

WOODNEWS

Furniture and
Manufacturing
Technologies

PDA
TRADE MEDIA

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SHOW STOPPERS

**INDIAN SAW MILLERS
CARVE OUT RICH
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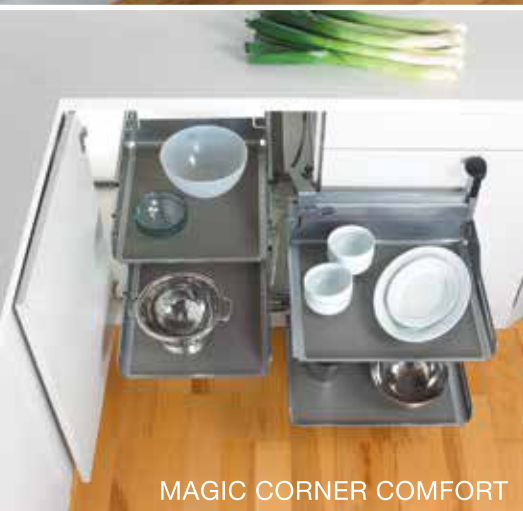
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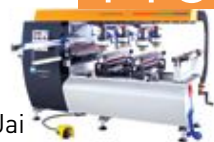
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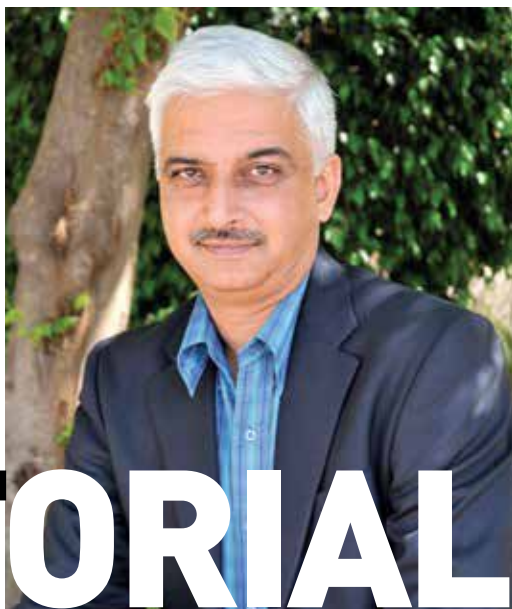
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EDITORIAL

Fighting our own demons

Hello Readers,

Exciting times, aren't they? As we hurtle towards the last quarter of fiscal year 2016-17, recent events have created ripples of hope and uncertainty across all businesses in the manufacturing and services sectors. With the passage of the General Sales Tax (GST) Bill in Parliament, deliberations of the GST Council have come in sharp focus – the what, when, why, where and how are still clothed in continuing deliberations between several stakeholders. One wonders how the new regime will treat machinery, materials and services in the Indian furniture industry.

Broadly, the tax “slabs” have been made public, but one can expect clarity only before next year's Union Budget in February. But one thing is for sure: the new system will finally do away with the multiplicity of rates and complexity of tax administration. GST is expected to offer a level playing field across industries and services, and bring the unorganised sector into its fold.

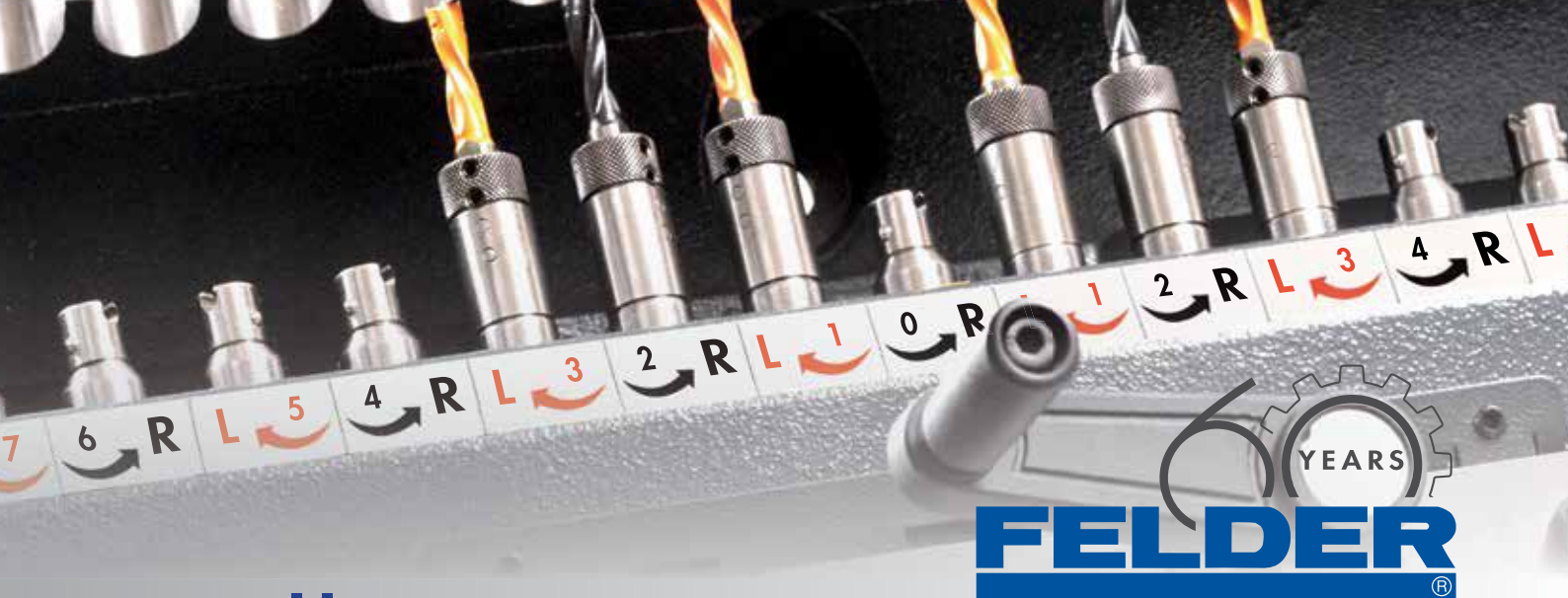
The more recent demonetisation of high-value Indian currency took everyone by surprise, despite subtle signals from government. It will not only help clean up the thriving black market and arrest “terror funding”, I expect it to make financial inclusion more than just rhetoric, and honesty and transparency a habit among us! We need to revert to the use of legal channels to do business and reduce tax manipulation to the extent possible. Along with the GST regime, this step could be a game-changer for the furniture industry, where the unorganised sector enjoys an 80% market share.

It sounds no less than a fairy tale for woodworking in the country: an Indian saw miller, working almost exclusively in Myanmar teak, catering to the top-quality, precision-engineered demands of super-yachts and ultra-luxury villas and resorts around the world. It is Anuradha Timbers International that is doing it from its stock yards and factories in Secunderabad (Telangana) and Kolluru (Andhra Pradesh). Devastated by a fire that engulfed the entire teak stock and all equipment at the 140-year-old family-run business, its brave-heart owners rose from the ashes of their misfortune, to be reborn as an export house!

Although modular kitchens first made their entry into India three decades ago, the demand and supply sides have varying views on standardisation, customisation, modularity, scalability, space and cost efficiencies. And while the world has moved on to particle board, in India the ‘plywood versus MDF’ debate still drags on! Read more about it in these pages, in our Special Focus on kitchens.

From the entire *WoodNews* team in Bengaluru, here is wishing you all Merry Christmas and a Happy New Year!!

Dhananjay Sardeshpande



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Plant-based, new-age material



Furniture made of wood-plastic composites is a growing industry in the West and Australia.

**By Pankaj K. Aggarwal
& Shakti Chauhan**

Bio-based thermoplastic composites are gaining increasing importance as there has been a dramatic increase of interest in using them as fillers in organic and inorganic composites because of their bio-degradable, renewable and environment-friendly nature.

Composite materials essentially combine more than one material or substance, most commonly a reinforcing fiber and a matrix resin. Many bio-based fibers have been used as fillers in thermoplastic composites like jute, bamboo coir and bagasse, in addition to wood powder and fibers.

Blending of polymers with fillers is a powerful way to produce newer materials with a desirable combination of properties unavailable with a single component.

Typical desired properties are improved stiffness, thermal stability, tensile and bending strength, reduced shrinkage of molded parts and reduced wear due to usage and environmental factors.

The most commonly used reinforcements are glass, Kevlar and carbon fibers, whereas talc, calcium carbonate and clays are fillers. Manufacturing of glass or carbon fibers is highly energy-intensive and hazardous to health. It would be particularly

beneficial, both in terms of the environment and also in socio-economic terms, if a significant amount of the fillers were obtained from a renewable agricultural source.

Environmental awareness and cost-effectiveness today motivates researchers to study agro-based, fiber-filled thermoplastic composites. The material can reduce the consumption of plastics significantly.

Material cost savings due to the incorporation of the relatively low-cost agro-fibers and the higher filling levels, coupled with the advantage of being non-abrasive to the mixing and molding equipment, are benefits that are not

likely to be ignored by the plastics industry for use in automotive, construction, appliances and other applications.

Flexible options

Plant-based composites may, in the future, become materials to replace both polymer-based composites and costly wood because of their attractive specific properties, lower cost, simple processing technologies, reduced environmental impact and ability to be recycled after use.

Taking advantages of fiber cell wall modification chemistry, and combining fibers with other materials, provide a strategy for producing advanced composite materials that take advantages of both natural fibers and thermoplastic resin. It also provides flexibility to tailor materials as per end use requirement within the frame of cost availability.

In the age of composites, combining biological fibers and commercial plastics can bring in transition to safer and more environment-friendly composites. These materials can be used to make lighter, stronger and more durable products that save resources and energy. Long life and eventual recycling can be engineered into these products. Natural or bio-fiber composites are now emerging as a realistic alternative to glass fiber reinforced composites.

In recent years, the use of synthetic polymers has grown tremendously because of the capability to mould these thermoplastics into desired shapes and engineer desired properties into them. However, there are some drawbacks also.

These include poor mechanical properties: impact toughness and stress relaxation behavior. One of the most effective ways to improve these properties is by addition of reinforcing fibers or particles. For fibrous material there are two classifications:

- Continuous fibers
- Discontinuous fibers.

In this study we concentrated on discontinuous fiber composite material, classically defined as a combination of

short (chopped) fibers with a continuous surrounding material. Short fiber-filled composites find the best applications in moulded products. Most commercially important composites use glass fiber as reinforcement.

Wood advantages

Advantages of using wood fibers as a reinforcing element for thermoplastics arise from the fact that they are lightweight, damage-tolerant, non-corrosive and less abrasive to processing equipment.

Because of the low density of plant fibers, a wood fiber reinforced product will always be thicker than the one reinforced with the same mass of glass fiber. When the product design is stiffness limited (as is frequently the case) rather than failing stress limited, a thicker product could be stiffer and still acceptably strong for the same mass.

The overall performance of any fiber-reinforced polymer composite depends to a large extent on fiber matrix interface. Wood fiber surfaces are fairly irregular which should, in principle, enhance the fiber matrix interfacial bond.

Further, high specific strength and modulus, low cost, and availability in most geographic regions make wood fibers even more attractive as fillers. The principal advantage of natural fiber reinforced composites is their ability to absorb tremendous amount of energy during impact fractures.

The higher strength is not just due to fiber pullout work and work done in

creating new surfaces but also due to complex fracture mode of natural fiber as compared to glass or carbon-fiber reinforced composites.

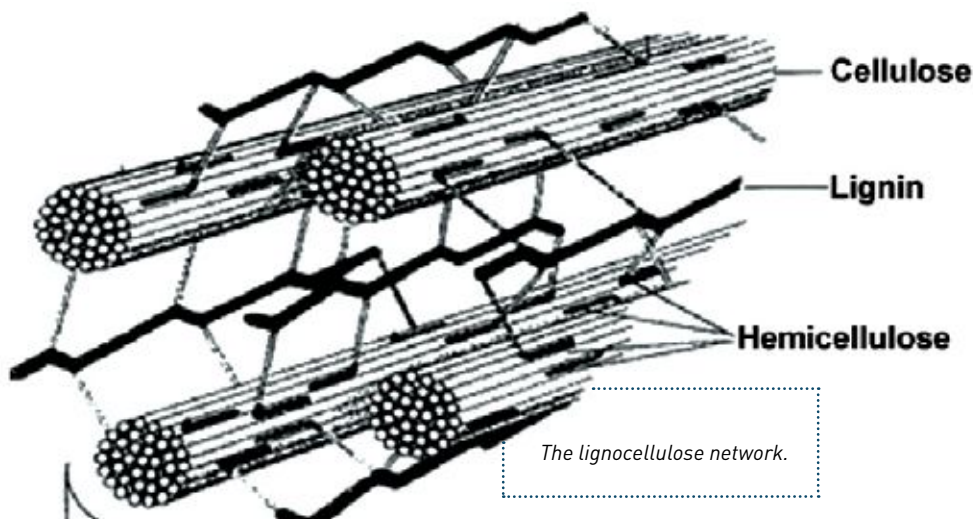
The compact design of biological fibers introduces an element of redundancy that is very desirable from the safety point of view. They rarely show brittleness as the interaction between the sub-elements is such that it allows non-elastic deformation before fracture. Natural fibers can combine resilience (energy storage) and toughness (energy absorption).

Plant fibers are carbon-dioxide-neutral in their production (they derive carbon from air, not from oil or natural gas) and require only small energy inputs for processing. Plant fibers cause less dermal and respiratory irritation, and are more pleasant to work with than glass fibers.

Limitations of use

Despite all the advantages mentioned above cellulosic materials are less frequently used in common thermoplastics such as polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC) and polystyrene because of difficulties associated with surface interactions between hydrophilic wood fiber and hydrophobic thermoplastics.

Such divergent behavior results in difficulties in compounding these materials, and poor mechanical properties of the end product. The hydrophilic-hydrophobic boundary between the pulp and the plastic is a



WOOD-PLASTIC COMPOSITES

very high-energy surface, when compared with hydrophilic-hydrophilic and hydrophobic-hydrophobic surface interactions when the two phases separate. Thus, polymer and pulp segregate into pure thermoplastic and pulp clumps.

The abundant hydroxyl groups in plant cell walls strongly attract water, and the resultant absorption causes anisotropic swelling. If this swelling is restrained mechanically – by encapsulating the fiber in a water-non-reactive matrix – the uptake of water causes a swelling stress.

If the fiber is exposed to water, swelling stresses can eventually cause failure of any matrix resin that is used to bond fibers together.

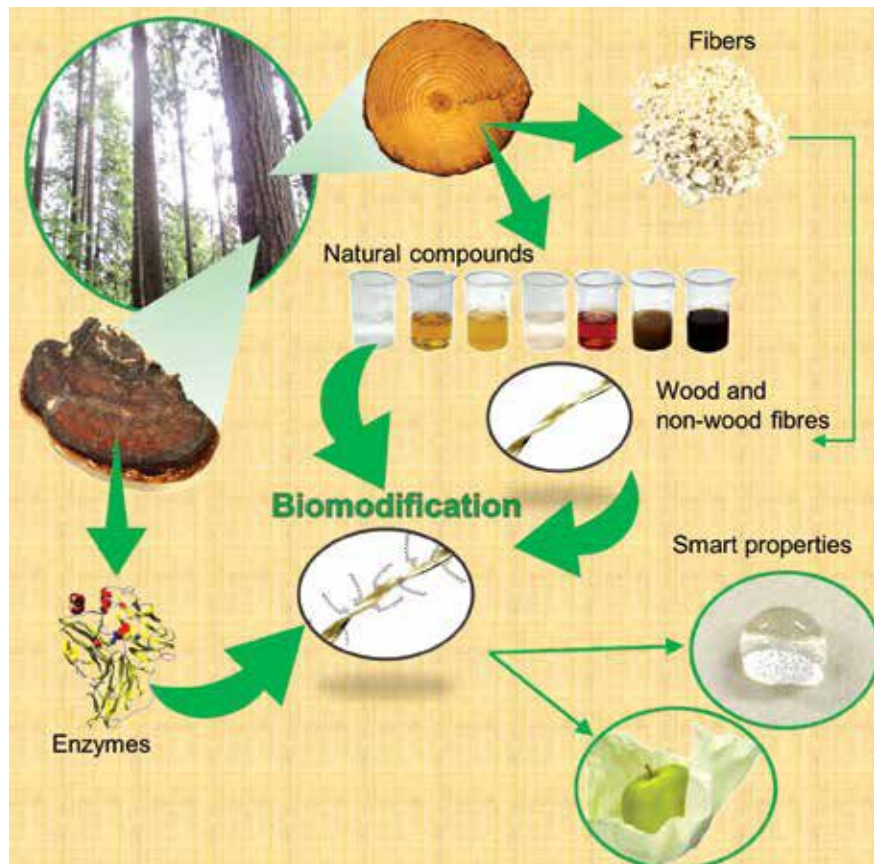
A survey of scientific literature reveals that adhesion and chemical affinity between cellulose and polymer matrix can be improved by modifying the surface of cellulosic fiber through use of various additives, such as grafting vinyl monomer chain, on to fiber backbone, or using coupling agents that can react with both matrix polymer and reinforcing fiber.

To take full advantage of high tensile strength and low weight of these ligno-cellulosic fibers as true reinforcing elements in composites, it is necessary to modify natural fibers or plastic matrix to optimize stress transfer, minimize stress concentration and maximize final mechanical properties. The quality of interface is enhanced with the introduction of chemical bonds across the interface or through increased secondary interactions.

The surface characteristics of cellulosic fibers are modified by treating the fibers with compatibilisers or coupling agents. After treatment with compatibilisers the surface energy of the fiber is increased to a level much closer to the surface energy of the matrix. Thus, a better wettability and a higher interfacial adhesion can be obtained.

Ready market

Natural fiber as reinforcements for both thermoplastics and thermosets are one of the fastest growing types of additives



Providing high added-value products or alternative products to the existing synthetic ones employing sustainable and environment-friendly processes.

(Pic courtesy: Barcelona Tech University)

in plastics. According to a recent study by Kline & Company, the North American market for wood and agricultural fiber reinforcements was estimated to be in excess of US\$150 million in the year 2000, with average annual growth exceeding 20% in automotive applications and 50% in selected construction applications.

The primary market force behind these materials will be their low cost. But natural fiber can offer much more in terms of technical advantages over conventional composites: good specific strength, higher stiffness, ease of recycling and a "green" perception.

Novel applications, growth prospects and patenting opportunities have accelerated interest in the wood-filled polymer composites. The scientific community, industrial researchers and universities are working aggressively on developing these hybrid materials and finding new applications for them.

In India, very few companies produce wood fiber-filled thermoplastic

composites used for manufacturing of door and window frames, decking, wall cladding, etc. But a major problem seems to be lack competitive technologies. Although some research institutes are working in this direction, a lot more needs to be done, especially with respect to process conditions and properties.



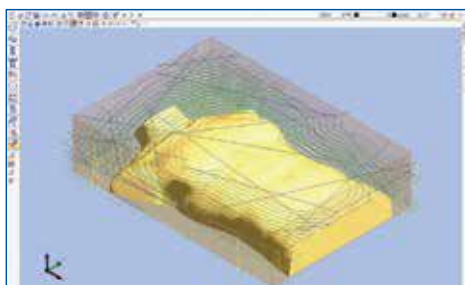
-The authors, Pankaj K. Aggarwal (L) & Shakti Chauhan (R), are scientists at the Wood Polymer Research and Training Centre of the Institute of Wood Science & Technology, Bengaluru. They can be contacted at pankaj@icfre.org. They are thankful to Mr. Surendra Kumar (IFS), Director of the Institute, for his support and guidance.

To be continued.



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'Surfaces are work of the devil'



Two important meetings held in Italy in October focussed on performance of furniture surfaces and preservation of wood

Companies in the wood and furniture sector were acquainted with the necessity for surface testing, assessment and consequent product improvement.

The two meetings were organised by Catas, an active Italian laboratory for the wood and furniture industry, and received considerable attention of experts of these sectors. Around 50 industry professionals gathered on October 5 at the headquarters of Catas in Lissone-Brianza.

It was an opportunity for considering in depth the "state-of-the-art" in the standards governing furniture surfaces. What should manufacturers consider for furniture surfaces? What performance is required, considering that furniture is not be only "beautiful" but also withstand daily use?

The surface appearance is undoubtedly important, because it is the first value that a consumer perceives. But if, behind the appearance some potential defects are hidden, the question changes and those who purchased a piece of furniture can live an unpleasant experience, with inevitable negative effects for the manufacturer and the dealer.

Disputes, in other words, can become a serious problem, to the point of influencing the reputation of the parties involved.

A risk to be absolutely avoided: so better

safe than sorry, better to submit the furniture to the necessary tests in order to avoid disputes – also defined by specific standards – and so ensuring a good, peaceful relationship with the consumers.

Dr. Franco Bulian, Deputy Director of Catas, quoted Wolfgang Pauli, the famous Austrian Nobel-winning quantum physicist as saying that while the mass of the objects was created by god, their surfaces are the work of the devil. "I am absolutely certain that this sentence is more than acceptable also as regards the sector of wood and furniture," Franco echoed.

The surfaces of the furniture is fundamental to the aesthetics of the product, and certainly the subject of great attention and strong investments in order to reach the best possible results. Finishing is undoubtedly one of the absolute excellence of Italian furniture and of the producers of finishes and application technologies.

The purpose of the meeting held in Lissone, said Franco, was to acquaint the companies of the wood and furniture sector about the opportunities of surface testing, assessment and consequent improvement.

Ms. Debora Tiberio, a technician of the Catas surfaces section, explained all test methods that the institute proposes and performs to simulate and reproduce the defects that may occur on the furniture surfaces in consequence of the effects of temperature change, accidental impact, contact with liquids, or simple exposure to sunlight.

Timber durability

The other event took place on October 6, in San Giovanni al Natisone, and focused on the durability of timber and timber products intended to be used outdoors (floors, windows, exterior cladding, decking, beams, etc.) The work-shop was organised as part of the activities of the European technical committee CEN TC38 and was attended by around 20 representatives of the standardization bodies of Italy, France, Germany, England and Denmark.

The participants especially considered the efficacy requirements for preservatives currently applied on wood in order to maintain its physical and mechanical properties as long as possible. After the entry into force of the Biocides Regulation (EU Regulation No. 528/2012), the marketing of chemical preservatives protecting wood from the attack of fungi and insects is subject to a regulatory approval.

According to Dr. Elena Conti, head of the biological section of Catas, the experts dealing with such regulation and those involved in the various evaluation committees have considered and discussed the new documents establishing what are the criteria for assessing the efficacy of the wood preservative products.

Such subjects are often complex and require specific knowledge, not always acquired by users, by the people who must then apply these new rules during their daily activities for the preparation of dossiers for the approval of the products to be put on the market.



Bio-deterioration of wood depends on its intended use, the geographical area and the design features.

For this reason, accepting the proposal of the CEN technical committee TC38, which covers the aspects related to the durability of wood and wood-based products, Catas hosted a workshop for experts of regulatory activities and wood preservatives producers.

"During the discussion, we have highlighted the critical issues of regulatory documents currently in force," said Elena. "Some proposals and ideas have emerged that will be useful to fill the inevitable gaps that the discussion on a subject so wide and complex can generate."

The subject involves an incredible number of variables: the risk of bio-deterioration of wood in use depends on several factors, including the intended use, the geographical area, the design features. "To cover all these aspects in a standardization document is certainly not easy. But, depending on the full collaboration of all parties involved, we can only predict that the next revisions will be towards documents adapting to the evolution of both the products and the laws that regulate their marketing," she said.

– Catas (established 1969), the Italian research and certification institute and test laboratory in the wood and furniture field, is an internationally recognised entity. It has two laboratories located in San Giovanni al Natisone (Udine) and Lissone (Brianza).

