October 2019.

In addition, the company will also supply equipment ranging from the air grader to the storage system. With state-of-the-art automation and control systems, the MDF



line will meet the highest demands of digitalization.

Plant construction is scheduled to start in the second quarter of 2021 in the southern Chinese city of Chongzuo, not far from the Vietnamese border.

Stable results for Egger



Despite the particularly challenging time, the Egger Group is reporting eleven successful months and thus a stable business

development overall for the financial year 2019/2020. The wood-based material manufacturer generated revenue of EUR 2,831.5 million and an Ebitda

margin that was 15.0 % higher than the same period last year.

The company has raised its production capacity to a new record of 8.9 million cubic metres of wood-based materials and timber and is also continuing a phase of very high investment activity in the current financial year.

After a very positive business development in the first eleven months, the effects of the corona pandemic have slightly dampened this trend. While sales in Western Europe declined over the entire financial year, sales in Central Europe increased slightly and in the Eastern European, American and overseas markets in some cases substantially, compared to the previous year.

IKEA assists healthcare workers



To help protect the health and livelihoods of those affected by the Covid-19 pandemic, the IKEA Group has initiated several initiatives that include the use IKEAs supply chain infrastructure

to produce personal protective equipment for healthcare workers that has been delivered to local and global organizations. Médecins Sans Frontières (MSF) is one of the recipients.

Around the world, MSF provides medical care to people affected by conflict, epidemics, disasters, or exclusion from healthcare. Since the start of the pandemic, healthcare workers worldwide

have struggled to find the personal protective equipment they need to protect their health.

IKEA has now repurposing some production lines at their suppliers to produce personal protective equipment. Quality is one important factor for healthcare equipment.

The requirements for the personal protective equipment, in this case, protective gowns, were set by specialists at MSF who were working closely together with the IKEA supplier to ensure the requested quality.

The protective gowns produced by an IKEA supplier in Asia have been delivered to MSF hubs in Europe for further distribution.

New milestone in Siempelkamp sales



Assembly work on the new forming and press line with the 7'-x-37.1-metre, ninth-generation ContiRoll for the production of particleboard at Kastamonu Entegre, has started at the end of July.

The leading producer of woodbased boards in Turkey and the seventh-largest in the World also placed an order in July for a modernisation package for its Siempelkamp MDF line in Kastamonu City, to be installed at the end of 2020.

The assembly work was scheduled for early 2021 and this means that the continuous forming and press line in Samsun – which is intended to replace the

existing particleboard line at the Yontas location that was acquired in 2009 – is now entering its home straight.

Pallmann, which is also one of Siempelkamp's subsidiaries, will be supplying the knifering flakers – two MicroFlaker and two MacroFlaker systems as well as a knife-ring flaker for dry particle preparation at each location.

An automatic setting and knife-ring grinding robot by Pallmann for automatically sharpening the blunt knives in the ring constitutes an additional part of the scope of delivery.

Kastamonu is also currently relying on Siempelkamp support at another six locations in Turkey. The modernisation work will be generating considerable added value as it will be enabling significant expansion in its range of products and reduce both raw material costs and raw material input while developing greater potential for itself.

The company currently operates eight Siempelkamp plants using continuous press technology in Turkey, Russia and Italy.

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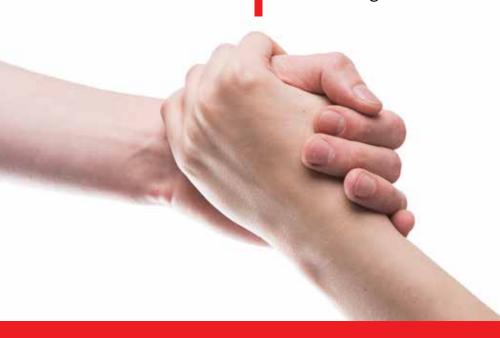
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FROM FOREST TO FINISH

T.ZED Architects have wrapped KOA Canvas - a unique new residential community in Dubai representing a new era in modernized urban property development - with thermally-modified American tulipwood. Over 750 square meters of tulipwood have been used to create the cladding element which shades and prevents overheating of the double-height co-working and closed office spaces, and which also transforms into an outdoor shaded walkway and elevated public balcony. This is the first time that thermally-modified tulipwood has been specified in these quantities in the region and the architects are confident that the material will weather and stand the test of time in this arid desert climate.

For more information visit www.americanhardwood.org Image @ Marc Goodwin