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Trade collaboration key to tropical legality



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Global hardwood specialist Danzer does not see the EU Timber Regulation or FLEGT voluntary partnership agreements (VPAs) as missions accomplished yet. But it recognises them as key additions to timber's legality assurance armoury and believes they can become more significant. **Mike Jeffree** reports.



Mr. Hans-Joachim Danzer.

Mr. Hans-Joachim Danzer is an ardent advocate for tropical timber, the tropical timber trade and, crucially, getting a true picture of the business, its ethos and potential out to the marketplace. The chief executive of Austria-based Danzer, one of the leading global hardwood players, enthuses about the material's diversity, ability to substitute less environmentally sound man-made material and capacity for reinvention.

Danzer's timber mix today is around one-third tropical, two-thirds temperate with the former managed by its subsidiary, Interholco. It sells worldwide and makes everything from engineered timber components, to hi-tech mouldable and even metal-striated veneers for car dashboards.

It also recently developed advanced cutting technology to make the valuable hardwood resource go further. Against that background, it's understandable the company is equally impassioned by the tropical timber trade, in Danzer's words, "too often being criminalised in the public eye".

By committing to responsible sourcing, Danzer and the Interholco management see the trade as a driver for supplier uptake of sustainable forest management. But thanks, they believe,

to "misunderstanding, poor communication and law-abiding companies' being tarnished by the remaining illegal trade", it is still commonly perceived as a driver of deforestation.

Market consequences

"Wood is the most modern, versatile product, yet it's been bad mouthed for decades," said Danzer. "So today we stuff houses and offices with artificial non-recyclable products, because consumers are too afraid of buying timber."

Danzer's proactive response is to embrace any credible tool that helps eradicate remaining illegal elements and enhances the legitimate trade's environmental performance and reputation. So legality verification and sustainability certification are central to its operations.

"Interholco's concession in the Republic of Congo achieved FSC certification in 2009 and, at 1.2 million hectares, is the region's biggest certified forest," said Danzer. "Supplier concessions are partly certified and in high risk countries where certificates aren't available, Interholco conducts on-site legality and sustainability audits itself."

Danzer also supports the anti-illegal trade goals of the EU Timber Regulation (EUTR) and EU Forest Law Enforcement Governance and Trade initiative (FLEGT), with the latter's ultimate aim of supplier countries signed to its VPAs exporting legally assured, EUTR-exempt FLEGT-licensed timber.

The company's EUTR support is also down to its ambition, not just to bar illegal wood from the EU, but ensure all member states impose consistent timber legality requirements. By underlining its stance against illegal

EUTR, FLEGT update

The latest European Commission report found all 28 EU member states now meeting EUTR enforcement obligations and nearing 'fulfilment' on any outstanding issues.

Meanwhile, Australia says it will accept FLEGT licences as proof of low illegality risk under the AILPR, and US commentators have said they may be regarded as contributory evidence of 'due care' under the Lacey Act.

wood, it feels, the EUTR can enhance the trade's image too.

"If it promotes wood in a small way, it's contributed," said Danzer. "The EUTR process is different from FSC or PEFC audits, so our systems were further independently audited."

EUTR due diligence has also impacted on supplier selection. "In meeting our legality standards, existing suppliers had done their homework so we lost very few due to the EUTR," said Danzer. "It's been a more a case of not starting relationships with new suppliers which can't satisfy the criteria."

Yet to deliver

But while backing the EUTR and wider FLEGT objectives, Danzer is not uncritical. One thing it feels the former still has to deliver is that EU-wide level playing field in terms of timber legality requirements.

Danzer also urges greater synergy between EUTR and FSC and PEFC certification, with these "established, credible schemes given greater weight as evidence of compliance... It could



Danzer mouldable technical veneer, blending Sapele and Sycamore.

benefit from their experience and proven systems."

Initially the company itself is taking a cautious approach on how it integrates FLEGT-licensed products into its operations when the first become available to the EU, with that now set to

be from Indonesia later this year. But its position could develop.

"A FLEGT licence signals automatic EUTR compliance, but initially we'd still check suppliers," said Danzer. "However, once its proven the system works across a country, we could amend policy to

reflect FLEGT-licensed timber is OK under our legality criteria."

Danzer additionally raises the need to increase awareness of FLEGT licensing along the supply chain. "Without communication to consumers, retailers and manufacturers, FSC wouldn't have the recognition it enjoys," said Danzer.

Another positive for suppliers would be coordination of FLEGT licensing with the due care/due diligence demands not just of the EUTR, but the US Lacey Act and Australia's Illegal Logging Prohibition Regulation (AILPR) too.

Where the FLEGT initiative and EUTR could prove more valuable still is by further addressing forest conversion, blocking timber resulting from land clearance for such uses as development and agriculture, from EU supply chains.

Ultimately Danzer sees all timber legality measures as steps, albeit vital ones, to the ultimate objective of compulsory proof of sustainability. But despite this and his recommendations for improvement, Danzer believes the EUTR and FLEGT VPA initiative have already had "very positive impacts on trade"; improving forest governance, increasing legality and risk awareness and compelling application of due diligence.

– The writer is Communications Consultant with the Global Timber Forum. (mjefree1@gmail.com)



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Fevicol SWR Range

Specially designed for the handicraft industry, this Polyvinyl Acetate based white adhesive meets the DIN EN 204 Stress Group D3 Standard. It is suitable for all types of wood working applications and provides very high water resistance and excellent bonding in lamination with all grades of wood, even in high humidity areas. Fevicol SWR Plus is specially designed for application in cold weather conditions. SWR EQ has even better cold weather performance and can achieve D4 standard by adding 5% isocyanate. SWR LV has very low viscosity. All are non-flammable and non-toxic with REACH Compliance, Low VOC (Volatile Organic Compound) Certification and Free Formaldehyde Certification.

Fevicol Probond

This water/synthetic resin based emulsion adhesive is suitable for lamination of primer coated PVC sheet to MDF. It is also used for manual edge banding of primer coated PVC Strip to MDF, particleboard, ply etc without using any edgbanding machine, making it highly economical. It has excellent bonding compared to solvent based adhesives, as well as high heat resistance, easy applicability and low VOC



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Fevicol SP Range

This range of sprayable, synthetic rubber based solvent borne contact adhesives can permanently bond painted steel, plywood, chipboard, PU foam, muslin, foam rubber, felt, fabric, leather or many other materials. SP-4 is the basic version. SP-5 is specially designed for the automotive industry and is also used to make writing boards using honeycomb cardboard and white laminates. SP-6 also has high heat resistance.

Membrane Press Range

Fevicol Membrane PU is a solvent based polyurethane contact adhesive used to bond PVC foil to MDF, plywood or other materials. It is ideal for door manufacturing, with low activation temperature, fast drying time and good bond strength.



Fevicol Membrane Press Star 2K is a two-component water based synthetic adhesive used to bond PVC film laminate to wood based panels in the modular furniture, modular kitchen and doors industries. It has excellent heat resistance, low activation temperature and high green tack. It is non toxic and non flammable.

Fevicol Membrane Press Adhesive LC.

Fevicol Membrane Press Adhesive LC is a water based adhesive, specially designed for applications in PVC moulded doors. The unique formulation ensures high green tack resulting in strong bonds on difficult substrates. The product does not release any harmful emission and is safe for users with no adverse effect on the environment.



The product can be easily applied using an air compressed spray gun. Its distinctive features ensure effective deposition on the substrate resulting in higher coverage. Since the adhesive is water based the spray gun can be cleaned with tap water. When used with 5% Membrane Press Hardener the heat & water resistance properties improve vastly. This product bonds PVC to most of the wood substrates like MDF, particle board etc. The mixture with hardener has a pot life of 3 to 4 hours. Higher coverage of 6 to 7 doors compared to 4 or 5 doors in solvent based systems. No volatile losses in this water based system.



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Complementary potential



FSC's John Hontelez



Ben Gunneberg of PEFC

Mr. John Hontelez, Chief Advocacy Officer of the Forest Stewardship Council (FSC), and Mr. Ben Gunneberg, Chief Executive of Programme for the Endorsement of Forest Certification (PEFC), say certification schemes and the FLEGT initiative share goals and can be mutually beneficial.

What is your organisation's perspective on the relation between FLEGT (Forest Law Enforcement, Governance and Trade) and certification?

John Hontelez: FSC sees FLEGT's aims and activities as complementary to its own. FLEGT voluntary partnership agreements (VPAs) are unique in the way

they promote forest policy reform and establishment of effective enforcement institutions, and these are both preconditions for sustainable forest management.

FSC can then help VPA acceptance and realisation. Four of the six countries with ratified agreements have included the possibility of recognising private forest

certification as compliant with their FLEGT timber legality assurance system.

We're now asking for the option to recognise certification schemes in all further

VPAs at forest management and chain of custody levels.

Ben Gunneberg: PEFC sees FLEGT as

very constructive in drawing attention to challenges and opportunities in forest governance and ensuring underlying issues giving rise to illegal logging and trade, such as weak governance and corruption, are addressed at the highest levels.

Also, while forest certification delivers locally developed, internationally endorsed sustainability verification beyond the scope of FLEGT, it is a voluntary mechanism and applies only to certified forest areas and supply chains. FLEGT VPAs and licensing offer the added value of targeting forest legality issues of producer countries as a whole.

Does FLEGT's focus on timber sector transparency and stakeholder engagement add something new?

JH: FLEGT's approach, with explicit roles for stakeholders in preparatory and implementing phases, is particularly valuable. It's not very different from FSC practices for formulating national standards and stakeholder engagement requirements for forest certificate holders and certification bodies.

But the FLEGT VPA process additionally includes forest legislation and is not limited to those choosing to use certification schemes.

BG: In strengthening multi-stakeholder dialogue FLEGT VPAs have been helpful for PEFC. Stakeholders subsequently have more capacity to build consensus in developing national forest management standards.

Continuing discussions from agreeing definitions of legality, to building consensus around requirements for sustainable forest management, is also a natural trajectory.

How will FLEGT licensing work with certification in the market?

BG: One issue (we have) is the fact that FLEGT licensing, through its timber legality assurance systems, will be given green lane status in the EU Timber Regulation. Yet tried and tested forest certification is referred to (only) as a due diligence tool to mitigate risk of importing illegal timber into the EU.

This should be quickly rectified. But we don't see competition between FLEGT licences and forest certification. FLEGT-licensed timber on the EU market could contribute towards mainstreaming legal forest products trade and enhancing the forest products industry's reputation.

At the same time, certification will continue to grow as it goes beyond legal requirements in the forest and a PEFC label communicates sustainable origin of products to consumers.

Demand is also embedded in private and public procurement policies and consumer expectations for sustainable forest products. And we see further potential synergies between the two.

Where VPAs come first, they can assist countries in promoting multi-stakeholder participation, transparency and accountability in national certification standards development and revision. PEFC also now requires that the legality definition agreed through a VPA is reflected in these standards.

Likewise, where national certification standards develop first, they can help inform more realistic and practical VPA timber legality assurance systems.

JH: FLEGT enforcement in tropical exporting countries makes certification

easier for foresters, given that compliance with local laws lays the foundation for sustainable forest management and means illegal logging will no longer undermine commercial viability of legal practices.

FSC certification then has the value of being an entry point into the already mature certified timber market, with labelling and possibilities for price premiums. We're also promoting that FLEGT VPAs include the possibility of recognising credible third-party verified forest certification and chain-of-custody.

This can reduce the burden on public authorities and showcase the commercial viability of law-respecting forest management practices and their social and economic advantages.

How do you see the future of certification and the FLEGT initiative together?

BG: Ultimately we need to recognize that customers and procurement officials increasingly require evidence of sustainability and not just legality. But this means that all processes taking us towards a world in which people manage forests sustainably will be a move in the right direction and, where certification proves particularly challenging, verification of timber legality under a VPA timber legality assurance system will offer a first step to improving forest management.

JH: FSC alone can't end illegal logging as it depends on voluntary engagement of the forestry industry. That's why we need effective law enforcement and FLEGT can help.

– European Timber Trade Federation

'Corruption at root of illegal logging'

Without serious intervention against corruption, it will be impossible to address the problem of illegal timber trafficking across the globe. Presenting its findings in Rome, the Timber Regulation Enforcement to protect European wood Sector (TREES) project has successfully shed light on the role that bribes play in encouraging the illegal timber trade in Europe.

"Corruption is strongly connected to the illegal timber trade, but at the same time it appears to be a 'victimless crime'," said Mr. Antonio Brunori, Secretary General of PEFC-Italy, a TREES partner.

It is traditionally very hard to identify corruption, as it is based on an agreement between several parties, all involved with mutual benefits. Moreover, the corruption (at least formally) produces documents that hide the irregularities -- when all the documents appear to be legal and correct, it is extremely difficult to detect the crime.



"It is vital that we act to minimize this type of criminal activity occurring within the forestry sector, in order to minimize the damage to the environment and the enterprises that work legally," Antonio continued. "The findings from the TREES project will provide an important starting point."

The problem of illegal trafficking of timber is widespread. Interpol indicates that this phenomenon provides organized crime a turnover of up to Euro 100 billion every year – an income second only to the drugs trade!

According to the European Parliament, about the 20% of the total wood imported into Europe is illegal, with the Balkans standing out as an area where corruption makes this illegal importation easier to do.

For fighting the illegal logging and the illegal timber trade, an intervention on the already existing European

normative is needed. From 2013, the European Union Timber Regulation (EUTR) has been a useful tool to combat the phenomenon, but it appears that this is not enough.

Together with the EUTR implementation, three corrective actions seem to be necessary: involving the actors engaged in the import of wood; leveraging technological tools making it harder to falsify the documents; and introducing incentives to support operators working legally.

The TREES project is funded by the internal affairs director general of the European Commission.



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Forest certification consultation in India

India's draft standard for sustainable forest management is open for public consultation (03 October – 02 December, 2016). This means it is now your chance to ensure that this standard reflects your needs and expectations.

Since joining the Programme for the Endorsement of Forest Certification (PEFC) in 2015, the Network for Certification and Conservation of Forests (NCCF) has been working on the development of a national forest certification system for India. For a country the size of India, where up to 400 million people depend on forests for their livelihoods, this is no small task.

With its rich heritage of forest, breathtaking ecological diversity, and the socio-economic significance of the range of forest goods and services, there are numerous aspects that need to be taken into consideration as the national standard for sustainable forest management is developed.

Through extensive stakeholder

engagement, including direct consultations with stakeholders in the field, the first version of the sustainable forest management standard was prepared. Now comes the next stage, the public consultation – the chance for everyone around the country to give their comments and feedback on the developing standard.

Following the completion of the public consultation in early December, all the comments and feedback will be considered by the multi-stakeholder group responsible for developing the standard, and changes made as required.

The revised standard will be pilot-tested to monitor the feasibility of the standard in the field, and once finalized the standard will be placed for approval by NCCF.

The consultations include legality of forest management enterprises; the development and updation of a written forest management plan and its

implementation and monitoring; the impact of forest management activities in social, economic and environmental spheres; the economic viability of forest management operations in sustainable and productive utilisation of forest resources; socially responsible forest management; and environmental and ecological sustainability of forest management in relation to high conservation values and bio-diversity conservation.

You may contribute to the standard setting process through the public consultations; provide financial support to help the continued financing of the process; or even become a national stakeholder member of the NCCF.

For more information email PEFC's projects and development unit at development@pefc.org, or the NCCF at info@nccf.in. To send in your comments and inputs email: consultationsfm@nccf.in.

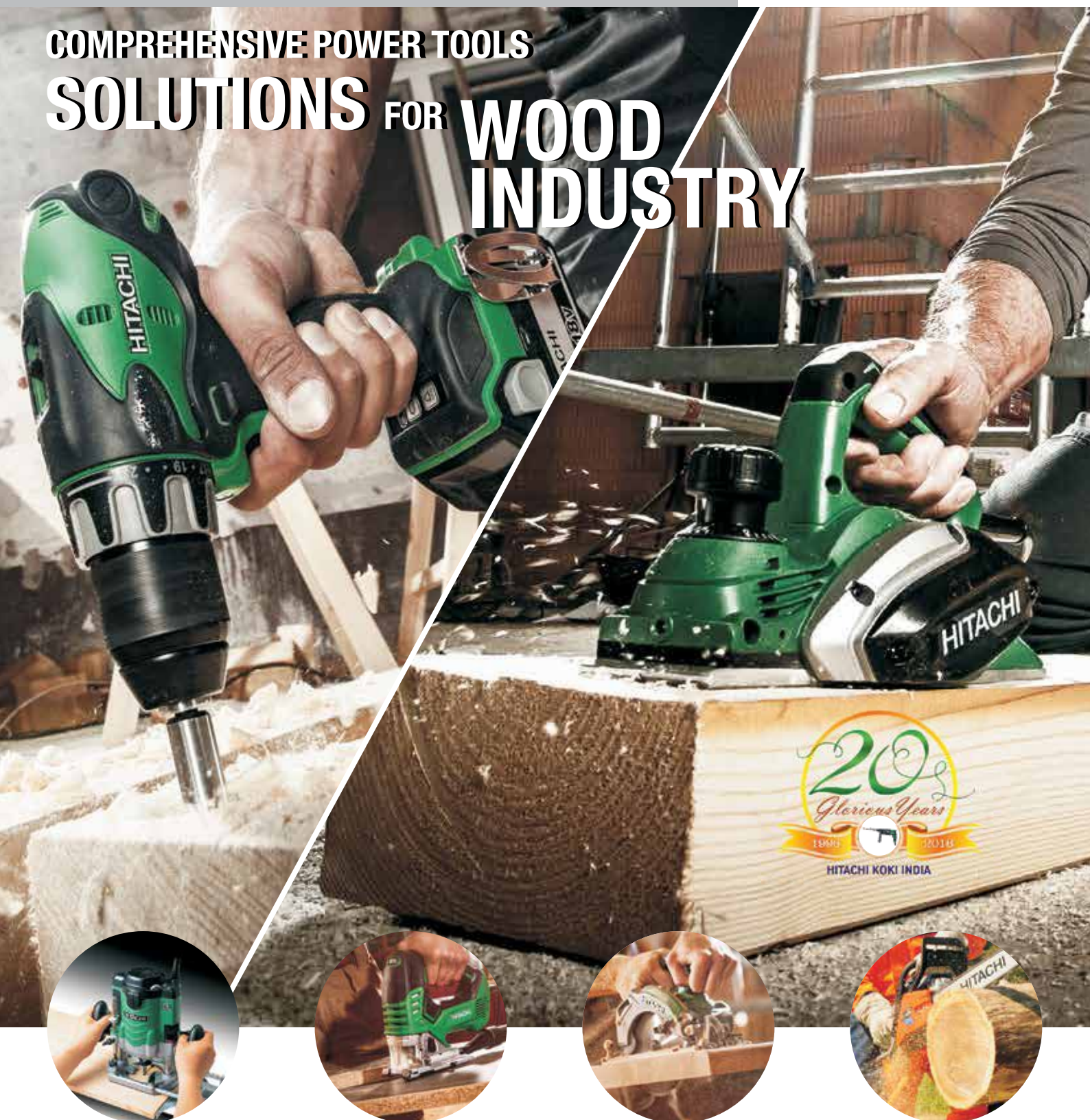
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Show Stoppers

Indian saw millers carve out a positive reputation across global shipyards



Myanmar teak decking for the Motor Yacht Eclipse, a luxury vessel constructed by Blohm&Voss in Germany, for a Russian businessman, Mr. Roman Abramovich. At 162.5 metres in length, it is the world's second-largest private yacht. MY Eclipse has two helicopter pads, three launch boats, a mini-submarine and comes fitted with a missile defence system.



This is a real-life story similar to the Phoenix, the legendary bird in Greek mythology that is reborn from the ashes of its predecessor. Devastated by a fire that engulfed the entire teak stock and all equipment at the 140-year-old Anuradha Timbers in Secunderabad, its brave-heart owners saw an opportunity to be reborn. *WoodNews* brings you the exemplary fight by two brothers, **Mr. Sharath Kumar** and **Mr. Kiran Kumar**, to carve out a star export house of their ancestral calling, and to change the presumption worldwide that Indian saw millers are not up to international standards.



Mapping the multi-level decks of the Dubai at the depot in Secunderabad. The yacht is owned by Sheikh Mohammed bin Rashid Al Maktoum, the ruler of the Emirate of Dubai. At 162 metres, it is the third-largest yacht in the world and cost US\$ 400 million.



It sounds no less that a fairy tale for woodworking in the country: an Indian saw miller, working almost exclusively in Myanmar teak, catering to the top-quality, precision-engineered demands of super-yachts and ultra-luxury villas and resorts around the world. It is Anuradha Timbers International that is doing it from its stock yards and factories in Secunderabad (Telangana) and Kolluru (Andhra Pradesh).

Anuradha Timbers is a 140-year-old entity in timber trading, led by its Managing Director, Mr. Thirupathi, a third-generation saw miller. It dealt exclusively in teak for the domestic market's consumption for solid-wood furniture, and had a reputation for supplying the best from around the world.

In 2001, its fortunes nose-dived after a massive fire destroyed all its stocks of logs, sawn wood and processing equipment in the Secunderabad depot. There was also no insurance to lessen the brunt of the tragedy. Burdened with debts and client commitments – but egged on by their passion and resolve – the Kumars did not panic.

There was no point repeating what the company had been doing all these years; so the youngsters, Sharath and Kiran, put their heads together and shoulders to rebuilding their business. The brothers trawled the Internet to gain preliminary knowledge and travelled across the world – including business conferences and trade fairs – to study various markets and products.

Breaking stereotypes

"It was obvious to us from the very beginning that we must aim at high-value products for niche markets," Sharath recalls, "That was our best option for a fast recovery." Over time, they decided to take on the biggest challenge: taking a pot-shot at the most demanding, teak-based, flooring and cladding market for maritime vessels in

Europe. So far as the timber requirements were concerned, they had learnt their lessons from impeccable German experts: only Myanmar teak (*Tectona grandis*), straight grain, no knots, no defects!

Given that Indian saw millers were never known (till then) for their professionalism, wasn't it a big gamble? "Of course, we knew about the reputation of Indian saw millers abroad," says Kiran. "We Indians were notorious for outdated technology and equipment, and slipshod work. We were neither trusted nor respected initially. But with Ramu's encouragement and guidance, we decided to break the stereotype."

In 2004, they set up Eshaan Enterprises, a sourcing company, with offices in Yangon (Myanmar) and Singapore. A full-fledged Ebil vacuum-drying kiln from Germany was commissioned in the Kolluru timber yard, along with Butfering sanding machines and finishing lines.

In the Secunderabad depot, a Primultini automated saw mill was installed. The Italian brand is well-known for its rip saws and resawing machines; horizontal and cross-cut saws; carriages and canters for tropical timber, hardwood and softwood; headrigs and conveyors and turnkey saw mills.

Alongside were commissioned a Wintersteiger (Austria) thin cutting frame saw; a Raimann ProfiRip KM-310M gang rip saw for planed lumber and modular blanks; and a Weining Unimat Gold moulder for planing and profiling. Most tools were Stellite (alloy) – which are more resistant to corrosion, wear, acid, hardening and annealing – from Leitz.

"We sought out the best machinery and expertise for the correct treatment, processing and milling of timber," Kiran stresses. The logs are quarter-sawn, with great attention to maintaining straight grain over long lengths. They have to be defect-free, with precision



OY Botina Marine of Finland, which builds the popular Targa boats, is also on the clients' list of Anuradha Timbers International.

milling across 4x100-metre teak planks and boards. And yes, it meant educating factory workers about maintaining quality standards and training them to operate all the machinery efficiently, he adds.

Niche markets

As Indian saw millers were not trusted, the brothers took another big risk: without so much as securing orders, they began sending containers – some of them with material valued at 40,000 Euros – to top shipbuilding yards in Europe. Their gamble paid off when their flooring, decking and cladding products were recognised as measuring up to world standards.

"We kept sending them containers of our products, and gradually they (shipyards) came back with acceptance, payments, enquiries and more orders," recalls Kiran. "We convinced one shipyard after

another – first in Germany, then in Italy and Spain, followed by those in the Scandinavian countries (Denmark, Finland and Sweden) – and they recognised our good work."

"Today, we can say that shipyards in Europe and the United States have no compunctions about placing orders with us. I think we changed their presumption that Indians are no good at sawing and milling!" he smiles.

Among the great shipbuilding companies that are now clients of Anuradha Timbers International are:

- Lurssen is a German shipyard (established 1875) based in Bremen-Vegesack with five building yards in north Germany. It is credited with building some of the world's finest luxury yachts between 33 and 200 metres long, and claims to have produced the world's first motor

yacht in 1886.

- Another shipbuilder of global repute, Blohm & Voss, is based in Hamburg, Germany, and has been operating since 1877. Its portfolio consists of naval warships, ocean liners, luxury yachts and even air force interceptors, bombers and reconnaissance aircraft!
- OY Botnia Marin is a Finnish shipbuilder, famous for its hand-finished Targa fleet of sea-going vessels. It has dealers in 21 European capitals, besides Russia and Japan.
- Howaldtswerke-Deutsche Werft (HDW) is also a German shipbuilding firm, established in 1968 with headquarters in Kiel. It is part of the ThyssenKrupp Marine Systems.
- Nautors Swan, another Finnish company, has built more than 2,000 Swan yachts since its foundation in 1966.

Previously, these shipyards sourced Myanmar teak products from saw mills in Italy and Spain, who imported the logs from Myanmar and Thailand. However, the European saw mills were edged out by severe competition owing to high cost of labour. "We are now supplying what these European firms were doing as far as teak products for the maritime shipbuilding industry are concerned," grins Kiran.

Thanks to 'Ramu'

But the recognition is attributed to 'Ramu' and the plaudits are shared with him, because he stood by them in time of need and created a support system. "It was he who brought in European machine manufacturers to India; he educated the industry on the nuances of solid wood and panel processing," Sharath states.

Kiran pitches in: "Ramu primarily paid attention to the problems and offered solutions, rather than aiming at selling machinery to his clients. He brought into India the best of machines and tools; he followed it up with proper training; and he ensured after-sales service to his



Work horses at the Secunderabad timber yard: (clockwise from top) a Raimann ProfiRip KM-310M gang rip saw; an automated saw mill for tropical timber, hardwood and softwood from Primultini; a Wintersteiger thin cutting frame saw; and a Weining Unimat Gold moulder.



customers. Otherwise why would Indians buy expensive technology from across the oceans? Our success today is part of his vision."

In the year 2009, the brothers converted Anuradha Timbers International into a 100% export-oriented unit and earned the classification of a Export House. "This enables us to import raw material without hassles, without having to pay customs duty. Needless to say, we pass on the benefits to our customers," Sharath says.

Anuradha Timbers International has entered into a joint venture with the US-based Teak Solutions, a high-end luxury property contractor in San Diego, California. Since its launch in 1993, Teak Solutions has executed world-renowned projects on luxury yachts and resorts in the US, Germany, Spain, Malta, the Bahamas, Singapore and Italy.

Teak Solutions recently opened a ship repair division in Barcelona and established a large factory in Valencia, both in Spain. Together with Teak

Solutions, who execute the project work, Anuradha Timbers International has supplied flooring, decking and exterior cladding to such super-yachts as the *White Pearl* (now *Motor Yacht A*), *Eclipse*, *Dubai*, and *The World's Not Enough*. Together they have also designed and manufactured yacht furniture for several projects – all in Myanmar teak.

What is the special relationship that ocean-going yachts have with Myanmar teak? Kiran notes that plantation teak is of no use in maritime environments. ▶



ANURADHA TIMBERS INTERNATIONAL



Nandana Villa, a luxury resort on the Grand Bahamas Island, consists of 18,000 square feet of living space. In 2007, Anuradha Timbers supplied all ceilings, pillars, flooring, cladding, decking and some seating for the resort from Secunderabad.

Most of these logs are about 15 years old, have a lot of sap and contain no oil. While sapwood is good for the living tree, it is not ideal for woodworking – it tends to retain high moisture content and is more susceptible to decay and staining by fungal infestation.

“Natural-grown harvested Myanmar teak, on the other hand, is 60-100 years old, contains no sap, has a moisture content of less than 8%, and has natural oil that makes it more durable,” Kiran notes. “Its durability can be measured from several temples in South-East Asia that have endured tropical weather for more than 200 years since they were built.”

The brothers (and their father, in his younger days) take great care to seek out good quality timber: they first study forest maps supplied by the Myanmar Timber Enterprise, then often trek to timber yards in the midst of the dense tropical forests to inspect stocks. “We found out that, within Myanmar, high mountain teak is light coloured, while that harvested from swamps has a darker colour,” Kiran recalls.

Luxury resorts

Myanmar has banned fresh harvesting and export of teak logs. What happens after the existing stocks run out?

Anuradha Timbers International was early to seek options to deal with the global recession and tightening of Myanmar’s timber regulations. It diversified into custom-made products for the ultra-luxury hospitality sector in Europe, using hardwoods imported mainly from Ghana (Africa) and Costa Rica (Central America).

It now supplies flooring and decking from plantation teak, as well as pillars, ceilings, rafters, decking and pergolas from hardwoods. “These are all customised to each project. They are processed and milled in Secunderabad, ready to be installed on site across

ANURADHA TIMBERS INTERNATIONAL

Europe, the US and even Australia,” Kiran informs. “The quality of wood, its precision cutting, and shaping/ moulding to perfection is essential. There also requirements of scalability – we once had to supply 700 moulded pillars at short notice for one project.”

The first real estate project that Anuradha Timbers International and Teak Solutions executed together was a boutique resort, Nandana (‘Paradise’ in Sanskrit) Villa, on the Grand Bahamas island (US), in 2007. Designed by a renowned architectural firm in an Asian beach house style, the property has six separate buildings.

A spectacular main house with soaring 40-foot-high ceilings is surrounded by five richly-appointed, free-standing bedroom suites. The interior of the property has been constructed entirely of natural materials with massive quantities of Myanmar teak covering the floors, walls and ceilings, and natural stone forming most other surfaces.

Spread over more than 18,000 square feet of living space, all ceilings, pillars,

flooring, cladding and decking for the luxury resort were milled and manufactured in Secunderabad! Riding on the success of the project, orders for yacht-grade furniture were executed for clients in Greece, as well as decking for those in Israel.

What are the prospects for Anuradha Timbers International? It plans to increasingly rely on plantation teak and hardwoods sourced from sustainable sources in Africa and America, along with softwoods from Europe. The ban on Myanmar teak is not the end of the road.

Says Sharath, “Solid wood is still strong,

elegant, respected and valued. We see our opportunities in high-value, precision machining and finishing of solid wood. Our strengths lie in sourcing the best timber and building relationships with new clients. Besides, we now have a reputation to uphold and build upon!”

Myanmar teak adorns the interior of the Motor Yacht-A (right), built for Russian billionaire, Mr. Andrey Melnichenko. This much-sought-after wood also finds all-weather use in a luxury resort in the European Alps (below).



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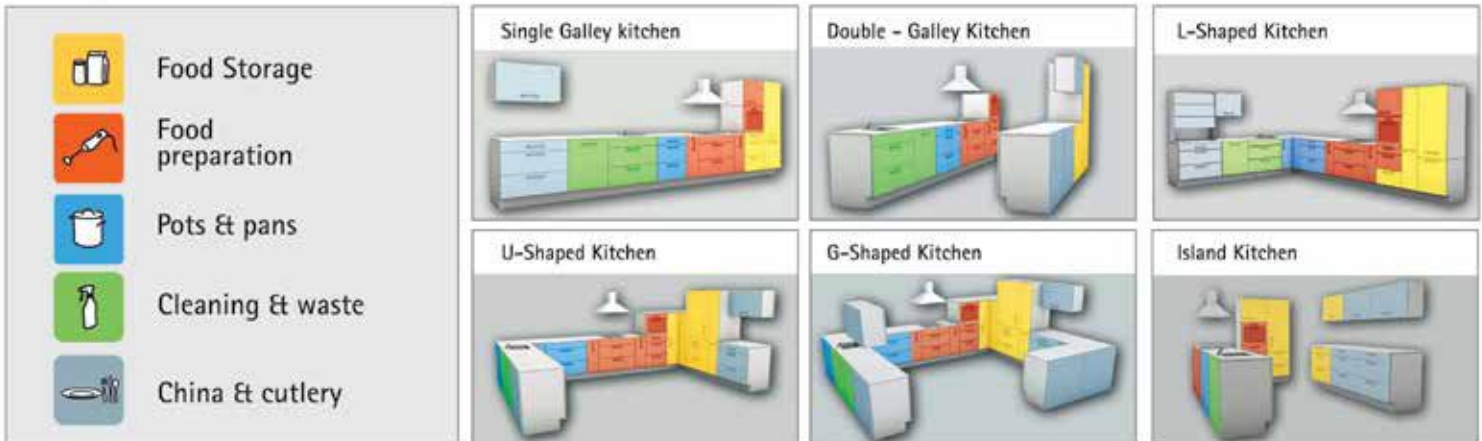
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Tech-tonic forces at play



Efficient and well thought-out design delivers superior value to the end customer and brings product differentiation to the table.

How scientific integration of lifestyle research is shaping the future of design and functionality in this important space

By Anil K. Goel

Recently, I was in a discussion with a European company, and another from Russia, that wanted to enter the Indian furniture market. Both asked one pertinent question: If the Indian furniture industry is as big as US\$16 billion, how come the modular furniture industry has remained miniscule, at around US\$1 billion?

The modular furniture industry has three major components: office, kitchen and bedroom/living room requirements. There are other many smaller areas, but these have been ignored as economies of scale cannot be realised except in the case of free-standing furniture.

Office furniture grew very well in the early years in the first decade of the current millennium, but committed hara-kiri (suicide) by churning out low quality furniture because all manufacturers competed on cost, without any product differentiation in design or functionality. This situation forced most large buyers – mainly software companies and business process outsourcing firms – to buy furniture from outside India.

Now many multinationals dealing in office furniture have entered the market, and it is again going up the scale in terms of quality, functionality and ergonomics.

On the home furniture front, the industry can grow only if we understand the nature of buying and build our businesses around the consumer psyche, meeting their explicit and latent demands.

Understanding kitchens

The main point to remember is that residential furniture is produced first and sold later. But a kitchen is sold first, then manufactured. It is the single-most important factor, poor understanding of which is resulting in a major impediment in achieving economies of scale in the kitchen manufacturing segment.

Anything that is sold first and produced later will restrict the growth of the industry or business unit. It is quite obvious that kitchen and living room or bedroom furniture business are two different animals. Though both are related to homes and sound similar, they are inherently different with regard to

the marketing and manufacturing approaches.

Surprisingly in India, most furniture manufacturers feel that their core competency lies in furniture manufacturing rather than doing kitchens or manufacturing home furniture. Their business model and back-end are both directed towards executing complete turnkey assignments. This very fact keeps their business small in value and limited in volume.

Kitchen is the most important constituent of the furniture industry as it accounts for close to 40% of production the world over. In India, acceptance of modular or modern kitchen has come about gradually. In truth, kitchen design is in a transformation stage, and technology is playing a vital role in re-defining futuristic kitchens.

A few years ago, aesthetics and modularity were considered to be the key deciding factors while designing a kitchen. Lately, however, efficient use of space, ergonomics and functionality have gained in significance. Furniture hardware has become a predominant

factor while designing a kitchen as it weaves in all the above-stated aspects into the modern kitchen.

Another important change is that the kitchen is moving from the backyard to the living room and becoming a centre point, where family members meet and interact, leading to their increased attention and efforts towards planning a better kitchen. It would not be out of place if we envision the kitchen as a place that is fast becoming an airy, well-lit, green, spacious and well-organised space that serves as a meeting place!

Any discussion on the expansion of the kitchen industry has to be viewed from two aspects: What are road blocks preventing accelerated growth? How can the industry exert itself to grow to the advantage of every stakeholder?

Value proposition

If you compare prices of an Indian kitchen with a European one, you will be surprised that European kitchens are much cheaper on ex-factory basis for identical specifications. The acquisition cost to the customer will more or less remain the same, except for duty impact, but with value addition. This price differential is caused by too much customisation.

Odd cabinetry size, different colours and a desire that one client's kitchen should be better than that of his/her neighbour is the key driver of inordinately high customisation. If, instead, the consumer is made to concentrate on conveniences and ergonomics and to ensure that all her requirements are met, it would create greater 'post-sales satisfaction' and deliver higher value for each rupee spent.

This is what needs to be sorted out. It can be done by making adequate investment in the back-end, primarily in disciplined and system-based manufacturing, rather than outsourcing each component.

The manufacturers can still retain higher profits through application of design concepts and innovation. If we incorporate interior organisation in the base structure, the cost to the end consumer will be reduced significantly.

For example, CargoPlus combines the functionality of wire mesh drawer base with aesthetics and smoother movement of double skin drawer. No extra interior organisation is needed for the drawer as CargoPlus is complete by itself, meeting the storage need of the customer at reduced cost and with the added advantage of improved aesthetics.



CargoPlus is complete by itself, meeting the storage needs at reduced cost.

Economy & innovation

This is another cost driver resulting in lower value delivery to the end customer. Nobilia, the largest kitchen manufacturing company in the world, does about 28,00 kitchens per day and intends to scale up to 34,00 by end of 2017. As against this, there will hardly be any company in India doing that quantity even in a year!

Despite doing so many kitchens a day – with over 75 models on display – Nobilia's basic kitchen cabinetry is just white. There are many shades, and customers can make their choice. The cost of production of such companies would obviously be lower, and that is why a European kitchen costs much less.

Likewise, by using innovative techniques, we could create enough value for the end customer by combining luxury and affordability together. For example, instead of using three cabinets of 600-mm each, cost can be reduced by using two drawers of 900-mm each.

It not only reduces the cost for the furniture manufacturer but also increases the real space for the end customers, since all extra dividing panels are not required. Heavy-duty drawers to carry weight from 40-60 kg and 80 kg are available to accommodate

large-format drawers.

Large front drawers with adequate weight carrying capacity bring inordinately attractive look to the kitchen with simultaneous reduction in costs. A similar use of 'push-to-open' drawers eliminates the handle requirement while improving the visual appeal.

Why standardisation?

When an overseas visitor asked Nobilia how it is able to grow year after year while others are struggling to gain traction in his country, the sales guy took him to the appliances section. He said Nobilia offers select model of hobs, hoods, refrigerators and ovens – which might be 20/30 types in each category – but the customer has to make a choice only out of that available range.

The same logic goes for handles, shutters and cabinetry. Nobilia does not change the drawer and hinge for a minimum of 10 years – because each change has to be incorporated into its software, which is a humongous task.

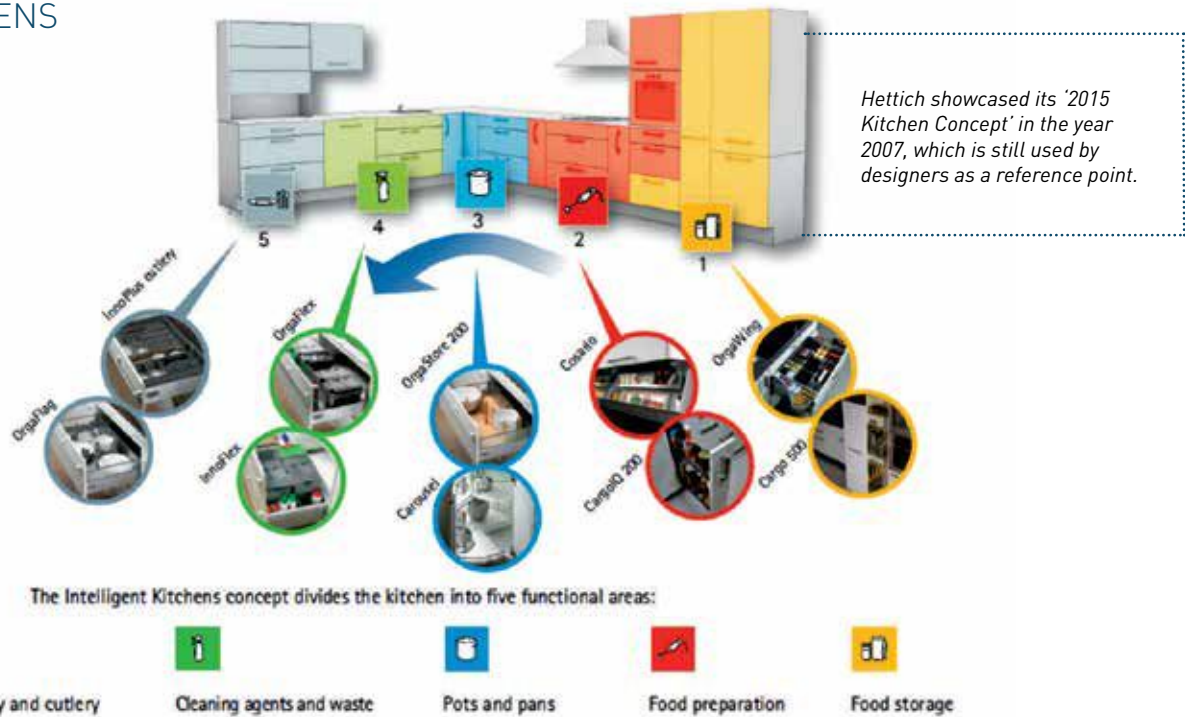
Likewise, another large kitchen manufacturer from Germany makes each drawer into multiples of 150-mm to standardise. This also helps it to deliver in time, cut on inventory and create convenience for its installers to execute a hassle-free job.

If each kitchen cabinet is non-standard in size, it would be prohibitively expensive to produce the same on machines, which either make the cost go high or forces you to cut corners to make your orders profitable. Standardisation also reduces wastage of material and machine set-up time. But standardisation is needed in terms of both, manufacturing and the offering to the market.

Building capacities

It is quite obvious that large volumes enable the manufacturer to produce at lower cost, and to transfer that benefit to the end consumer, which in its obvious impact will further expand the market on a continual basis. Therefore, large capacities are a must to reach the right price point and value proposition for the customer and the manufacturer.

This can be achieved by installing



machines not for today but with a long-term view of 5 years from now! The excess capacities can always be utilised by striking strategic partnership with other assemblers or manufacturers on stand-alone or reciprocal basis, depending upon the business model.

Therefore, revisiting the business model is a must. In fact, recently one intelligent kitchen manufacturer did discuss setting up a large unit as he wanted to grow five-fold in 3 years.

India is a developing country and incomes levels are rising. Each such upward movement brings a definite shift in demand pattern, and kitchens will be no different. Cosmetic changes will have a short shelf life.

It is a given that Indian cooking is wet as compared to European cuisine, and we use raw vegetables rather than semi-processed food. But changing eating habits and social developments (such as joint cooking by husband-wife) need to be factored in.

That is why all companies in the West are investing resources to study future changes with regard to people's lifestyles.

Reading trends

Based on the same theme Hettich showcased its '2015 Kitchen Concept' in the year 2007, which is still used by designers as a reference point for their own creation. Electro-mechanically operated drawers and shutters are the

order of the day. In coming days you will be able to open your kitchen drawer by simply clicking on your iPad, tablet or mobile phone.

Flush sliding doors in overhead cabinets are going to be the trend of futuristic kitchens. LCD display with Wi-Fi connectivity and deck for your iPad will become an integral part of any futuristic kitchen.

Lighting brings emotion to furniture and users are going to experience motion-based lighting in each and every part of their kitchens. Technology integration, combined with minimalistic look, will be in the forefront for futuristic kitchens. Water usage will be minimal. Even conversion of kitchen into a living room will not be a far-fetched idea!

Besides innovation and technology, ergonomics has become a crucial element in designing any kind of furniture. In kitchens, wall units can be made with adjustable heights, and control panels on the base unit will make it possible to raise and lower cabinet elements independent of each other.

The kitchen is increasingly evolving to fit with those using it, ergonomically moving cabinet contents to the level that best suits the user. Also, there is an emerging trend of replacing side-mounted doors and top-mounted flaps with sliding systems because they don't get in the way where space is at a premium.

Open doors on wall units are not likely to leave you injured. Sliding doors are easy to open without your customers dodging out the way of opening doors. Efficient and well thought-out designs also delivers superior value to the end customer and brings product differentiation to the table.

Kitchen design obviously has to factor in space availability and the needs of the family. The kitchen layout, if changed from L to U/I or G shape, can use the space more efficiently while improving the quality of interaction amongst family members.

Likewise, use of intelligent kitchen concept, which emphasises on layout according to cooking process, is a much better option as it helps in keeping distances short and getting the ergonomics right.

In the end, I would like to reiterate that we all have to continually innovate and standardise to deliver superior value to the end customer to really take advantage of the opportunity offered to us by our developing economy.



– The writer is Managing Director (South Asia and Middle East) of Hettich India Pvt. Ltd.

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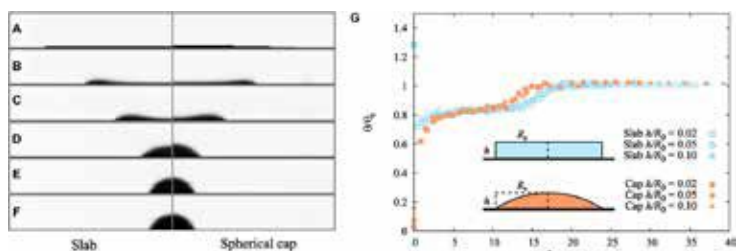


How would you like a kitchen surface that cleans itself? Technological advances such as this could be one step closer after a breakthrough by British researchers from Northumbria and Nottingham Trent Universities who have made the first ever direct observation of the elusive de-wetting process.

Wetting and de-wetting are both fundamental modes of motion of liquids on solid surfaces. They are critically important for processes in biology, chemistry, and engineering, such as drying, coating, and lubrication.

However, recent advances in wetting, which has led to new fields such as super-hydrophobicity and liquid marbles, has not been matched by de-wetting. A significant problem has been the inability to study the model system of a uniform film de-wetting from a non-wetting surface to a single macroscopic droplet, a barrier that does not exist for the reverse wetting process of a droplet spreading into a film.

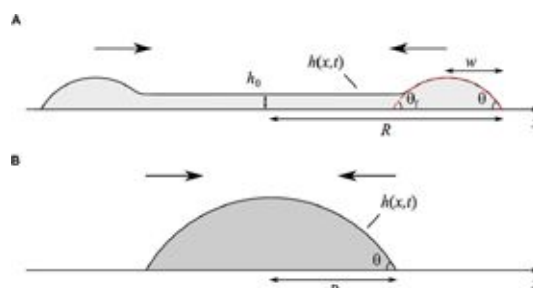
The researchers reported the de-wetting of a film, induced by dielectro-phoresis, into a single equilibrium droplet. The emergent picture of the full de-wetting dynamics is of an initial regime, where a liquid rim recedes at constant speed and constant dynamic contact angle, followed by a relatively short exponential relaxation of a spherical cap shape.



Lattice Boltzmann simulations of de-wetting films of different initial shapes. A to F are instantaneous liquid profiles relaxing from slab (left) and spherical cap (right) initial configurations.

This sharply contrasts with the reverse wetting process, where a spreading droplet follows a smooth sequence of spherical cap shapes. Complementary numerical simulations and a hydrodynamic model reveal a local de-wetting mechanism driven by the equilibrium contact angle, where contact line slip dominates the de-wetting dynamics.

The conclusions can be used to understand a wide variety of processes involving liquid de-wetting, such as drop rebound, condensation, and evaporation. In overcoming the barrier to studying single film-to-droplet de-wetting, the results provide new approaches to fluid manipulation and uses of de-wetting such as inducing films of prescribed initial shapes and slip-controlled liquid retraction.



Schematic shape of the cross-sectional profile of a de-wetting film (A) and the quasi-equilibrium shape of a de-wetting droplet (B).

Despite the smallness of inertial forces relative to viscous and capillary forces, the dewetting process is not a simple time reversal of the spreading problem, where a droplet undergoes a smooth sequence of spherical cap shapes as it relaxes from an out-of-equilibrium droplet shape toward a film configuration.

This is because the mechanism driving the process stems from the local relaxation of the interface close to the contact line. Simulations show that whether the initial film has an initial spherical cap shape or a slab shape, its initial de-wetting is not a sequence of spherical cap shapes.

It also shows that the de-wetting behaviour observed in the experiments is not specific to the liquid chosen, and so have wide applicability. It is hoped that this will inspire further studies on strongly distorted droplets undergoing a de-wetting process and where tuning of the solid-liquid interactions can lead to better control of the retraction speed of a liquid film.

– The writers, Andrew M. J. Edwards, Rodrigo Ledesma-Aguilar, Michael I. Newton, Carl V. Brown¹ and Glen McHale, are researchers at Northumbria University and Nottingham Trent University.

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The essence of modularity

One of the impediments to standardisation and cost efficiency in modular kitchen manufacturing is 'customisation'. Mr. Sunil P. Rao, Marketing Director for Hyderabad-based 'Kitchen By Design', tells *WoodNews* what it takes to help the customer (and industry!) understand the essence of modularity and its benefits.

Talk about "modular kitchens" and you have as many views within the industry as you will hear from the expanding market in India. Although such kitchens first made their entry into India three decades ago, the demand and supply sides have varying views on standardisation, customisation, modularity, scalability, space and cost efficiencies.

Among the early converts in India to factory-made, scientifically designed kitchens was Hyderabad-based Linus Consultants Pvt. Ltd. The founder partners – Mr. Christopher Hartnett (Managing Director), Ms. Samia Ali Khan (Director-Design) and Mr. Sunil Rao (Director-Marketing) – launched the brand, Kitchen By Design (KBD), in 1999.

KBD started off as a representative of Mr. Snehal Vasani's Kitchen Grace; and a year later began importing from Europe's largest kitchen supplier, Top Form (Eurokit) of Italy. These were flat-packed carcasses and shutters that were assembled and delivered on-site to customers' homes in a fortnight, according to Sunil.

KBD went on to represent some of the finest Italian kitchen manufacturers, such as Record Cucine and Bloch Cucine, to suit a variety of customers, mainly from the middle and upper-middle classes. Sunil says the aim was to provide Indian homes with a wide range of modular kitchens at par with international standards, designed for comfort, functionality, dimensional flexibility and aesthetics.

Plywood vs PB

However, going by the Indian propensity for wet cooking and using water generously, designers and engineers at KBD tweaked the kitchens to incorporate steel sink carcasses and PVC skirting. Sunil says KBD has been using only excellent quality high-density particle board, including MDF, in the place of plywood.

"Earlier, we used to insert PVC caps for all shutter screws and hinges: in the rare case that a screw or hinge gave way, our engineers only had to replace the caps and screw on the hinges without having to drill another hole," he says.

Since its inception as a brand, Sunil states, KBD has been using Hettich fittings and accessories for their functionality and dependability. There

are many other ways of protecting woodwork in kitchens:

- Use MS powder-coated or stainless steel sink carcasses in the wet areas, especially where vegetables and utensils are washed
- Ensure kitchen counter-tops have a groove to drain water away from carcass and shutters
- Use water-proof PVC skirting under all storage areas to avoid moisture affecting the kitchen
- Provide drip trays for wire baskets and cutlery storage.

On the comparison between plywood and particle board, Sunil notes that there is little awareness among the end users, who generally depend on contract carpenters. "The carpenter is not usually well-versed with the latest technology or the best materials. He has a mental block and is happy with what is already familiar to him. Moreover, a carpenter bills his customer on hours of labour – the longer he takes to finish the job the more he charges!"

From his experience Sunil believes that machining and finishing on particle board is far superior to that of even machine-laminated plywood. At best, plywood can be used in protected areas under granite counter-tops. "Most plywood manufactured in India is not properly calibrated, or even pre-laminated," he adds.

Expansion mode

By the year 2003, KBD entered the home furniture segment in full, designing and manufacturing panel-based wardrobes, beds, living and dining room furniture from imported particle boards. It has also tied up with the US-based Stanley Chairs, Fama Sofas and Gamamobel of Spain and Lestro from the IMAB Group in Italy. It represents Living Spaces from New Delhi for moveable furniture (primarily living, dining and bedroom furniture).

Positioning itself as a one-stop-shop for all home furniture, KBD offers solutions from as little as Rs. 4 lakh to Rs. 15 lakh for an entire house. Its customers are mainly employees from government, public and private sector undertakings, as well as yuppies who buy residential accommodation early on in life.

KBD has designed and installed modular kitchens in nearly all major cities across the country, through its showrooms in Chennai, Kochi, Bengaluru, Mangaluru,

Pune, Mumbai – and even as far as Gurugram, Delhi and Shillong!

"However, our franchising plans did not go far," says Sunil, recalling that it was not possible to hand-hold some of the franchisees. "A franchisee has to have a business vision and dedication to operations. He has to be proactive to market changes and self-driven, all of which was not forthcoming."

In the year 2000, a year after its launch, KBD averaged 30 kitchens per month. ▶





Now it is doing 15 units per month, but not counting the projects (apartments and villas) it executes. "The value of business has gone up," Sunil points out, "And we are also manufacturing wardrobes and living/dining furniture."

He admits the kitchens market has fragmented, with more than 100 manufacturers in Hyderabad alone. "But the volume of business and value of manufacturing is growing exponentially," he adds. "The only people to be adversely affected are the unorganised, semi-skilled carpenters."

Design & styles

A family-focused kitchen is designed to assist in cooking and dining for not only grown-ups, but also children, keeping in mind their convenience and safety. For someone who loves to cook, however, a fully functional setup with plenty of work space would be essential.

For those used to entertaining guests at home frequently, it would make sense to incorporate wine chillers, larger refrigerators, warming drawers, and ice- and soda-makers. Such a kitchen would also have to cater to informal and comfortable seating.

Sunil also speaks of the "showpiece kitchen", one that is not for exhaustive cooking, but a space that looks classy and shows off your aesthetic taste. Such a kitchen caters to merely preparing

beverages, heating up pre-cooked food and serving them. "Mind you," Sunil adds, "such kitchens are not a figment of anyone's imagination; more and more of my clients are demanding them!"



Mr. Sunil P. Rao of Kitchen By Design

Technology is playing a large part in the design and layouts of modern kitchens, especially so far as push-to-close, soft-close, inbuilt lighting, variety of drawers, storage solutions and functional fittings are concerned. "Sure enough they are differentiators. But, just like matt or gloss finishes, these options come at a higher price point," Sunil notes.

However, clients are demanding more

practicality and functionality; so wall-mounted storage spaces are giving way to more base-level storage and tall units. In fact, built-in appliances are now de facto standard in such kitchens: dish-washers, food processors, oven, crushers, hobs and chimneys.

"The expensive ones are optional – wine chillers, microwave devices, or warmer drawers – but we make provision for fitment at a future date," Sunil adds.

Trends & finishes

Dining rooms are fast becoming redundant in India, with island kitchens becoming more popular. Sunil declares, "Kitchens are becoming the nerve centre in most of our homes." And it is not just about more men taking an interest in cooking.

There is what he calls "YouTube cooking" and fancy cookery shows catching the imagination of consumers of food across all ages. He is not at all surprised when some of his clients demand a television/cable or Internet connection in the kitchen – for themselves and for the bai (domestic help)!

So far as finishing goes, Sunil says, "In India we don't have seasons of colours and finishes. But we still have a wider palette of 40-odd colours that can match the rest of their home decor." Instead of a bright colour for the entire kitchen, only a highlight might do the trick.

Isn't the Indian consumer already spoilt for choice? "We always want more," Sunil smiles. Whenever a client makes excessive demands, he thinks of the 'honeymoon period'. He wouldn't mind giving him/her a bright red or pink or black. But he nudges them to ponder if they would love it the rest of their lives.

"The client should love the colour and finish of his/her choosing each early morning. It should not be chosen just to impress the guests at the griha-pravesh (house warming ritual). That would be the clincher!" he says.

– KBD also provides exhaustive support to consulting professionals such as architects and interior designers with their modular kitchen projects: from conceptualisation, measurement, detailed drawings, 3D imagery to installation and commissioning. Check out www.kitchen-by-design/layoutpro.htm.

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NextGen acrylic takes big strides

What's the difference between this 5-layer technology and conventional products available in India?



By Pankaj Chandak

We know that all that glitters is not gold. Similarly, all high-gloss 'acrylic' surfaces are not the same. There's more to acrylic than just the gloss. In this article, we will literally try to scratch the surface of acrylic laminates to understand more about them.

High-gloss acrylic laminates are in vogue to make a variety of furniture like kitchen shutters, wardrobes, TV units, tables, display units, etc. Acrylic laminates offer a variety of advantages compared to conventional laminates or any other polymer material. Some of the prominent features of acrylic laminates are:

- **Gloss:** Acrylic laminates have one of the highest levels of gloss (→90%) as compared to any other material.
- **Mirror Finish:** It is possible to have mirror finish furniture made using acrylic laminate and flat lamination technology.
- **Formability:** Acrylic laminates can be post formed, thus providing a seamless edge to furniture.

However, the current quality of acrylic laminates available in the market have some serious performance limitations. For example, some of them have extremely low scratch resistance. Further, as acrylic is glossy, even minor scratches or abrasions get amplified and thus ruin the complete look of the furniture.

Low ultra-violet (UV) resistance tends to change its surface colour after some time. Low chemical resistance of ordinary acrylic makes it lose its sheen when exposed to chemical solvents or aggressive household cleaning solutions.

Back painted acrylic and PVC laminated acrylic have this issue of colour variation, thus providing a 'mosaic' finish instead of a classy consistent look. Ordinary acrylic, when exposed to slight heat, loses its gloss and other surface properties.

Next generation

The good news is that, because of advancement in polymer extrusion technology and surface treatment processes, we now have the next generation of acrylic which is far superior than the conventional acrylic laminates. There's more: this next generation of acrylic surface is now readily available in India.

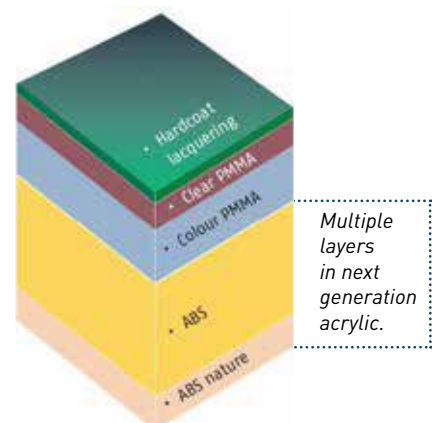
So what is this next generation acrylic? How does it overcome the limitations of conventional acrylic? While conventional acrylic is 'pure' polymethyl methacrylate (PMMA), or in some cases PMMA top layer co-extruded with acrylonitrile butadiene styrene (ABS) bottom layer. As ordinary acrylic is soft, the surface gets scratched easily, thus ruining the look of furniture.

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has overcome this major limitation.

Instead of two layers, the laminate of acrylic panels (such as OpuLux) is made by sandwiching five different layers, each layer playing an important function in enhancing the overall functionality and the quality of the panel.

The bottom two layers of this sandwich are extruded using ABS, which provides the flexibility and formability to the laminate. The third and fourth layers, which is made of PMMA, provide the gloss and stability. The top layer in this co-extruded sandwiched sheet is a hard coat lacquer, as seen in (Figure 1.)



What is so special about this proprietary technology is that the top hard coat lacquer layer has been successfully applied on acrylic without affecting its colour and without deteriorating its gloss. The advantage of the hard coat lacquer is that it increases the surface hardness of the acrylic panel by a huge factor.

The surface of the next generation acrylic panel OpuLux is so hard that it can withstand scrubbing up to 20 rotations of steel wool Type-0 with 1 kg load without any scratches on the surface (Figure 2).



Performance after being scrubbed with steel wool Type-0.

An ordinary acrylic surface is completely damaged when subject to the same level of abuse. This increased surface hardness makes the furniture made using next generation acrylic panel scratch-proof within defined tolerances.

New applications

Areas of application that were unthinkable for acrylic have now opened because of this technological breakthrough. Furniture for horizontal applications like dining table tops, office and conference room tables, centre tables, point of sale furniture, etc. can now be made using OpuLux acrylic panels.

Scratches, which used to occur on ordinary acrylic furniture during cleaning and maintenance, are a thing of the past. Because of the hard coat lacquer, no special polish is required to maintain the surface of furniture made using next generation acrylic panel.

Indian kitchens are full of spices: while they are aromatic they also have chemical properties that can harm

ordinary acrylic surfaces. During manufacturing of furniture in a factory, workers tend to use solvents like turpentine and acetone to clean semi-finished furniture. Ordinary acrylic surface gets easily damaged when it is scrubbed with a solvent.

New generation acrylic panels easily overcome this limitation. The surface of OpuLux has extremely high chemical resistance, retaining almost all of its surface properties even after exposure to acetone for 1 hour (Figure 3).



PETG performance after being exposed to acetone for 1 hour.

This feature makes it extremely suitable for use in kitchen and bathroom furniture. Because of increased chemical resistance, furniture made using OpuLux can be cleaned with the standard household cleaners and does not require any special expensive polish for maintenance. This also reduces the cost for maintaining the furniture.

Colour consistency

India is blessed with sunshine for almost the entire year throughout its geographical expanse. Although sunlight is good for humans, it is not so good for ordinary acrylic because the UV radiation from sunlight attacks ordinary acrylic and results in surface degradation. This happens because ordinary acrylic is not manufactured to withstand the detrimental effects of UV radiation.

Surface degradation due to UV radiation may result in change of colour or cracks developing on the surface of the acrylic laminate. An ordinary acrylic surface tends to turn yellow after being exposed to light.

OpuLux, on the other hand, is UV-stabilised by using some of the best stabilisers available in the market. Simulated results show that there is

virtually no colour change when the new generation acrylic panels are exposed to xenon light for more than 500 hours!

Colour variation is an acute problem found in back-painted or PVC-laminated acrylic. Because of this limitation, it is practically impossible to maintain the same colour between batches. It is a nightmare for manufacturers when they have to replace a back-painted or PVC-laminated acrylic!

However, because of a proprietary manufacturing process that uses state-of-the-art master batches and extremely stringent quality control systems, the next generation acrylic panels have complete colour consistency between batches.

It is a very common occurrence that an ongoing project sometime may require a replacement of installed shutters for a multitude of reasons. No end-customer would accept a replacement which has even a slight colour difference with the rest of the shutters. Therefore, to have assurance on colour consistency is a huge benefit for the original equipment manufacturer.

Heat resistance

It is hard to find an Indian kitchen which doesn't have a stove. As most of the acrylic laminated panels are used in kitchens, it is very important that they are designed to be able to withstand the extreme temperatures prevalent in kitchens.

OpuLux is designed to withstand dry heat temperature of up to 75-degrees C and a wet heat temperature of up to 70-degrees C. This makes it extremely suitable for Indian kitchens!

The next generation acrylic panels not only overcome limitations of conventional acrylic, but come loaded with tons of features that enhances the functionality and the aesthetics of furniture. In addition to being feature-rich, OpuLux also proves the adage that it is not prudent to be penny wise and pound foolish.



—The writer is Managing Director of Mumbai-based Prestige Interio, which manufactures OpuLux.

A dash of lighting to spice up cooking



The Indian consumer market is slowly becoming receptive to innovative home interior trends. This can be attributed to the increased number of international players operating now in India, offering international trends in home fittings and solutions, as well as to the fact that many Indians are now increasingly travelling abroad on work and leisure trips and gaining exposure to global trends.

As a result of this, many stigmas and stereotypes in home and kitchen fittings and materials are slowly giving way to contemporary trends which are sustainable, well-designed and high on functionality.

Today, the kitchen is not merely seen as

a hub of cooking and cleaning activities. It has gradually transited into becoming the focal point of families where, besides cooking, small family meals are served, homework is done, friends are entertained and so on.

While ergonomics in a kitchen is attributed to good kitchen designing, functionality is a direct outcome of kitchen fittings. Functionality is a growing trend in its own sphere – functionality is dynamic and there is no limit for innovation in ‘functionality’.

Lighting in kitchens serves a dual role – it can be decorative (accent lighting) to enhance expensive crockery and glasses showcased in your glass cabinets; and it can be effective (task lighting) to

facilitate kitchen chores like cleaning, chopping and cooking.

Decorative LED lighting in cabinets, display lights, LED strips are some ideal solutions to enhance the overall colours and design in the kitchen. Under-cabinet lighting, recessed lighting within drawers and overhead cabinets are ideal for providing effective luminance execute every kitchen chore to optimum detail.

Contemporary solutions

From the initial and age-old preferences of marble and granite, home owners are now looking at innovative materials like quartz surfaces for kitchen counter-tops. Unlike marble or granite, quartz is an engineered stone that can be rendered in many colours and textures while



Accent lighting enhances expensive crockery and items showcased in glass cabinets.

giving the same amount of tenacity and endurance of conventional marble or granite.

With increasing urbanisation and international trends sweeping the Indian market modern appliances are gaining predominance. These come with convenience in operations with high levels of automation and precision.

Another wave of novelty that has hit the market in the last five years is the built-in appliances concept. However, the decision to buy built-in appliances is on a slow yet steady upscale. The main reason for this is that the integration of built-in appliances in an existing kitchen requires some amount of back-work, especially if the kitchen is not modular.

On the other hand, in the case of designing new kitchens, this process is easier. The installation of built-in appliances is largely dependent on the modularity of a kitchen; it follows the same designing principles of modular kitchens where the cabinet heights and depths are standard while the width can vary as per customer requirements.

Self-closing drawers, electrical opening systems for cabinets (where shutters or drawers open at the slightest nudge), lift-up systems for overhead cabinets, tall units for grocery and bulk storage, corner solutions for maximum space utilization are some trends that are

gaining prominence in the spectrum of functionality.

Hafele is a complete solution provider for kitchens and over the last decade it has established a significant presence in the market as a 'preferred kitchen partner'. New concepts from Hafele that one should look out for are the new Aventos HK-XS lift system from Blum for small overhead cabinets; the new VSA

pull-out storage unit from Vauth Sagel; new series of Blanco sinks and faucets; and the Darwin sliding system for maximum space optimization, unique functionality and an elegant.

– Courtesy: Hafele-India

Task lighting facilitates chores like cleaning, chopping and cooking.



A 'tower' in the kitchen ensures space

Kitchens are subjected to intensive daily use and, keeping this in mind, fittings manufacturer Blum has come up with several ideas to ensure that a kitchen can withstand these rigours. Good work flows, enough work space and top quality motion features that characterise a 'Blum kitchen'.

The space tower larder unit in the kitchen is a Blum innovation that can be accessed with impressive ease, provides ample space for provisions and can be tailored to a customer's individual needs. It allows a user to store a large number of items and makes the best use of the space available in the kitchen.

All of the fittings used for space tower come from the standard range. This allows the interchange of box systems, and the same wooden drawers can be used in various models. This makes it possible to achieve a uniform appearance across the whole kitchen but still leaves plenty of flexibility to individually design the cabinet interiors.

Some the practical uses of the unit are:

- **Flexible access**
It has full extensions that can be opened individually and provide a good view of stored items, which can be accessed directly from three sides. Removal is carried out conveniently from above. The light operating forces make the larder unit incredibly convenient to use.
- **Flexible storage**
Makes best possible use of the storage space available. High, closed drawer boxes ensure that provisions are stored securely, while flexible inner dividing systems can be used to organise and securely hold stored items. Each pull-out can handle loads up to a total weight of 70 kg.
- **Flexible design**
Allows for flexibility in height, width and depth and can also be adjusted to meet individual storage space requirements. In other words, this practical larder unit makes full use of the space available, down to the last millimetre. It can be customised further with a range of motion technologies.



- **Shelf and inner drawer visibility**
In high cabinets, a practical shelf is at the highest level and, therefore, clearly visible from the front. The inner drawer underneath makes it easier to access stored items from the side.
- **Flexible positioning**
The option to position the inner pull-outs at different heights within the cabinet guarantees that even items, such as bottles or cereal boxes, will not be too tall to store.
- **Hinge above the lowest pull-out**
When combined with the ClipTop 155° hinge without door protrusion, optimal use can be made of the cabinet width. If the hinge is mounted above the lowest pull-out, it can be inserted right at the bottom, turning even those last few centimetres into usable storage space.

PANEL GLUING machinery

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Ebco's drawers grab attention



Ebco has been into hardware for over 50 years and is today one of India's leading manufacturers in the furniture hardware segment. It has partnered with world renowned brands and its strength in this segment includes a broad product range from world-class specialist brands that have best-in-segment quality standards with cutting edge features.

Over the past two years, the company has given a special focus to the kitchen hardware and accessories segment. Its product range spans from drawer slides, hinges, computer furniture fittings, joinery, wardrobe fittings, furniture locks, to kitchen hardware systems and accessories, window and door fittings, architectural fittings, LED lights and more.

Keeping in mind that the Indian kitchen is full of utensils, cookware, dishes, cutlery, and spices, and is the only place where each and every aspect has to be utilized wisely, the company has focussed on making it clutter-free and help make a users life simpler and easier.

When it comes to Ebco's kitchens or wardrobes, drawers are the place that we often tend to turn a blind eye to. The Pro-Motion Slim series drawer system from Ebco is apt for any kind of interiors.

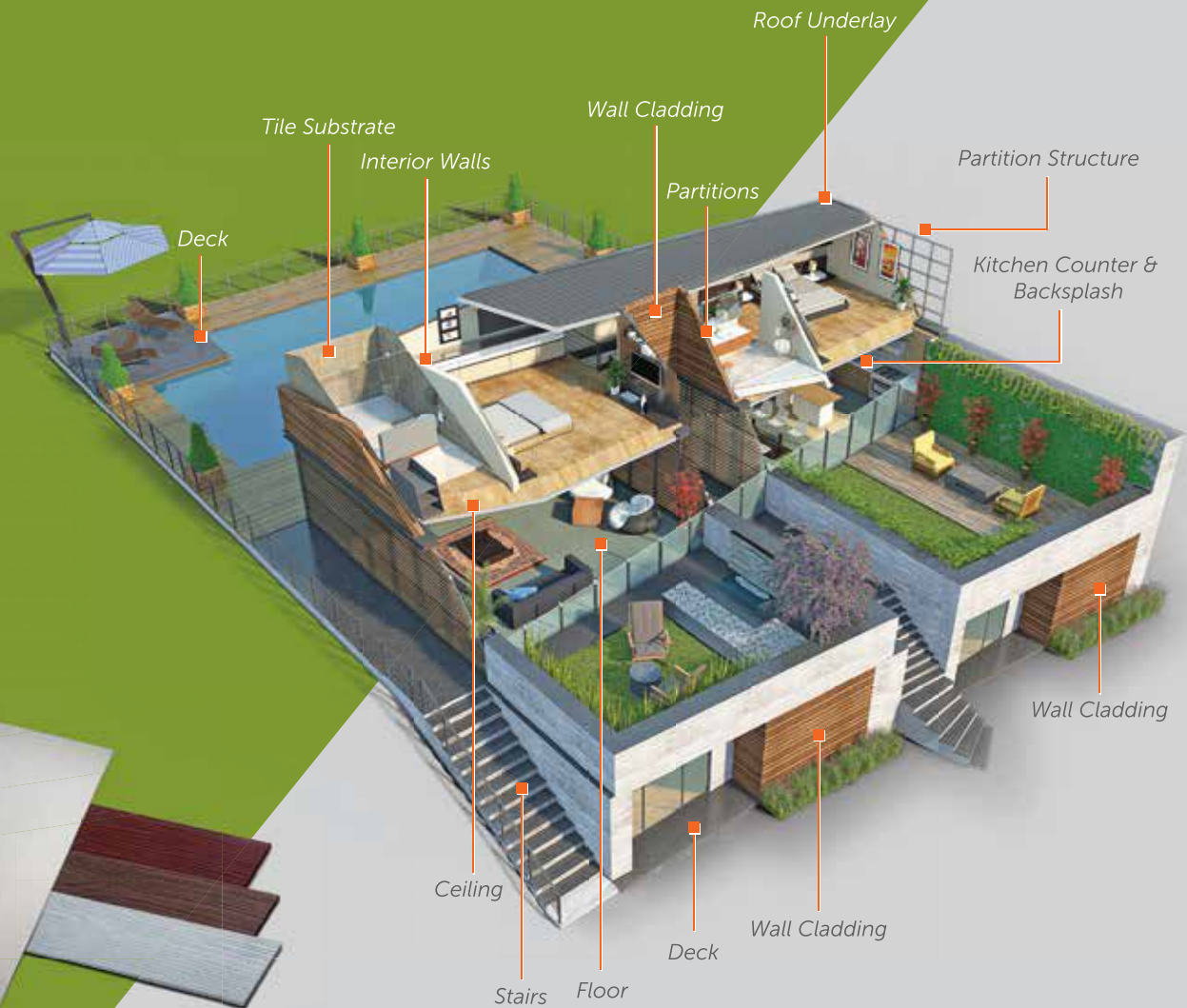
This drawer system's sleek and straight line design gives elegant and stylish touch to any kitchen. Its internal drawer organisers are suitable for customised storage and are an ideal solution for a hassle-free kitchen.

Special Features

- Unique and unparalleled drawer, of which two sides are in metal
- Internal drawer organisers as per convenience
- Inserts include cutlery trays, plate organisers and container holders
- Easy access to the drawer
- Sophisticated drawer slide mechanism with soft close system
- Available in the two different finishes and heights
- Suitable for kitchens, living rooms, bathrooms, bed rooms and office furniture.



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Drawer organisers



Organising the kitchen successfully makes life simpler. When it comes to getting organised, it is the little things that can make all the difference. A muddle in the kitchen clutters not only the worktop but also culinary creativity.

It is, therefore, desirable to have things out of the way. Easy accessibility and ergonomics are ensured with the various ranges of sleek and elegant drawer organizers showcased by Hafele. These drawer organisers include elegant and high-value inserts like cutlery trays, plate, container and knife holders, etc.

- Bamboo is an ideal material for drawer organisers due to its hard wearing and durable quality. Moreover, it is a naturally water-repellant material that helps you keep the kitchen dry and fresh, always. These inserts (for drawer widths of 600 mm and 900 mm) have pre-fixed divisions and come with matching accessories like knife holder, foil cutter, etc.
- Walnut wood and brown leather inserts: Cutlery trays with a sophisticated leather finish at the base add to the premium of a kitchen. Available for drawer widths of 600 mm and 900 mm, these inserts can be accompanied with walnut wood accessories.
- Bamboo and aluminium inserts: These cutlery inserts exhibit a unique combination of bamboo and aluminium, and come with adjustable aluminium dividers, allowing

flexibility in cutlery storage organising needs. These stylish inserts are versatile and are suitable for drawer width of 600 mm and 900 mm. They can be teamed up with complementary accessories.

- American walnut wood inserts are made of american walnut, which not only makes them look attractive but is also strong, fungal-resistant and do not shrink or swell easily. Accessories include plate organisers, cutlery trays, container holders, knife holders, aluminium holders and drawer inserts. These can be taken all in one drawer system or can be customised with the combinations required.
 - Ash and oak veneer inserts allow absolute freedom in the configuration of drawer accessories. With a special system of boxes of different sizes, drawers and pull-outs can be perfectly equipped as required. By using the anti-slip mats on the drawer bottom there is no need to fill the drawer completely with inserts. The system only requires a few components and offers functional accessories for everyday needs.
 - Cuisio cutlery tray is an elegant and high-value insert system for drawers. It has an inspiring material mix of translucent plastic trays and aluminium connecting profiles. Due to its sophisticated clip connection, it flexibly adapts to different drawer widths. Each tray can be individually
- equipped with adjustable dividers, providing individual freedom to organise drawers to one's requirements.
- Scoop-II has flexible slot-in divider system that allows arrangement of the compartments according to personal requirements in no time at all. The basic models of the cutlery insert can be expanded by adding to them from the extensive range of accessories.
 - ErgoTop presents itself as an aid in promoting tidiness and a well organised storage space, not only by combining functionality and modern design but following the principles of ergonomics. They are made for cabinet width of 450 mm, 600 mm and 900 mm.
 - Vario cutlery tray, with its clean minimalistic lines, fulfils every requirement of a modern storage organisation system. These cutlery trays have a perpendicular design and fit into cabinet widths of 450 mm and 600 mm.
 - Premiere racks are collections of frames and boxes. This range offers
 - Perforated bases for drawer widths of 600 mm, 900 mm and 1200 mm



- Vertical pins to fix into the perforated bases
- Removable big and small boxes
- Dish draining tray with accessories
- Elastic straps to create support with help of vertical pins.
- Premiere cutlery can be used for drawer widths of 450 mm, 600 mm, 900 mm and 1200 mm. The following accessories can be used with the cutlery trays:
 - Wooden knife holder
 - Stainless steel film dispenser
 - Wooden cutlery tray divider
 - Stainless steel and glass spice tray.



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Hettich's convenience of wire baskets



With a plethora of options available in the market today, homeowners are spoilt for choice when it comes to equipping their kitchen with the right kind of appliances, fittings and accessories.

But among all the new innovative products, one that has stood the test of time and has been appreciated as the perfect accessory for an organised kitchen is the wire basket. This

innovation provides a clutter-free and stylish storage system option for the user.

To fulfil the emerging need for a drawer system that has a mix of aesthetics and functionality, Hettich has now introduced the CargoPlus drawer system. This unique amalgam of the drawer system and versatile nature of wire baskets offers greater flexibility and gives the look, feel and usability of both the drawer system and wire baskets.

Features

- Thick wire mesh for better load capacity
- Chrome plated wire mesh prevents rusting
- Compatible with InnoTech and Atira drawer systems
- Easy assembly and fast installation
- Cost-effective solution for kitchen drawer
- Multiple combination of plate/cup or saucer/thali for Indian needs
- 10 years warranty against rusting

CargoPlus plain wire basket

- Available in three different sizes: 450 mm, 600 mm and 900 mm (width) and 70 mm and 144 mm (height)

CargoPlus with plate inlet

- Can take up to 11 regular saucers for 450-mm carcass width and 17 regular sized saucers for 600-mm carcass
- Less clutter noise as plates touches inlets at two places
- Available in 144 mm height
- Options of basket with inlets also available for thali, jars, cup-saucer, etc.





Automatic Panel Saws



Interior Track Saws



Panel Saws



Table Saws



Portable Edge Banders



Manual Edge Banders



Multifunctional Trimmers



Automatic Edge Banders



Hot Press



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Spindle Moulders



Surface & Thickness Planers



Sanders



Combination Machines



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Jigsaws



Band Saws



Dust Extractors



Wood Turning Lathe



Hand Planers



Carpenters Square



Cordless Screw Drivers



Drywall Sander

Jai products can also be used to make classy modular kitchens

Jai Industries offers an unparalleled array of products that include woodworking machinery, panel processing machinery and electric motors. All the machines are manufactured using premium grade metals and electrical components.

The company uses advanced technology and quality machines to ensure robust construction, unmatched reliability, high durability and proven performance. The machines have application in heavy duty processing, construction, automobile and electrical industries.

This world class panel process machinery, including the first homemade Euro- precision Pride of India range, is produced by the company to suit Indian working conditions.



Panel Saw (manual) J-3200.in Plus

This saw is used to cut the panel board to the required sheet size ranging from 8x4 ft to 9x6 ft. Panel saws are suitable to cut chip free all kind of laminated chipboard and MDF, HDF & panels. The saw displays maximum strength and rigidity with other value added features.

The heavy duty precision sliding table with linear bearing has been developed with advanced technology with multi-chamber system for maximum rigidity of the double roller carriage.

Salient features

- Sturdily built heavy duty m/c that suit Indian working condition for precise cut with burr free cutting
- Lifting and tilting of saw unit by hand

wheels both located in front for more convenience

- Scoring saw precision lever mechanism for manual adjustment controls of the scoring saw with memory reference stop
- Electronic digital readout of saw unit tilt
- Anodized aluminum rip fence with sliding system on heavy round bar for parallel cutting up to 1250mm. Fine setting mechanism allows for precise measurements for parallel cuts.
- Allows for easy and quick saw-scoring blades change.
- The entire saw unit is placed on heavy duty cast-iron trunnion.
- Saw unit vertical movement on precise round guides ensures smooth operation. Its closed structure guarantees high rigidity and a vibration free operation.
- Scoring pin with memory reference stop for rapid re-position of the saw to a previous setting
- Extra second support for larger sheets
- Rip fence with fine setting for precise positioning



Post Form (Auto) J-2400.in

This post forming machine is used for curving the laminate on the edges according to the profiles shape. The

special pneumatic gauge, operated by 2 cylinders for repetitive jobs setting, helps in getting optimum result. Other models are available and can be customized according to production levels requirements. The machine allow for automatic and error-free laminating of the profiled panels that is easier and quicker.

Salient features

- A forming rail that enables 8 pneumatic cylinders to apply uniform pressure on work piece for effective bonding of laminate
- Ground and hard chrome plated heater bar for smooth operation and long life
- Backstops facility that provides support for long and odd shape jobs
- Allows for the lamination of more than one small board at a time
- Facilities for dry runs and manual runs provided for settings and trials
- Automatic post-forming cycle with variable heating time, stop and go time and holding time, which can be adjusted to the profile
- Driver motor with brakes provided to avoid slippage of rotary motion of the heater frame
- Mechanical drive control by limit switch
- PLC based control panel as standard feature, with a capacity of 20 programmes.
- Special pneumatic gauge, operated by 2 cylinders, for repetitive job settings.
- Equipped with a pressure clamp that has a rubber pad, for better grip on work piece, to avoid damage.



J-3400.in spindle moulder with sliding & tilting facility

This machine is used to give form to the edges of materials such as chipboard, MDF panels or boards. Mainly required for preparing moulding and making profiles like bull nose, duck nose, and half round for post forming.

Salient features

- A side rip fence of aluminum, which is adjustable
- Clamping for tenoning work
- Ground and electronically balanced spindle for vibration free operation
- Easy and convenient system for locking of spindle shaft
- Spindle driven by motors through V – belts, housed in sealed bearings that ensure minimum maintenance
- 3 - Spindle speeds of 5000/ 7000/ 9000 rpm, depending on tool diameter
- 9000 RPM speed is to be utilized for routing work only
- Dust chute is provided on fence assembly for dust evacuation

An optional feature is the Auto feeder for automatically feeding the work piece. This feature can also be provided on the Wudpro-Max series Tilting Arbour Spindle Moulder S-n-T or can be bought separately. Auto feeding of the workpiece is a safety feature that improves production, reduces cost and ensures better finishing with accuracy.



Roller Press J-1200.in (auto)

This is used to cover laminates, papers, acrylics, veneers, PVC foil on the materials such as MDF, particle board/ plywood

Salient Features

- Hard rubber rollers and four heater elements, that ensures perfect fix of laminates on board
- Easy accessible mobile control panel at machine in-feed provides convenient operation of the machine
- Motorized up/down movement for thickness adjustment.
- Provision of hand wheel for manual setting of workpiece thickness
- No waiting period, no limit to the work piece length and easy to use
- Consumes less energy as compared to other presses
- Adjusting roller speed and temperature is necessary for best results
- With its in-feed and out-feed wide conveyors, it becomes a continuous production system suitable for mass production



CNC Router J-1325 (A)

This is a higher quality CNC model that allows greater workability, with an ergonomically designed control panel

Salient features

- Taiwanese linear rail with high precision
- Heavy ball screw with high accuracy
- Cast steel structure that makes our routers more stable
- Auto lubrication that makes maintenance easier
- A convenient, separate control panel box allows flexibility and efficiency in

machine operating. Digital signal processing as the controlling system.

- Tool holding guide system ensures carry the CNC design commands with precision. This Auto-Sliding guide system allows great design flexibility
- An optional precision vacuum table at additional cost for vacuumed fixing and clamping of the workpiece to ensure steadiness during the entire routing operations

Additional technical details can be made available on request.



Vacuum Membrane Press J-1250.in (single door)

This press is used for applying a uniform lamination of PVC, decorative papers and veneer of up to 0.4mm on the top surface and borders on a flat and designed work piece having a smooth shape. It allows vacuum-lamination with high quality and maximum production.

Salient features

- Used for applying a uniform lamination of PVC, decorative papers and veneer of up to 0.4mm thickness on the top surface and borders, and on flat and designed work piece having a smooth shape
- Vacuum abnormality wrapping technology having single table
- Lamination of PVC foil on one side of MDF, particle board and solid wood
- Silicon membrane offered for veneer application
- Short pressing cycle
- Superior quality pump fitted in the machine for better performance
- Silicon membrane sheet is a standard supply with the machine
- One set of tray minimiser for optimum usage of work tray is provided along with the machine
- Additional trolleys can be ordered separately, while this is a standard feature in model # J-1102.in & J-1252.in



The Joway P-32 sliding table saw.

A smooth and tough sliding table saw from Joway

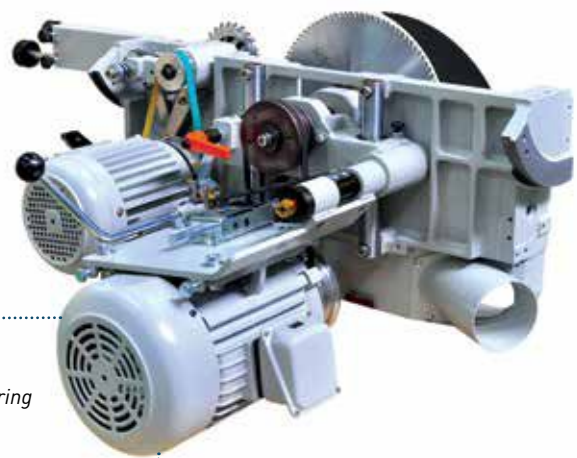
The nearly three-decade-old Joway Machinery Co. Ltd. is a leading Taiwanese manufacturer of woodworking machinery, with rich experience in manufacturing the sliding table.

The sliding table saw is a professional woodworking machine that allows the cutting and sizing of panels. The P-32 sliding table saw enables the user to work on kitchen cabinets, book shelves, coffee tables and even beds.

The Joway sliding table saw has four different models (by cutting length): the 1900, 2600, 3200 and 3800 mm. Of these the 3200 mm, or the P-32 model, is the most commonly used and is popular for its ability to cut through a 5x10-foot panel.

A Standard P-32 comes with following features:

- 7.5 HP main motor and 1 HP for the scoring motor with the main spindle speed of up to 8000 rpm.



The 7.5 HP main motor is supplemented by a 1 HP scoring motor.

- Each Joway P-32 is equipped with a 305-mm saw blade that allows it to cut a 100 mm height panel at 90° and 70 mm at 45°.



A full-size distribution panel makes operations easy.

- A 370-mm extension saw table and a 1300-mm cutting width device makes working smooth.
- The main saw height, blade tilting, scoring saw blade can be adjusted (+/- direction) with a slightly spin of the hand wheels.
- A mitre fence allows the operator to make an angled cut that is clearly shown on a digital display device.

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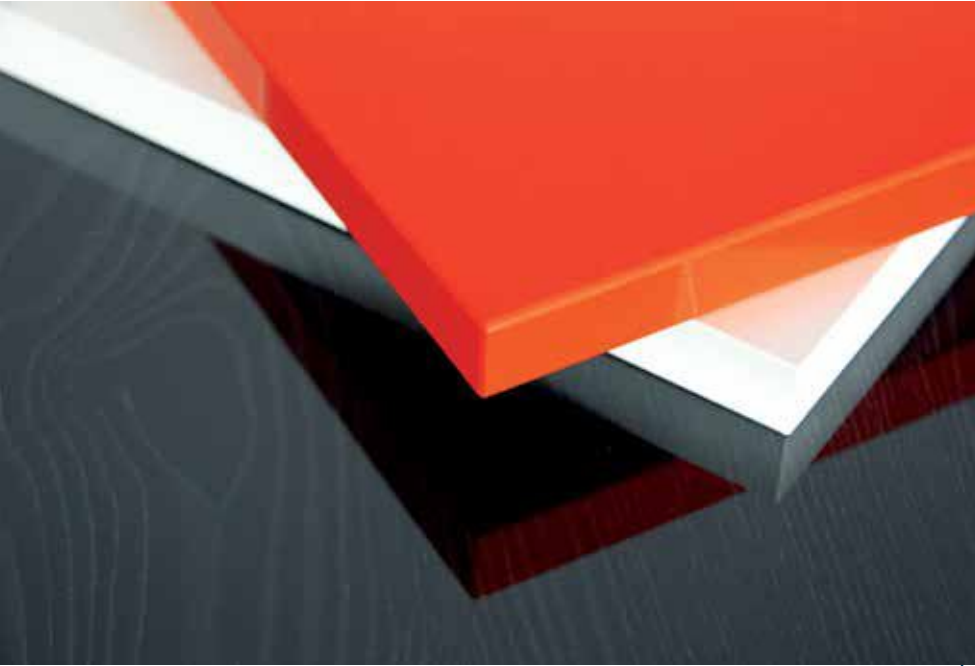
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Kleiberit makes 'zero glue line' the buzzword



The 707.9 PUR hot-melt develops a chemical bond with wood and panel, and can be only separated with excessive force.

When it comes to bonding, polyurethane (PUR) hot-melt adhesives are hard to beat. With "zero" or "invisible glue line" becoming a buzz phrase in the woodworking industries, this seamless look is more achievable than ever.

The advantage of PUR hot-melt adhesive systems is that they react with moisture from the material or working environment to be bonded - meaning that in addition to the physical effect through the hardening of the liquid adhesive, there is also an additional chemical reaction with positively influences the bond properties.

With regard to the bond properties or water and temperature resistance PUR hot-melts are hard to beat. Thermoplastic hot-melts for the edge banding of panels are typically based on ethylene-vinyl acetate (EVA), polyolefin (APO) or polyamide (PO) and build up bonding strength by the physical hardening of the liquid adhesive.

But these hot-melts seem unable to

fulfil the requirements for an invisible glue line on a permanent basis. Over time, environmental influences such as dust, household cleaners, humidity in the room and temperature changes penetrate the closed joints, causing even a minimal joint opening to stand out, depending on lighting conditions.

Advantage 707.9

However, this need not be the case. Modern adhesives from the previously mentioned thermoplastic are formulated for these requirements and cope with them, but only when proceeded under ideal conditions. There is no getting around this.

In this area, processors who have changed to PUR hot-melts definitely have the advantage. Here, Kleiberit's 707.9 offers a solution for the demanding requirements regarding glue line and bonding quality. The 707.9 PUR hot-melt is a classic in the world of invisible glue lines.

It has been widely used and trusted for

years and makes everything - from profile wrapping to edge banding and a wide variety of assembly bonds - possible.

The 707.9 is a reactive hot-melt which develops an extremely hard glue line. When correctly processed, it is also highly water-resistant. For this reason it is subject to the so-called rubber effect. This effect can be noticed when one carefully goes over the edge joint with the hand or a dusty, moist towel. The joint will appear somewhat darker owing to dirt or grease. This is especially impossible to avoid with lighter adhesives and panel materials.

Kleiberit's 707.9 PUR hot-melt, in addition to all mentioned benefits, develops a real chemical bond with the wood and the panel, which can be only separated with excessive force. Usually it is one of the solid materials which fails and the strong, invisible bond remains.

For more information, visit www.kleiberit.com.

No-glue-line proof in a perfect aluminium-edged corner piece (below) and bamboo kitchen shutter (bottom).



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Setting the correct ambience



Ebco, the furniture hardware specialist has, over the past two years, given a special focus to the kitchen hardware and accessories segment. Along with this product range they have also produce a range of LED lights that can be customised and used in the kitchen.

Lights have always been a captivating aspect for creating good ambience. Ebco's path-breaking solution, Luminor, is a perfect light diffuser that helps create beautiful lighting wherever it is used.

It uses a unique material that is highly flexible and can be applied on three dimensional structures where it diffuses the light homogeneously.

Special features:

- Creates customised length luminaries



Luminor's flexible design transforms into any geometric shape and is dot-free.

- Flexible design which transforms in any outline horizontal, vertical, diagonal or geometric
- Minimum radii of $\rightarrow 50\text{mm}$ can be achieved
- Dot-free uniform lighting reduces or eliminates the appearance of LED dots

- Seamless illumination
- Suitable for low and high power LED strips
- High power LED strips can be used with heat sink aluminium profiles
- Protection against dust, solid objects or moisture
- Makes profile cleaning much easier
- Self-extinguishing material.

This range of lights suits any type of décor (interior and exterior furniture); can be used for passageways, illuminating mirror edge and floors; ceiling, wall or cove lighting; exhibition and shelf lighting; or can be recessed under kitchen cabinets, retail shelves or displays.



WOODNEWS

WoodNews thanks the various companies that have submitted information. For any editorial submissions, please contact Mr. Dhananjay Sardeshpande, Chief Editor, at ghananjay@pdatrade.com. The information published in this, *Notes and News*, *Indiawood Products* section 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.

DOUGLAS FIR

BEAUTIFULLY STRONG



Straight-grained and moderately dense, Douglas fir is one of the most attractive and strongest of the Western softwoods. The wood has a slight rosy cast; the sapwood generally a light straw colour and the heartwood a deep russet brown.

Request your English or Hindi copy of our *Guide to American Softwood Species* by e-mailing your address to: india@americansoftwoods.com

Main uses

Its appearance is prized for joinery, paneling, cabinets, flooring, windows and cladding. Its strength and straightness make it the perfect high-performance timber for structural uses, such as trusses, framing, bridges and large heavy members.

Physical and mechanical properties

With a weight 540 kg per cubic metre, it has a high density, specific gravity and strength-to-weight ratio. Very stiff, with high strength values in bending, tension, horizontal shear and compression. Minimal shrinkage and swelling once seasoned.



People you can do business with
www.AmericanSoftwoods.com

Futuristic panels from Ornare



Planned interior design today is often customised and reflects the client's intimate sense of style, comfort, confidence and functionality. While designs are skillfully balanced with craftsmanship and modern woodworking, materials elevate cabinetry and furniture to capture a vibrant style in the most functional spaces.

Modern interior design has given rise to a requirement for high gloss finishes that show an appreciation for clean lines and surfaces. To meet this rising demand, Ornare has introduced HD Lux high-definition lacquered panels that are inspired by modern European furniture and cabinetry design.

These panels are ideal for several interior design applications and allow the same thoughtful, sleek interior design within residential and commercial applications.

Glossy, strong, and more affordable, the panels are produced using environment-friendly E1-grade MDF. Acrylic lacquer coatings are applied on to the panels utilizing a patented base primer

undercoating that provides a highly abrasion-resistant finish.

The brilliant degree of gloss is → 91 gloss. The seven-step coating process culminates in a highly protective film that offers a high level of scratch resistance. The resultant advantages are panels that are durable and resistant to moisture and less prone to damage when processing and installation.

Thanks to the completely new finishing process, this product is far ahead of the similar products available in the market and connects the high quality look and feel of modern surfaces with economy and ease.

Remaining ahead of contemporary architectural trends, the company offers an unparalleled selection of durable, stunning finishes that are rich in depth and colour.

Reflecting the hues of nature, the selection of brilliant solid colors, exotic metallic and subtle stone patterns provide an opportunity for designers to make an artistic statement and enhance the value of the final product by brightening interior spaces and

furnishings and providing it with life and character.

With a high-gloss lacquer finish, HD Lux panels come in 18-mm thickness and are ideal for creating decorative walls, architectural elements, kitchen cabinetry, closet organizers, offices, and for several other applications.

FEATURES

- Coated with 7 step high-gloss acrylic lacquer
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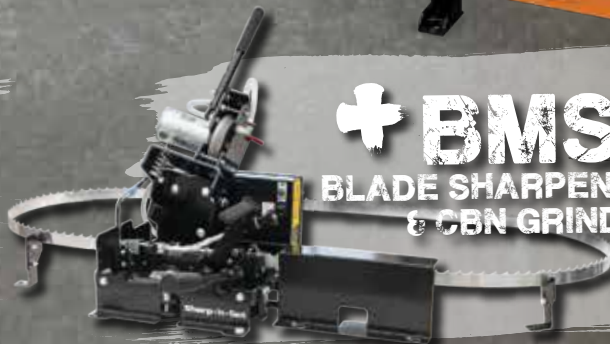
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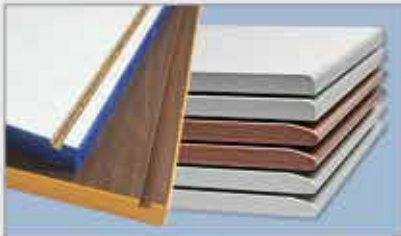
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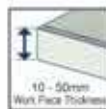
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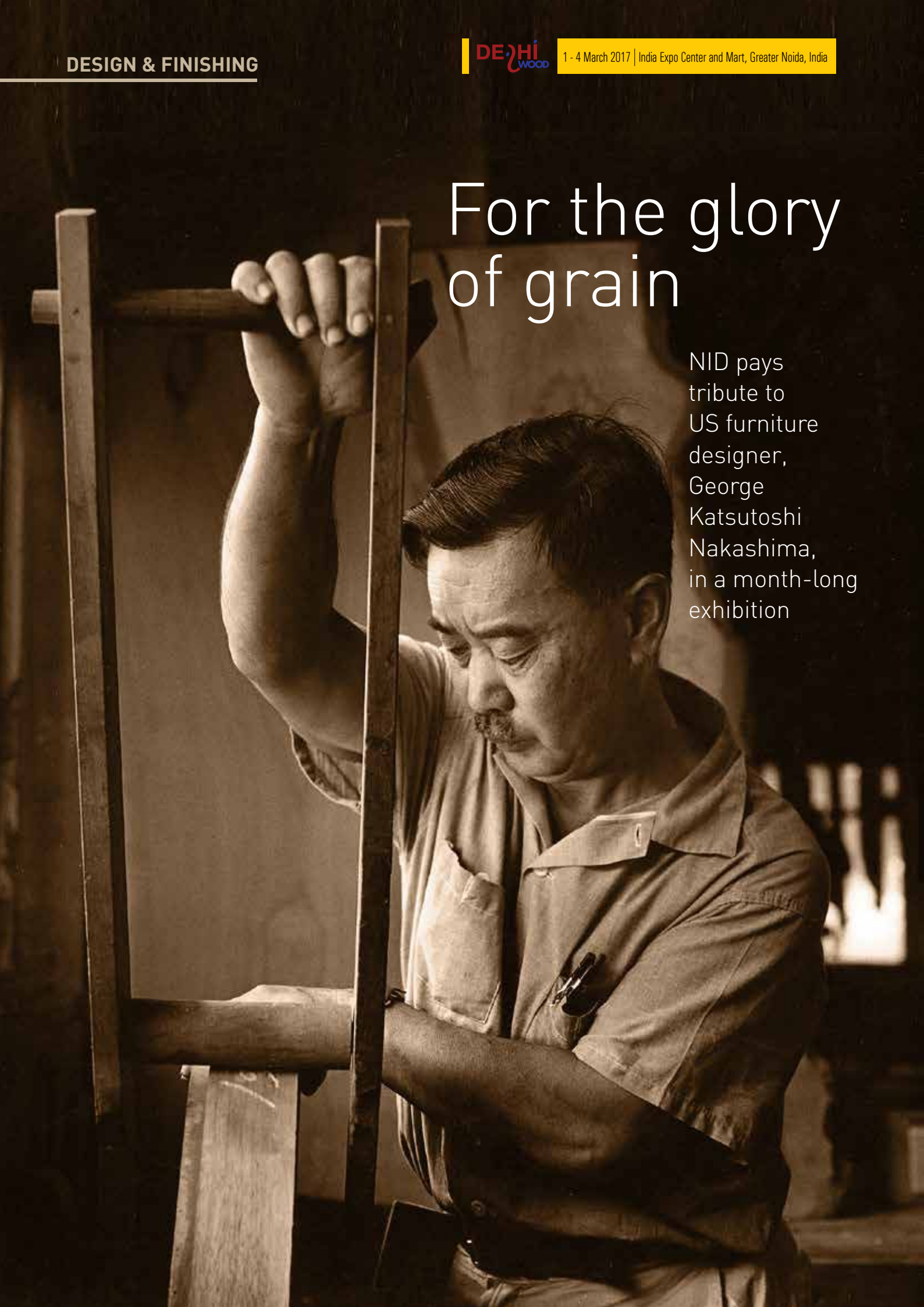
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For the glory of grain

NID pays
tribute to
US furniture
designer,
George
Katsutoshi
Nakashima,
in a month-long
exhibition





he National Institute of Design in Ahmedabad, organised a symposium-cum-exhibition, 'Discovering Nakashima', on its campus on 21 October this year. The exhibition on the legendary architect-turned-furniture-designer, 'The Free Edge', ran from 21 October to 21 November at its Design Gallery.

It was held in conjunction with Fevicol. So, who is Nakashima?

George Katsutoshi Nakashima (born 24 May, 1905) was an American woodworker, architect and furniture maker, who was one of the leading innovators of 20th century furniture design and a father of the American craft movement.

Born to Japanese immigrants in Spokane, Washington, he graduated with a Bachelor of Architecture from the University of Washington in 1929. He went on to earn a Master's degree in architecture from the Massachusetts Institute of Technology in 1931, then purchased a round-the-world steamship ticket to roam the world!

His travels took him to France for a year, then North Africa and eventually to Japan. Nakashima went to work for Antonin Raymond, an American architect who had collaborated with Frank Lloyd Wright on the Imperial Hotel. Nakashima also toured Japan extensively, studying the subtleties of Japanese architecture and design. ▶

A file photograph of George Nakashima. "Hours spent by a true craftsmen in bringing out the grain, which has long been imprisoned in the trunk of the tree, is an act of creation in itself. he passes his hand over the satiny texture and finds god within," he is quoted as saying.

A Minguren coffee table supports a top up to 60 inches long. This one is made from English Oak burl top and base.



The three-legged variation on a Shaker theme, built for Mira in 1950, is still popular.



Some of George's works on display at the Modernism Museum, Mount Dora.

Beginning in India

In 1937, Raymond's company was commissioned to build a dormitory at an ashram in Auroville, in Puducherry (India), for which Nakashima was the primary construction consultant. It was here that Nakashima made his first furniture!

In 1940 Nakashima returned to the US and began making furniture and teaching woodworking in Seattle. Two years later, like others of Japanese ancestry, he was interned by American authorities in a camp during World War II. It turned out to be a blessing in disguise!

At the camp he met Gentaro Hikogawa, a man trained in traditional Japanese carpentry. Nakashima learned to master traditional Japanese hand tools and joinery techniques, and began to approach woodworking with discipline and patience, striving for perfection in every stage of its construction.

His work ranged from dining and coffee tables to seating and sofas, beds and benches to cabinets and chest of drawers, rockers and lamps to shelves and interior decoration pieces.

This desk has a file drawer on one side and a cross-legged base on the other.



But Nakashima's signature woodworking design was his large-scale tables made of large wood slabs with smooth tops but unfinished natural edges, consisting of multiple slabs connected with butterfly joints. He explored the organic expressiveness of wood and choosing boards with knots and burls and figured grain.



After release from the camp, Nakashima designed furniture lines for retailing giant Knoll, including the straight-back chair (which is still in production), and for furniture manufacturer Widdicomb-Mueller. He continued his private

Pole Barn, where exquisite, mouth-watering slabs are stored on site.



commissions and his studio grew incrementally. In 1973, American business tycoon Nelson Rockefeller commissioned 200 pieces for his house in New York.

Drawing on Japanese designs and shop practices, as well as on American and international modern styles, Nakashima created a body of work that would make

his name synonymous with the best of 20th century American Art furniture.

In 1983, he accepted the Order of the Sacred Treasure, an honour bestowed by the Emperor of Japan and the Japanese government. He breathed his last on 15 June, 1990.

(For more, look up www.nakashimawoodworker.com)



Conoid slab benches, first made in the 1960s, are designed individually to the boards selected.



It was George's dream to provide 'Altars of Peace' for each of the seven continents on earth. Two of them are in New York City and Moscow. A third table, built and sent to India in 1996, has found a permanent home in the Unity Pavilion of the 'City of Peace' in Auroville, Puducherry.

Conoid room divider.



'Smile' shines a light on hardwood CLT



'The Smile' (left) is the first project in the world to use large hardwood CLT panels. A cross-section of the Tulipwood CLT (right).

'The Smile', a spectacular, curved, tubular timber structure measuring 3.5 metres high, 4.5 metres wide and 34 metres long, by the American Hardwood Export Council (AHEC), Alison Brooks Architects and Arup has paved the way forward for the use of hardwood cross-laminated timber (CLT) in the construction industry.

On display at the Chelsea College of Art Rootstein Hopkins Parade Ground as part of the London Design Festival 2016, the installation showcased the structural and spatial potential of CLT using American tulipwood.

'The Smile' is effectively a beam curving up at both ends and is the first ever 'mega-tube' made with construction-sized panels of hardwood CLT. CLT is usually made of a softwood called Spruce, better known as the "Christmas tree".

But 10 years ago AHEC started experimenting with CLT made from fast-grown North American tulipwood. Testing has shown that not only is Tulipwood considerably stronger than spruce, it also has a superior appearance.

'The Smile' is the first project in the world to use large hardwood CLT panels:

the entire structure is made from just 12 huge Tulipwood panels, each measuring up to 14 metres long and 4.5 metres wide.

Not only does it have a double cantilever, but the entrance door is placed right at the center, where the stresses are highest. In essence, it's two 15-metre cantilevers; if you turned the structure vertically and added the weight of 60 visitors at one end, it's equivalent to the core stabilizing a five-storey building.

Life cycle assessment (LCA) of 'The Smile' revealed that it is better than carbon neutral at point of delivery to the site. Tulipwood is one of the most abundant American hardwoods with forest volume of over 1,000 million cubic

metres, which represents 7% of the total US hardwood resource.

Every year, the volume of Tulipwood in US forests grows on average by 32 million cubic metres, of which only 13 million cubic metres is harvested. This means the volume standing in US hardwood forests expands by 19 million cubic metres every year.

"It is a massive challenge in terms of scale and engineering, as well as a demonstration of just how exciting and beautiful a building using CLT can be," says Mr. Roderick Wiles, AHEC Regional Director. "This brand-new product will transform the way architects and engineers approach timber construction."

American Tulipwood

American Tulipwood (*Liriodendron tulipifera*) has a creamy white sapwood which may be streaked. The heartwood varies from pale yellowish brown to olive green. This green color tends to darken on exposure to UV light and turn brown.

The wood has a medium to fine texture and is straight grained. One of the best value and most versatile US hardwood species, Tulipwood is widely used in construction, furniture and interior joinery.

Although relatively light in weight and soft, American Tulipwood has excellent mechanical properties and has a very high strength to weight ratio making it ideal for laminated beams and structures.

Tulipwood is often painted or stained, but the use of natural finishes to show off its exciting colour variations and grain patterns, is increasing.



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DelhiWood 50% bigger: why you should visit it!

31,000 square metres of space will host over 450 exhibitors from around the world, at India Exposition Mart in Greater Noida, 1-4 March 2017

The fifth edition of the furniture manufacturing industry's eagerly anticipated biennial event, DelhiWood 2017, will be held from 1-4 March at the India Exposition Mart in Greater Noida.

It will showcase modern automated solutions in furniture and wood-based production technologies, to help the industry to tap into the US\$35-billion furniture market (projected by the year 2020) within the country.

Over 450 exhibitors from around will showcase every facet of furniture production technologies covering machinery, tools, fittings, accessories,

raw materials and products in a whopping 31,000 square metres of space.

The 4-day trade exhibition will feature the latest in furniture production and woodworking from the following key segments on the show floor:

- Panel & solid wood production and processing
- Furniture production and processing
- Saw milling technology and processing
- Materials and supplies for furniture production
- Fittings, hardware, accessories for furniture and kitchen

- Packaging machines and materials for furniture
- Machines, materials and supplies for upholstery, mattress and sofa manufacturing.

Organised by PDA Trade Fairs the B2B trade show is, as in the past, endorsed and supported by Eumabois, the 14-country association of European federation of woodworking machinery manufacturers. Eumabois is instrumental in influencing the presence of the world's leading woodworking tech companies at DelhiWood.

Over the last four editions, DelhiWood has evolved into one of the largest

industry-specific events, offering a 360-degree experience for furniture and wood-based manufacturing industries. Initially conceived to cater to the North India region, it is now a recognised international event with an enviable visitor and exhibitor profile.

More space

The new halls at India Expo Centre and Mart have been built to sport a fresh, clean, luminous and harmonious new look. The main hall of 25,000 square metres is built to international standards, with high load-bearing capacity, ample parking space, etc.

This time the initially earmarked space was sold out with three months to go. To meet this demand for space from local,

and a second connected hall of 6,000 square metres will offer easy access to visitors and a conducive layout for exhibit display.

The expo is demarcated into machinery and non-machinery segments, allowing visitors the opportunity of maximise their meetings in the four-day window.

More exhibitors

More than 450 exhibitors from over 30 countries have registered so far at DelhiWood 2017 to showcase emerging trends and technologies for furniture production. The fifth edition will see 60% international exhibits – a new record for the show.

DelhiWood will have a strong international component, reflected in the



regional and international exhibitors, PDA Trade Fairs is making arrangements for additional halls.

The new floor layout accommodates 25,000 square metres in one single hall

many country pavilions at the show. Participating countries will be exhibiting machines, technologies and solutions that reflect each country's unique culture, expertise and specialisation.

“Exhibitions such as DelhiWood and IndiaWood provide a platform for industry players to be exposed to technological developments relevant to the industry. These are very much aligned with steps towards ‘Make in India’.

There is optimum choice available for every level of organised manufacturer, from micro to medium and large players. The events also provide a networking platform for building supplier-customer relationships.



Mr. Zurvan Marolia, Sr. Vice-President (Product Supply), Godrej Interio, Mumbai.

Ten international pavilions from Brazil, Canada, China, France, Germany, Italy, Spain, Turkey, Taiwan and the US will showcase their home-grown innovations and products at DelhiWood 2017. ▶



More visitors

DelhiWood attracts furniture and kitchen manufacturers, carpenters, saw millers, timber traders and importers, architects, engineering consultants, builders, architects, interior designers, and fittings and hardware traders.

The last edition of DelhiWood (2015) was attended by a record 16,703 visitors from 48 countries and 524 towns and cities from 32 states in India. Notably 86% of the visitors were decision-makers from the trade.

PDA Trade Fairs has embarked on a pan-Asia visitor acquisition activity to make the 2017 edition of DelhiWood the best to date. With a clear objective of ensuring record participation in the upcoming expo, no stone is being left unturned to give the event wide and sustained publicity.

Focussed visitor acquisition via industry road shows is underway in the National Capital Region (New Delhi, Noida and Gurugram), woodworking hubs of Haryana, Uttar Pradesh, Punjab, Uttarakhand, Rajasthan, Jammu and Kashmir, Himachal Pradesh, West Bengal, Jharkhand, Arunachal

“IndiaWood and DelhiWood are incomparable in scale and content as far as Asia is concerned. For those who cannot travel abroad, these shows offer a localised opportunity to see the best in technology and materials.

The shows also generate confidence in the Indian furniture industry, and the results are there to see: carpenters and contractors are slowly converting to joinery units with the best of equipment and support.



Mr. Vivek Deshpande,
*Managing Director,
Spacewood Furniture,
Nagpur*

Pradesh, Assam, Manipur, Meghalaya, Nagaland, Sikkim, Tripura, Gujarat and Madhya Pradesh.

Great expectations

So, what can visitors to and exhibitors at DelhiWood 2017 expect of the show?

- See the latest in furniture production and marketing
- Check out over 450 exhibitors from India and abroad
- Identify reliable suppliers, short-list sourcing partners
- Meet new suppliers, form long-term partnerships
- Discover opportunities, investment potential in the industry
- Register for pre-qualified one-to-one meetings with businesses.

An exclusive VIP buyer programme is going to run two months prior to the show. Top 500 buyers will be identified and invited personally by the PDA Trade Fairs team. A separate VIP concierge desk will be set up to facilitate their visit to the show.

Among a wide range of exclusive services to be offered to the VIP guests are fast-track entry into the premises, VIP Lounge access with complimentary refreshments, access to the



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International Timber Congress, and pre-fixed meetings with exhibitors.

Meetings are often one of the most important components of business and sales. B2B meetings are a quick and easy platform to maximize networking activities and meet potential customers or business partners in a more efficient way.

Registered participants can choose the exhibitors/ profiles they want to schedule meetings with. They can request B2B meetings with as many participants as they wish. A few days before the event, they will be assigned a schedule for their meetings, which they can print or download to their Outlook calendar.

Timber Congress

An international Timber Congress is also in the pipeline to bring cutting edge timber knowledge to the woodworking community. The congress is being conceptualised to present and discuss the latest technical and architectural developments and innovations in wood or timber construction.

The congress is envisioned to become a

prestigious international event in timber engineering, engineered wood products and design of timber structures and will attract researchers, engineers, architects, consultants, building officials, contractors and project managers, fabricators and suppliers from all continents.

It is easy to reach the India Expo Centre and Mart in Greater Noida using the Delhi Metro and the day-long free shuttle buses from Botanical Garden metro station in Noida.

DelhiWood will be open between 10.30 am and 6.30 pm from 1-3 March, and from 10.30 am to 4 pm on 4 March 2017. This show is only open to trade professionals and visitor entry is free of charge. Children below the age of 18 years are not allowed to visit the trade show.

Promotion campaign

Mailer campaigns and industry meets in West Asia, South-East and South Asian countries like Nepal, Sri Lanka, Bangladesh, Myanmar and Bhutan are being conducted.

Sustained advertising campaigns in

38 print and electronic media related to furniture manufacturing, architecture and design, interior designing, plywood, handicraft promotion, building, saw milling, and timber trading have been initiated.

Some of the other activities planned include direct e-mailing to 1,50,000 woodworking professionals in India and West, South and South-East Asian countries and direct mailing to 2,00,000 furniture manufacturers, saw millers, hardware dealers, architects, interior designers, woodworkers, carpenters, timber and lumber dealers and distributors in India.

Radio campaigns in 11 states and 39 cities, television advertisements in leading channels, poster activity in 29 cities across India, and mobile display vans for a month across various cities.

Telemarketing activities to personally invite close to 70,000 woodworking professionals along with multiple SMS campaigns are also on the cards. Web advertising, online event listing and publicity on social media (LinkedIn, Facebook and Twitter) are planned.

“IndiaWood and DelhiWood are more relevant to Indian manufacturers as far as machinery, material and products are concerned. These shows are good bridges between what is happening in the world and what Indian industry needs.

Conferences on wood and design, Sourcing Forum and Timber Congress add tremendous value to these shows.

Mr. Abhinav Tewari, *Director, Bantus Interiors, Lucknow.*





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Diameter of main saw shaft	30 mm
Max. saw blade diameter	350 mm
Max. depth of cut	115 mm
Height adjustment	manual
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MumbaiWood 2017 set to attract visitors across Asia

Third edition is scheduled for 12-14 October, 2017, at Mumbai's BCEC

Riding on the back of two very popular and successful regional events in 2013 and 2015, MumbaiWood 2017 is scheduled to be held from 12-14 October, 2017, at the Bombay International Convention & Exhibition Centre, in Goregaon, Mumbai.

PDA Trade Fairs, the organisers of MumbaiWood, with decades of experience in handling international events, is ramping up its efforts attract visitors from across Asia.

The event will be a unique platform for domestic and global brands to showcase furniture manufacturing and woodworking technologies, raw materials, fittings, accessories and products for wood-based industries and interior design.

According to Mr. Sivakumar, General Manager and Exhibitions Director at PDA Trade Fairs, MumbaiWood was conceptualised in 2013 as a regional event to provide a knowledge bridging platform to small- and medium-scale wood-based manufacturers in the hinterland of Western India.

The success of the debut edition and the following edition in 2015 altered the market dynamics, creating a demand from the ecosystem for an exhibition that is international in content and appeal.

Keeping this in mind, MumbaiWood 2017 will be featured as an international trade expo. Sivakumar reports that concerted efforts are already underway to attract exhibitors from Europe, the US, China, Taiwan, Malaysia, Turkey and other

international markets, and the response has been extremely encouraging.

As in the past, MumbaiWood looks forward to a huge participation of craftsmen, woodworkers, furniture and kitchen manufacturers, plywood and particle board manufacturers and traders, from across India, the neighbouring SAARC region, South-East Asia and Persian Gulf countries.

MumbaiWood will complement IndiaWood and DelhiWood to offer a vibrant international platform for viewing and sourcing state-of-the-art manufacturing technologies and machinery, tools and components, raw materials and interior solutions.





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Final countdown for national team



The Furniture and Fittings Skill Council (FFSC) recently conducted regional selections (South and North zones) in the trade of Cabinet Making ahead of the WorldSkills Competition scheduled to be held in Abu Dhabi early in 2017.

The competitions were conducted in New Delhi and Kozhikode (Kerala) with the support of industry partners, Caple Industrial Solutions and Zamorian's Furniture Consortium. The eight finalists will undergo rigorous training at the first Iconic Training centre of FFSC, the Hettich Poddar Woodworking Institute in New Delhi.

There were 75 candidates (60 from South Zone, 15 from North Zone) who had registered online through the IndiaSkills portal, all aged less than 20 years. Those selected are Anand K. Krishnan (Mundakkal, Kollam), Ratheesh

Radhakrishnan (Thrissur), Jinesh C (Malappuram), Rejeesh MK (Kannur), and Anant Kumar, Vijay Sharma, Pervez Alam and Birma Ram (all from Delhi).

The candidates were given a set of objective type questions, which tested their domain knowledge in carpentry and the process involved in cabinet making. They then attended a power tool demonstration by Festool, to familiarise them with modern power tools.

The candidates were then given a test project based on the WorldSkills format, which was to be implemented in 16 hours, split over two days. The product was a cabinet containing two drawers and shutters, which consisted of various joints and fittings, to test the skill level of the candidates.

The marking scheme was based on the precision of measurement, joinery,



process, tool usage and the duration of the project execution. The final selections would have been conducted in Mumbai from 10-13 November, 2016.

FFSC has received a request to train all the trainers in various Industrial Training Institutes in Kerala that run the carpentry course. FFSC will also showcase a live demonstration of skilling during the 'Rising Kerala Festival' in Kozhikode, 9-11 December 2016.



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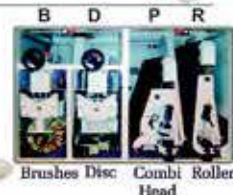


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India-suited species generate interest in Chennai



A private residence in Himachal Pradesh, designed by Aakar Design Consultants, has made extensive use of Canadian wood species.

Canadian Wood continued with its on-ground informative seminar series in late September in Chennai, with more than 50 attendees encompassing architects and interior designers, furniture manufacturers, timber importers and builders and developers.

Canadian Wood is represented in India by Forestry Innovation Consulting India (FII) Pvt. Ltd. The topic of discussion,

'Wood from Sustainable Sources', was presented by Mr. Peter Bradfield, Technical Advisor, Canadian Wood. The highly informative and interactive event was managed by WoodNews.

Peter shared an engaging and detailed presentation on usage of Canadian wood in building and designing with wood, innovation in interiors, emerging trends and new-age wood technology.

Several projects and products produced by Indian manufacturers were also showcased at the seminar. This opened the audience's mind to new wood species that are perfectly suited to Indian conditions.

The event was attended by senior industry leaders in the woodworking field including Mr. M.P. Farook, Chairman of Farwood Industries; Mr. Balaji Rajaraman, Managing Director of Soundarya Decorators; Mr. Ramkumar Rajendran, Joint Managing Director of Jaybharthum Furniture; Mr. Shivprasad MKK, Head of Operations of SofaKings; and Mr. Kalliappan, Studio Director of Shilpa Architects, among others.

The Q&A round threw up various questions regarding size availability, time duration for wood to reach destination, timber milling practices adopted by Canada, kiln drying and heat

treatment of lumber, technical information on each species' physical and working properties leading to a high quality finished product.

The audience was responsive towards knowing the Canadian wood species and were very keen to get engaged with FII's team of wood experts to know about the wood species in greater detail.

Canada is the world leader in sustainable forest management; and its wood species of Western Hemlock, Douglas-fir, Yellow-Cedar, Western Red Cedar and Spruce-Pine-Fir (SPF) are certified by either by the Programme for the Endorsement of Forest Certification (PEFC) or Forest Stewardship Council (FSC).



FII Technical Advisor, Mr. Peter Bradfield, explains details of various Canadian wood species to guests at the Chennai seminar.



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Feedback confirms MTC on track



The day-long Malaysian Timber Council (MTC) seminar and B2B meetings held on August 26 in Bengaluru met with all-round enthusiastic response. Members of the 19-strong delegation from Malaysia, as well as the participants from India, were unanimous in their opinion that the objectives of the meeting had been met.

The seminar saw 106 attendees from a wide spectrum of wood industry activities, ranging from traders and importers, interior designers and architects, to furniture manufacturers, real estate developers and consultants. Most of them were CEOs, owners or directors, while some of them were senior managers and decision makers of the companies they represented.

While the majority of these participants

were from Karnataka, it was interesting to note that some of them were from far-flung states like Gujarat, Haryana and Bengal, and from cities and towns like Moradabad (Uttar Pradesh), Gurugram (Haryana) and Kasargod (Kerala).

"The event was very well organised, and held in an excellent ambience that ensured a conducive setting for business networking," said Mr. George Jacob, architect and partner with Carambiah & George. "I look forward to participating in more such events."

While 31% of them said that the objective of attending the seminar was to develop new business contacts, 56% of them said that they were interested in exploring opportunities and tie-ups that the Malaysian companies had to offer, while

still others said they were looking at information on potential influencers and buyers for Malaysian companies.

A point to be noted was that most of the Indian delegates said that they were planning to do business with Malaysian companies, with 14 % of them saying that they would do so immediately, 46% saying that would do so in the near future, and 40% saying that they were exploring opportunities.

There was excellent representation of people from all facets of the industry. This interaction will help the Malaysians to understand and cater specifically to the India market," said Mr Vinay Gupta, Managing Director of SLV Saw Mills, Bengaluru. "Among the various points they should now consider is the pricing, not only of round logs and lumber, but also of sections of various sizes specific to India."

"The business potential is enormous: Malaysia is close to India and we will not have to look at sources like Surinam and such places. Similarly, they will not have to look at faraway markets like the US and Europe; India can be a major market for them," Vinay added.

The MTC seminar was a great step ahead to bringing manufacturers directly in contact with the end consumer in India, according to Ms. Sunitha Kundur, Architect and Partner with Bengaluru-based Hundredhands.

"I found the mix of companies very wide, but would like to see more furniture and interior product companies being represented to cater to designers and sourcing houses in India. But the event was very well organized and I would definitely attend again next year," she signed off.

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Strong tailwinds driving growth

Evolving from a traditional carpenter or an artisan-driven business, the Indian furniture industry is fast adapting to changing preferences of the modern day customer and may soon resemble an automotive assembly line. In the traditional business model, the artisans had limited local presence, worked mainly on customers' premises, and mechanisation was near non-existent.

Over recent decades, with lifestyle changes and an increase in spending power, the furniture industry has evolved to a more organised factory-based setup. Increased mechanisation, assembly line processes, introduction of particle boards, laminates and plastic furniture has opened up the market to a variety of designs at affordable price points.

Furniture retail showrooms have emerged as lifestyle hubs across metropolitan and urban centres. Demand for imported furniture, targeted at the premium market segment, is also witnessing growth. Debilitated by the difficulties of reach, in recent years e-commerce and online retailing platforms have been warmly embraced by the industry. E-commerce has not only provided greater choice for consumers but also opened up a plethora of opportunities for the small manufacturers to sell their products.

Notwithstanding the recent fast-paced developments in urban areas, the Indian furniture market is characterised by a large number of small players, accounting for nearly 80% of the domestic production. The furniture supplier market – comprising of manufacturers, wholesalers, retailers and importers – has now expanded to include online retailing (e-tailing).

The major user segments catered to are residential, office, commercial and institutional. With the onset and growing popularity of online furniture market, the industry is likely to witness consolidation.

Key drivers

- Rapid urbanisation
- Changing consumer demographics & lifestyle
- Higher spending power
- Real estate/housing boom
- Growth in tourism and hospitality industries
- Organised retailing
- Government's 'Make in India' program

Emerging trends

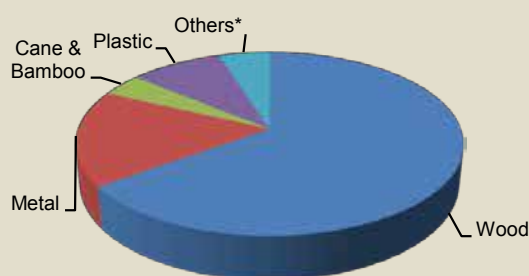
- Growth of particleboard and MDF board furniture
- Online retailing boom (e-tailing)
- Growth in the share of organised furniture retailing
- Emergence of new innovative materials for furniture
- Growing popularity of kids furniture
- Furniture rental gaining ground
- Increasing demand for modular furnituresystems

The furniture market in India was estimated at Rs. 720 billion in 2014-15 and has witnessed growth at around 14% per annum during the last 5 years. Of this, the branded and organised furniture has a market share of around 20% (around Rs. 144 billion), depicting the vast untapped potential. The furniture market is forecast to reach around Rs. 1,510 billion by 2019-20.

Being a tropical country with thick forest areas, wood was available in plenty in India till recent years. Wood furniture has always been a part of Indian households. However, increase in urbanisation, coupled with unchecked deforestation, has impacted availability of timber in the country.

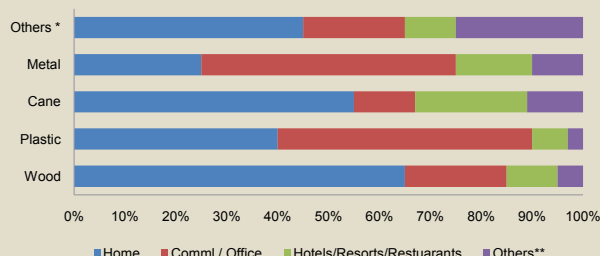
Over the years, solid wood furniture has been replaced by engineered wood in the form of MDF board, particle board and plywood, which are comparatively less expensive. Wood furniture continues to have a major share of 65% in the Indian furniture market, followed by metal furniture and plastic furniture.

Furniture market break-up by type, 2014-15 (%)



* Others include synthetic wicker.
Source: MCG Estimates

Furniture market break-up by material type vs user segments, 2014-15 (%)



* Others include synthetic wicker. ** Other segments include hospitals, educational institutions, etc.
Source: MCG Estimates

Furniture made from engineered wood (plywood, particle board and MDF board) are widely used in offices and other commercial spaces. Also, import of wood furniture to the country has increased considerably. Wood furniture is largely sourced from Italy, Germany, Spain, China, Korea, Malaysia, Indonesia, Philippines and Japan.

Cane (rattan) and bamboo furniture market in India has expanded considerably, creating a niche for itself. Apart from households (living rooms, bedrooms, etc.), cane furniture is preferred for outdoor furniture used in gardens, lounges, etc. Cane furniture sector comprises mainly small local players, mostly clustered around the forest (cane and bamboo growing) areas.

Plastic moulded furniture has become increasingly popular across various user segments during the last decade, primarily owing to convenience features vis-a-vis conventional wood and metal furniture. The moulded plastic furniture market in India is highly fragmented, with around 55% held in the small-scale, unorganised sector.

Demand for metal furniture is primarily driven by the office, commercial and hospital segments. Powder-coated metal furniture, as well as stainless steel furniture, in trendy designs are sought after for their durability and are preferred in public places such as airports and metro rail junctions.

The residential sector continues to remain the biggest user segment for furniture industry in India with the home furniture segment accounting for around 60% of the total furniture market. Demand for modular furniture made from less expensive plywood and composite wood has increased in the household segment.

In recent years, demand for imported furniture, both in the premium and mid categories, has witnessed significant growth. In the home furniture segment, manufacturers differentiate their products on the basis of design and price.

Demand for furniture from the commercial sector has also increased in the recent years owing to the emergence of new age start-up firms in addition to setting up and expansion of other commercial establishments. Demand for office furniture is forecast to grow at 15% per year during the next 3 to 4 years,

primarily driven by IT-ITeS spaces, retail, healthcare and educational institutions.

Growth in tourism and expansion of the hospitality sector has increased the demand for furniture from hotels, restaurants, resorts and service apartments.

Export-Import

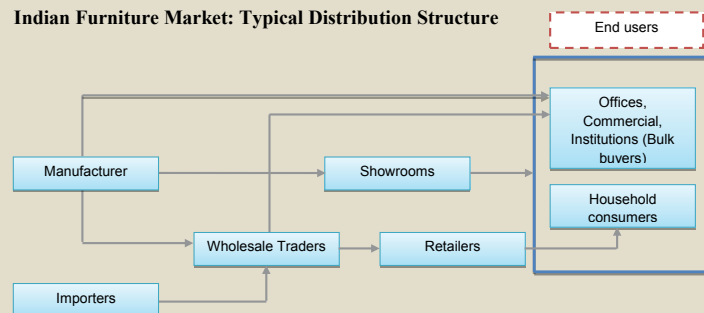
On the trade front, furniture exports from India has been growing at around 12% per annum during the last 5 years and was valued at Rs. 30 billion in 2014-15. While wood furniture accounted for 78.5% of the total furniture exports, metal furniture has been growing significantly in recent years.

Total import of furniture in 2014-15 was valued at Rs. 27.7 billion, with wood furniture accounting for 60% of all furniture imports. Import of furniture is largely from China, Malaysia, Italy, Germany, Spain, Korea, Indonesia, Philippines and Japan.

There has been a steep increase in the number of retail outlets selling imported furniture in urban agglomerations across India. A large percentage of the imported furniture currently sold in India is from China and Malaysia and is largely made of particle board and MDF board. Hard wood furniture in the premium segment is imported from Italy, Germany, Spain, Korea, Indonesia, Thailand and the US.

The furniture market in India follows a complex distribution structure comprising manufacturers, importers, traders, retailers and company-owned exclusive showrooms. Furniture manufacturers in India commonly adopt a three-tier sales and distribution structure, comprising of the distributor, wholesaler and retailer.

Indian Furniture Market: Typical Distribution Structure



Depending on the type of manufacturer (large, mid-sized and small), various methods of distribution is followed in the furniture market in India. In the furniture online retailing segment, market place vendors and private label operators follow a unique logistics and distribution model that is routed through third-party logistics companies and packers and movers.

The Indian furniture industry is expanding with consolidation of existing players and emergence of new players in the organised sector. Players across solid wood, engineered wood, and modular, plastics as well as metal furniture sector are strengthening their distribution systems to reach a large market across Tier-II and Tier-III locations.

Some of the major players in the domestic furniture market include BP Ergo Ltd., Durian Industries Ltd., Ekbote Logs and Lumbers Pvt. Ltd., Featherlite Office Systems Pvt. Ltd., Godrej Interio, Indian Furniture Products Ltd. (Zuari), Nilkamal Ltd. and Supreme Industries Ltd.

Many leading global furniture manufacturers too have entered the Indian market through exclusive marketing tie-ups or through joint ventures with Indian players. Among multinational companies, the recent entry of Ikea and the scheduled plan to open their first store in Hyderabad in 2017 is being closely watched by industry counterparts.

Other global players who have a presence in India include Damro, Herman Miller, Natuzzi Company, Rockworth, Simply Sofa and Veneta Cucine.

The online space for furniture retailing has expanded rapidly having attracted large funding. Fab Furnish, Pepperfry and Urban Ladder are some of the leading players in the online furniture segment. The online market place model has been successful in aggregating sellers mainly from the unorganised

sector, thus opening the market by providing a common platform to a larger number of manufacturers.

The furniture industry in India is witnessing multi-dimensional growth encompassing all the stakeholders along the entire value chain. The mandatory local sourcing clause for foreign direct investment has enthused several players in the small and medium sector to enhance their capabilities in order to cater to world class standards set by multi-national corporations.

On the domestic front, the established players are consolidating their presence and are in various stages of executing market expansion strategies. These interesting developments augur well for the Indian consumer, who now has an array of options across product designs and price points.

– This article is based on a market research report, “The Furniture Market in India to 2019-20”, prepared by Madras Consultancy Group, Chennai. For further information, email: admin@mcg.in (www.consultmcg.com).

LETTERS TO THE EDITOR



Mr. George Fernandez:

Director, Systems Engineering Consultants Chennai, TamilNadu

I refer to the article ‘Perfect looking joints’ (*WoodNews Jan-Feb 2016*). This write up by Homag’s Technology products Manager Mr. Markus Kostenbader, commendably illustrates the use of ‘zero-joint technology’ based on the diode laser, to establish quality benchmarks in edge banding, furniture and interior fittings.

In the LaserTech method the diode laser directed beam, melts the edge, and panels are joined as a wafer-thin layer on the edge by oscillating motion. No glue is required.

The greatest benefit working with LaserTech is that the functional layer is the same as the edge decor material and guarantees a jointless transition from edge to panel with unprecedented quality.

Woodworking professionals can certainly introduce the zero-joint technology in small, medium sized workshops to become internationally competitive in furniture manufacturing.



Mr. Deepak Goel:

Director, Techno Drive International New Delhi

I am very impressed by the contents of *WoodNews* magazine. It is very informative and keeps us updated on the latest technologies. We deal in a lot of wood related activities. If possible please mail me a copy on a regular basis.



Mr. Amit Kumar Bhagwat:

Vinyas Wood Works, Agra, Uttar Pradesh

The information that we get from *WoodNews* magazine is very good. We always look forward to receiving the magazine. I do hope that we receive the same education and information always.



Mr. Sandeep Madhukar Sutar:

MD, Shree Ganesh Wood Packing Pune, Maharashtra

I have purchased a thickness planer after reading about it in *WoodNews* magazine. This has resulted in better quality products and also increased production. My company is getting considerable benefit from installing the machine.



Mr. Amit A. Jande:

Partner, M/s Forestor's, Nasik, Maharashtra

WoodNews is very educative and I am a regular reader of the magazine. It would be very helpful if some articles on PVC foil plywood and door jambs are published by you, and the production line explained in detail.

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Accsys offers proof of carbon footprint

THE TIMBER TRANSPORT CO2 CALCULATOR

This calculator has been developed to calculate the annual greenhouse gas emissions (i.e. the carbon footprint) from the transportation of wood alternatives being used instead of Accoya®.

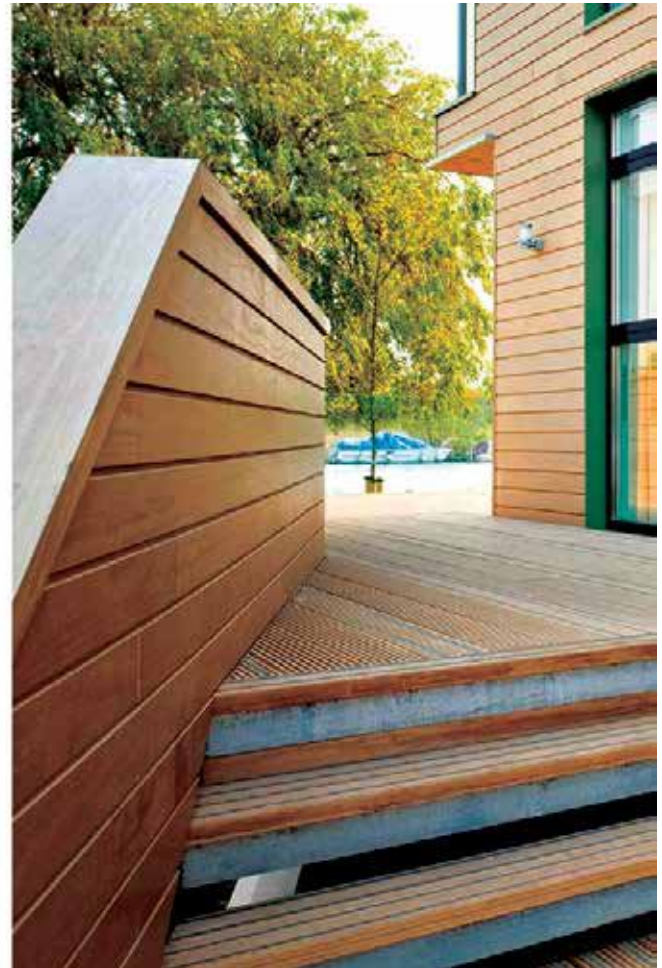
To reach the end value the following parameters need to be calculated: density (including moisture content), transport distance, vehicle efficiency and the life span of the wood (the longer the lifespan of the wood, the less replacements required, resulting in less transport). To make a custom-made calculation please complete the cells in the calculator below. For a realistic example (Accoya® wood vs Western Red Cedar from USA) please refer [here](#). This is also prefilled under "wood alternative".

Please see various prefilled examples at the bottom of this page. All distance calculations have been made using www.sea-distances.org and Google maps. The wood specific weight figures have been derived from www.houtinfo.nl.

Transport emission factors

Source: Eco-Invent v3

Vehicle	kg CO ₂ eq / ton/km	Ratio compared to ship
Truck (> 32 tons)	0.085	7.1
Ship (transoceanic)	0.012	1
Rail (diesel USA)	0.059	4.9
Air (freight)	1.13	94.2



This leading modified wood producer has underlined its outstanding environmental credentials by launching an interactive online calculation tool that compares its global transportation impacts with other wood species.

Accoya's Timber Transport CO2 calculator analyses the annual carbon footprint in its transportation and sets it against other wood species.

British firm Accsys Technologies has a commercially viable product that boasts the durability, termite resistance and stability of hardwoods, but using sustainably grown softwoods from New Zealand. Accoya wood represents a major development in wood technology and enables the consistent supply of durable, dimensionally stable, non-toxic solid wood.

Despite Accoya being primarily Radiata Pine from New Zealand transported to the manufacturing plant in Arnhem, in the Netherlands, the calculator shows that when taking into account the prolonged durability over the full product lifespan, Accoya's carbon footprint for transportation alone compares favourably to many competing wood species that are sourced more locally.

The online calculator takes into account a wide range of factors – including the wood's density, transport distance, vehicle efficiency and life span. Because of its superior lifespan due to acetylation, plus its naturally low weight and the low emissions of the sea transport used – more than seven times more efficient than transport by truck – the annual transport emissions of New Zealand-sourced acetylated pine are

competitive when compared to competing continentally-sourced timber species.

Access the calculator at: <https://www.accoya.com/sustainability/the-timber-transport-co2-calculator>

Accsys' confidence in the technology allows a 50-year above-ground guarantee against rot and decay, and an equally impressive 25-year assurance when used in the ground.

Distributed in India by the timber engineering company RitikaaWood, Accoya's commercial availability comes at an opportune time within the timber industry, with teak prices almost quadrupling across India in recent years.



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Jetmaster floors Lico



Lico, the Swiss manufacturer of high quality cork, linoleum, wood and mineral floors, has updated its printing lines with the 'single-pass' Barberan technology. The printing line, Jetmaster 630, specifically designed for cork floors, has been installed in the company's Mustair plant.

After experiencing the trustworthiness and quality of the Barberan machinery at their existing hot-coating plant, Lico acquired this machine for use in its new printing line. With this line the company

has applied the most effective treatment to obtain a Class-A C5 product that shows maximum toughness and resistance to abrasions, chafing and scratches.

Lico, which previously used the 'multi-pass' printing system, has speeded up its production with this new printing line. The system offers major flexibility and performance, achieving an unbeatable printing quality with high resolution and UV-curing inks (CMYK) at a speed of 55 metres per minute.

The Jetmaster 630 line for cork features a special module for primer application and maximizes its printing width to 630 mm, with a minimum separation between the panels.

This technological investment in digital printing gives the company a qualitative edge and provides an effective response for capacity enhancement to meet the demands of the market. It affords Lico operation flexibility and has considerably improved productivity. For more information visit www.barberan.com.

New Jowat adhesive for window profile wrapping

The market expectation of a modern window is one that lasts for 25-30 years, look good and operates without any problems. For lamination of window profiles the new PUR hot-melt adhesive, Jowatherm Reaktant, shows superior bonding results in window profile wrapping, and provides reliable processes and high initial strength when used in combination with the new primers from Jowat.

For many years, the tried and proven adhesive systems from Jowat – consisting of powerful PUR hot-melts and primers – have met the high demands in window profile wrapping. Outstanding wetting properties combined with high initial strength and a fast cross-linking of the adhesive facilitate shorter process cycles and increase efficiency.

The growing variety of substrates and decor materials, as well as bigger variations in the surface tension of the foils, called for a new adhesive. Characterised by a superior range of adhesion, the new product is the logical development that meets this requirement.

The significantly higher initial strength because of a considerably shorter open time of the new PUR hot-melt ensures reliable processes and a high quality of the end product, even with rigid foils and higher line speeds.

It can, thus, be said to play a major role in maximising the efficiency of laminating processes. In addition, the adhesive can be molten and processed at lower temperatures, which reduce the thermal stress on the adhesive as well



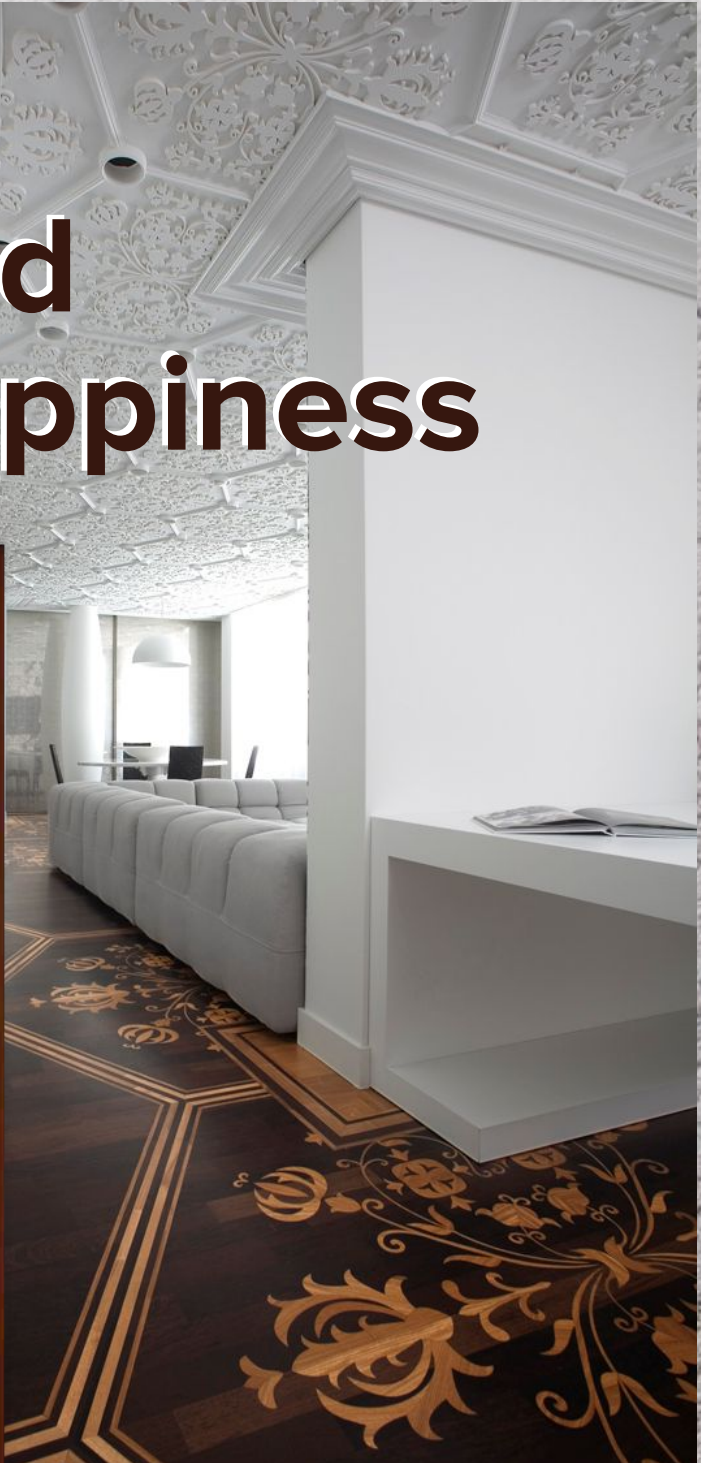
as on the thermoplastic foil, and facilitate more reliable processes of a higher quality.

Jowatherm Reaktant is also certified for the use in combination with conventional as well as volatile organic compounds (VOC)-reduced, NEP-free primers.

When processed together with the latest generation of Jowat primers, the new high performance adhesive provides additional benefits as the interaction between the primer and the adhesive ensures an accelerated cross linking of the PUR adhesive during the laminating process. (www.jowat.de).



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SCM upgrades machining for doors, windows

The 5-axes SCM Accord 25FX combines high technology and ease of use with competitive price.



The SCM Group, a leading producer of woodworking machinery and systems, participated in the Holz Basel trade fair in October where its latest-generation solutions for the doors, windows, stairs, furniture and wooden houses manufacturing industries were displayed.

This was part of its strategy to strengthen the Group's presence in Switzerland while using highly professional local distributors with years of experience who are capable of providing highly-qualified and fast service to clients.

On hand at the fair were SCM Group specialists dedicated to solid wood processing along with the ANTB team. ANTB is a top CMS dealer for over 20 years and is now dedicated to selling SCM, Routech and Celaschi products in French Switzerland.

On display was a working demonstration of the 5-axes SCM Accord 25 FX machining centre, which combines high technology and ease of use with competitive price. Equipped with Matic fully-automated worktable, a 5-axes Prisma electro-spindle and the Pro-Speed safety system, it allows the machining of a wide variety of products and requires far shorter times for set-ups and tool changes, thus optimising productivity.

Also on display was a wide selection of wooden beams and walls, which demonstrated the high flexibility and supreme quality of the 6-axes Routech Oikos machining centre.

SCM also presented the new multimedia application for machine virtualisation, which is an innovative and unique technology that allows the creation of 3D

interactive reproductions of any machine – in this case, solutions for Routech Oikos, Celaschi Progress, CMS Pro-Evolution and DMC System– which a user could interact with using an iPad.

The Accord 25FX model was designed with the needs of small and medium-sized companies in mind. SCM has developed a 5-axes machining centre that provides utmost performance with minimum investment.



The Maestro module allows programming and 5-axes machining of 3-D surfaces.

The model is available with bars table and multi-function table and combines state-of-the-art performance with extreme ease of use for flexible productions of doors, windows, stairs, solid wood parts, wooden and extra-wooden panels.

The machine it is capable of producing various types of products, thanks to the

increased machining dimensions and 44 tools that are always available on it. The new chain store, combined with the traditional lateral store, guarantees fast tooling times and the machining of many different profiles.

Safety features

The new 'ProSpeed' system with horizontal photocells and new bumpers on the mobile protection, marries maximum accessibility to the work table and safety for the operator in the work piece loading and unloading operations, while maximum speed and productivity are reached during machining.

Thanks to the Xilog Maestro software suite developed by SCM, programming Accord 25FX is easy, intuitive and effective. The Maestro 3D module allows the programming and 5-axes machining of three dimensional surfaces; Maestro WD, developed specifically for the production of door and window frames, allows users to design starting from the architectural light to the individual frame elements to be produced.

The Maestro MSL Connector module allows external management software to interface with Xilog Maestro. This software also includes Maestro APPS: a library of functions developed by SCM based on feedback from manufacturers of windows, doors, stairs and furniture.



SCM now has a new multimedia application for machine virtualisation.

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Industry 4.0 actuators ready to go



Industry 4.0 is the number one keyword in industry and engineering, and the same can be said for the long-established company Siko GmbH, located in Buchenbach in Germany's Black Forest.

The latest Siko Ethernet and field bus actuators, AG25 and AG26, offer a systematic answer for positioning machine axes smartly and fully automatically with ultra-compact actuators.

Despite their high functionality and performance, Siko's actuators take up no more space than a 0.33 litre beverage can (AG25). Thus, the actuators are ideally suited for fully automatic format adjustment in machines and equipment that have space limitations. The AG26 is built slightly larger, but also has more power (up to 13 Nm) despite its ultra-compact frame size.

The applications of AG25 and AG26 actuators include the adjustment of formats, stops, tools and valves. These, and a whole series of similar positioning tasks, are used in the packaging industry, the woodworking industry, for printing and paper processing, the food and beverage industry, in the textile industry and in electronics manufacturing.

Simple solution

Despite the most compact dimensions, both actuators represent a compact, all-in-one solution for engineering. The drives have a hollow shaft with a clamping ring for easy installation.

The engine, transmission, power electronics and bus communication are likewise integrated into the actuators, so that only the bus connection and a 24V DC power supply have to be supplied in the field. Thus, the entire system costs for integration in the machine will be drastically reduced over those costs for a discrete assembly.

Not to be forgotten is the integrated, high-precision multi-turn absolute encoder that detects the position of the drive shaft and the rotation of the shaft in the de-energized state of the actuator. Even large traverse ranges of up to about 2,500 revolutions pose no difficulties.

In addition to the long-standing SikoNet5, Profibus and CAN data interfaces, Siko has also implemented the most common industrial Ethernet field bus interfaces into the actuators: Profinet, EtherNet/IP, EtherCAT and Powerlink.

For this, the positioning drives are equipped with two M12 D-coded bus

connections to the cable-saving construction of a bus line without the need for star-wiring for control.

For "smart factories" it is often not enough to exchange pure process data; rather, communication must make it possible to select values for diagnoses, like final stage temperature, motor current, and various voltage values.

Furthermore, the electronic type plate offers clear identification of the unit type, as well as the serial number and hardware and software version, in order to schedule maintenance intervals as the circumstances require.

The actuator without controls can be accessed via an additional serial service interface. This is ideally suited for commissioning and testing purposes along with Siko's ProTool DriveLine tool and the AIF01 interface adapter. Of course, the actuators AG25 and/or AG26 can be configured and parameters can be set directly via the master PLC.

The service terminal also makes a freely configurable digital output and four freely configurable digital inputs available. Four LEDs indicate important port and switch status information in the field.

The bus address can be set as preferred by means of DIP switches. The actuator can be directly traversed to adjust the settings by using the two pushbuttons that are built-in under a cover. The actuators are available up to protection class IP65, which is also guaranteed during the traverse operation.

Actuators at SIKO are available for free as test devices. Upon request Siko customers can also receive support packages for the typical SPS types, free of charge. This significantly reduces costs for software engineering during the implementation phase.

– Siko is represented in India by Mumbai-based Rajdeep Automation Pvt. Ltd. (www.rajdeep.in)

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Vortex sawdust-removal bandsaw blade



Wood-Mizer, the world's leading portable sawmill manufacturer, has introduced into the market the Vortex sawdust-removal bandsaw blade. Available now in Asia, the blade is engineered for customers who need boards as free from excess sawdust as possible.

Till now, a pallet producer would have to clean off the sawdust from each board manually or with a separate machine. The Vortex blade, on the other hand, removes dust while sawing, thus minimizing or eliminating the need for sawdust removal after the lumber is processed.

This extremely unique blade profile has generated positive results in high-production pallet factory tests.

Pallet producer Jeff Coomer, who tested the blade, reported that the Vortex blade was getting 99% of the dust off, and was impressive on how much dust it took off compared to a typical saw blade.

User feedback is very positive and categorically states that the blade does a great job of getting the sawdust off the wood and can be an asset for companies

trying to produce a clean pallet. The blade is available in various lengths.

Tie-up with Multisaw

Wood-Mizer Asia is now also offering a full range of high-throughput wideband sawmill equipment. Best known as a leading supplier of thin-kerf, narrowband sawmills since the 1980s, Wood-Mizer has significantly broadened its reach into the narrowband industrial sawmill manufacturing and supply arena in the past decade, with many log processing lines operating throughout Asia.

Now Wood-Mizer has furthered its product range, and is supplying a complete range of wideband equipment

solutions, due to the conclusion of an agreement with South Africa-based Multisaw Sawmills to take over the sales and manufacturing of Multisaw's wideband sawmilling equipment.

Multisaw's products will now be sold as Wood-Mizer Titan. The move is set to add further momentum to Wood-Mizer's ability to design and manufacture innovative wideband saw milling solutions that will broaden the corporation's global reach in both the narrow and wide-band sawmilling arenas.

"Our narrowband range has made great strides in the last 15 years to help wood producers worldwide to cut costs and raise yields," says Mr. Richard Vivers, president and CEO of Wood-Mizer. "But that is just one piece of a very big market that exists. Titan products are extremely well built machines for high-throughput industrial applications."

Titan products are heavy-duty, and built-tough wideband sawmilling solutions for high-throughput industrial sawmilling applications. Each Titan product is designed to operate as standalone unit that can be used in existing sawmilling lines or form an entire sawmilling line that can be customized to the requirements of the end-user.

The range provides for primary and secondary log breakdown capacity across a range of log diameters varying from 100-800 mm in diameter. Blade widths on Titan machines vary between 32 mm and 150 mm, depending on configuration.

(info@woodmizerasia.com)

Vortex Blade Industry Test.



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WA 8 X slides into a leading position



Altendorf GmbH is the market leader for sliding table saws and its WA 8 series is known for its special applications in wood-based panel processing, solid wood, plastics, aluminum, MDF, HDF, and the FRP/composites industry.

WA 8 X is a machine that is robust and manufactured to Altendorf's rigorous technological standards and stands out with its solid build quality and ergonomic flexibility.

Ease of operation and ergonomics

Altendorf WA 8 X has an eye-level control panel and with its three motorised axes can be pivoted by the operator to the most convenient position. It has a motorised rise/fall and tilt adjustment of the main saw blade.

All major control functions are always visible. The panel pivots into the most convenient position and is accessible from both sides of the machine. Adjustment of both the saw blade and the rip fence are motorised.

Motorised rip fence

The motorised rip fence has a traverse speed of 250 mm/sec. and an accuracy of $\pm 1/10$ mm. The high precision five-point re-circulating ball spindle system needs little maintenance and, along with the motor, is well protected by its integration into the aluminium profile.

The fence automatically recognizes the position it is in, especially when it reaches the danger area around the saw blade. It has an emergency cut-out to prevent the risk of crushing.

Advantages of WA 8 X

- Accuracy up to 0.1 mm on rip fence setting (eliminating human error)
- Increased productivity as the rip fence is not manually set
- Reduction in labour required



The eye-level control panel can be pivoted by the operator to the most convenient position.

The rip fence has an emergency cut-out to prevent accidents.



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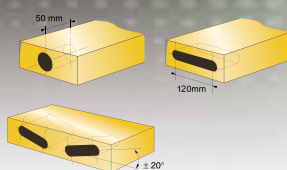


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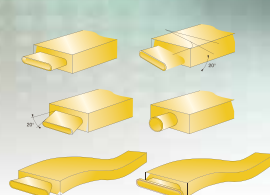
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Studio Bruno Guelaff wins award



Angled wood cladding in white oak in front of all glass partitions helped render a 'tree house' effect while also providing privacy in a unique way.

Studio Bruno Guelaff, a boutique design studio which spans an amalgamation of design mediums where creative expression is cultivated, has won the 'Outstanding use of American Hardwood in the Middle East' (West Asia) award for Unique Properties' offices at the Commercial Interior Design (CID) Awards 2016, which took place on September 21 in Dubai.

Studio Bruno Guelaff was praised by the judges for their 'committed and inventive use of American white oak that defines the space and sets the material rhythm'. The winner was awarded for 'a dynamic and playful use of wood demonstrated in all aspects of the project from bottom to top'.

The judges were impressed with the fact that the 'concept is entirely wrapped around the material with wood being used in furniture, lighting and panelling'.

Tesla now unveils solar roof tiles



The Chief Executive Officer of Tesla, Mr. Elon Musk, in November announced plans to create solar roof tiles that he says would cost about as much – perhaps even less – than a regular roof. The roof tiles would look better, last longer and have better insulation – all while generating electricity.

The tiles would be made of glass over a photo-voltaic substrate in four styles: smooth glass, textured glass, Tuscan

glass and slate glass. Dow Chemicals also announced a similar project a few years ago, but canned it in the face of the hard realities of cost, efficiency and market competition.

Tesla's solar tiles claim to be able to power a standard home, and provide spare power via its new Powerwall-2 battery in case of inclement weather or other outages. The tiles will actually be more resilient than traditional roofing

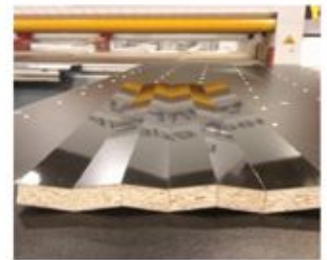
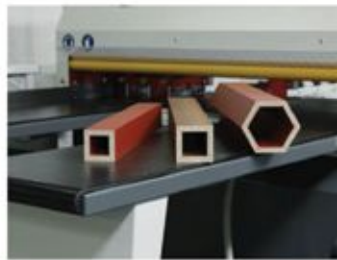
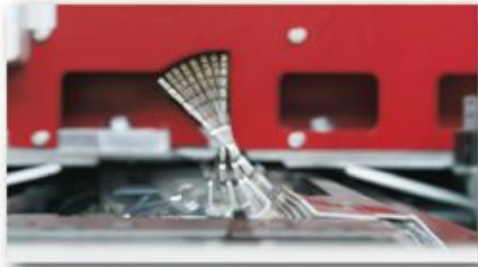
materials, including terra-cotta, clay and slate.

This new offering would complete Musk's trifecta: solar power-generating tiles on every roof, a Tesla battery in every home, and a Tesla electric car in every garage. Modern clean-energy living, independent of the grid!

But Tesla's shingles have an added cost: a battery to store the electricity they produce for when the sun isn't shining. The Powerwall-2 battery that Tesla unveiled along with its solar roof system costs \$5,500. The Powerwall-2 is a 14 kiloWatt-hour (kWh) battery, but a standard home probably needs at least a 30 kWh battery to cover one day of electricity use.

As with other kinds of technologies that are looking to make the leap from outlier oddity to mainstream, solar has a hurdle to leap in terms of customer perception. Existing solar designs, and even so-called attempts to make them more consistent with traditional offerings, leave a lot to be desired in terms of creating something that can be broadly described as good-looking.

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Liebherr to set up Rs.500-crore plant in Aurangabad

Liebherr, known worldwide for its innovative refrigeration and cooling appliances for the domestic and commercial sectors, is setting up a production plant in Aurangabad. Starting 2018, the company aims to manufacture 5,00,000 premium cooling appliances a year, tailored for the Indian market.

As part of its programme to build up its brand in India, it recently launched its

first ever experience centre in Mumbai, opening up their exclusive range of free-standing premium refrigerator models to the Indian consumer. The first of its kind showroom houses cooling appliances built on Liebherr's world-class standards. It will showcase cooling and freezing combinations of products,

side-by-side appliances, built-in appliances as well as wine cabinets.

Liebherr states that industry research indicates a growth rate of rate of 11.4% by 2025 in India. Coupled with higher disposable incomes and changing consumer preferences, this makes India an extremely relevant market.



Huntsman India appoints new head



Huntsman Corporation, a global manufacturer and marketer of differentiated chemicals with revenues of more than US\$10 billion, has named Mr. Harshad Naik as Managing Director for the Indian sub-continent, effective September this year.

In his new role, Harshad will lead the cross-divisional collaboration required to deliver growth, build external partnerships and asset investments. This new responsibility is in addition to his current role as Director of polyurethanes business across the sub-continent.

The company operates in more than 30 countries and employs approximately 15,000 persons worldwide.

Junckers opens design studio

Junckers, a leading Danish solid-hardwood flooring brand, recently opened its exclusive design studio in Delhi. It offers exquisite range of flooring, from black Oak textured and brushed desert gold to classic Beech Sylva red in different shades of pink, yellow, green, etc. It is durable and well suited for any design style, ranging from rustic to contemporary.

The company is eyeing 6,00,000 square feet of sales in India for this financial year, and is targeting three-fold growth in the following financial year on the back of upcoming luxury housing projects by large reputed builders.

With its vast experience of space, the studio redefined designs and its diverse flooring range displays beautiful designs in a huge array of colours, shades and style and is an ideal place for customers to choose from the best Scandinavian shades and design.

The various patterns have been made on the display flooring at the studio, depicting different colours and species that could be combined to give a great and different look.

Junckers was recently identified as India's most powerful brand in the solid wood flooring category at the Power Building Brands Awards 2016, by CNBC TV 18 and Realty Plus.

The awards are conceptualised to honour and showcase the top brands of building and construction industry in India. They recognise, encourage and promote excellence in the real estate profession and highlight important elements of real estate practice such as client satisfaction, innovation and contribution to the profession.



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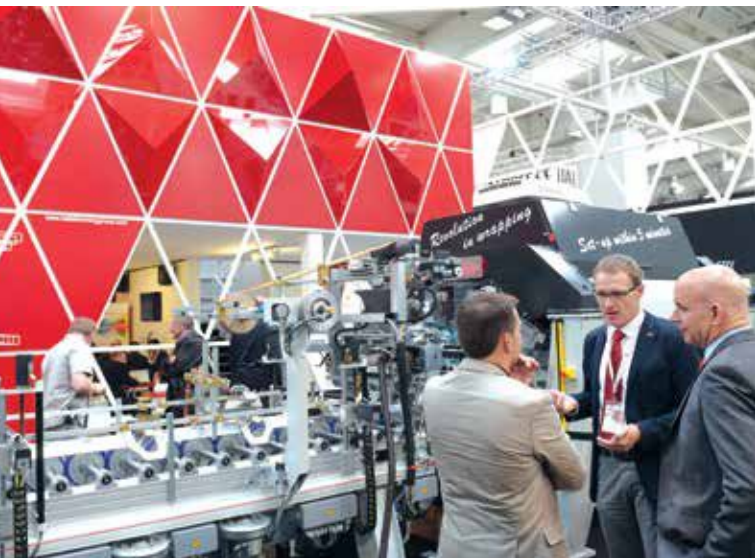
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Ligna 2017 to be bigger and better



Ligna, the world's leading trade fair for machinery, plants and tools for the woodworking and timber processing industry, is gearing up for its 2017 edition, slated to be held in Hanover from 22 to 26 May. Its organisers, Deutsche Messe, have confirmed that over 90% of the available exhibition space has already been booked.

The focus of Ligna 2017 will be on intelligent concepts for integrated manufacturing across all links in the wood processing chain and will showcase the close interplay between the virtual and real worlds – across the entire value chain of the timber processing and woodworking.

The wood industry summit and the 'Fibers in Process@Ligna' will be other highlights.

Deutsche Messe and VDMA, the German Woodworking Machinery Manufacturers' Association, plan to develop a new thematic layout that reflects the changing ways in which customers of all sizes use woodworking and timber processing technology.

Exhibitor locations will be based on salient aspects of technology use, giving rise to completely new display clusters. Visitors will benefit considerably from this revamped layout, which is designed to give them quick, convenient access to the themes that matter most to them.

World's highest wooden building stands tall

Brock Commons, the world's tallest wooden building, has been completed four months ahead of schedule. Expecting to have 700 students in it by September 2017, the 18-storey building in British Columbia, is the highest mass wood, steel and concrete hybrid project till date.

It has two concrete cores and a concrete podium but the rest of the 17 stories is cross-laminated-timber floors supported on glue-laminated wood columns. The entire experiment behind this sustainable building is expected to cost approximately \$51.5 million. According to the University of British Columbia it

will exceed required fire ratings and standard seismic safety requirements.

Wood is a wonder material as far as global warming is concerned as it stores, rather than emits, carbon dioxide. Using wood in this project is akin to taking 500 cars off the road a year. That is a reduction of 2,432 metric tonnes of carbon dioxide.

The developers hope that the building would act as an example that would lead to British Columbia's building codes being revised and would help make mass wood construction more common.



Middle East Covering in May next

Middle East Covering, a 4-day event at the Dubai World Trade Centre, is being held from May 22 to 25, 2017. It will showcase products to interior designers, architectural firms, building consultants contractors, furniture manufactures woodworking companies, etc. in the architecture and designing, home furnishings and home textiles industries.

Large infrastructure and hospitality projects underway in the Gulf Cooperation Council (GCC) countries are fuelling demand

for floor and covering materials as five-star finishes expected by luxury hotel and residential developers.

The exhibition is the ideal platform to promote products in this market. As the only trade event in the region dedicated to the latest international flooring, wall covering and interior surface design options, it serves as a source of new materials to the procurement community.

US gives fillip to wooden high-rises

The Timber Innovation Act, 2016, has been introduced to the US Congress by senators and representatives from Washington State to advance tall wood building construction in the United States. It directs the Department of Agriculture (USDA) to establish a performance-driven research and development programme to advance tall wood building construction.

As per the Act a "tall wood building" would mean a building designed to be over 85 feet high and constructed with large panel wood construction (mass timber), including cross-laminated timber, nail laminated timber, glue laminated timber, laminated strand lumber and laminated veneer lumber.

The USDA has been tasked to carry out an annual competition from 2017 to 2021 for a tall wood building design, and is also empowered to make a wood innovation grant to one or more specified eligible entities.

Kerala furniture makers go online

Kerala's Rs. 12,000-crore-a-year furniture industry has decided to take the e-commerce route to increase furniture sales and to meet the challenge from international players.

Among the steps they have taken is the launch of their own online sales portal, www.furnestore.com. It is expected that this venture will considerably boost business, especially as furniture made in Kerala had strong demand across India.

The industry in Kerala, spread across 6,500 micro, small and medium units, is already doing business worth Rs. 500 crore annually through online sales. Currently, large players like Urbanladder and Pepperfry are already sourcing products from manufacturers in Kerala.

As part of its efforts to provide new skills, develop new designs and acquire the latest equipment, a "cluster of clusters" will be built at a cost of Rs. 100 crore. The association has acquired three acres, which will be used for an "innovative international furniture hub" housing a design facility, common facility centre, a permanent exhibition centre and a convention centre, spread over around four lakh square feet of built-up space.

The facility, expected to be commissioned in 2018, would allow cluster development programme for furniture-makers, which would allow introduction of world-class technology at affordable rates for the small units.

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Andhra promotes timber clusters to attract shippers

Taking advantage of the huge volume of timber that enters India through Kandla port in Gujarat, timber companies have successfully developed business clusters in the hinterland around the port.

The Andhra Pradesh government now wants to replicate this success and is drawing up plans to try and attract shippers to use ports in the state, notably Visakhapatnam and Krishnapatnam. As a first step the state authorities are urging the central government to provide guidelines on the development of processing clusters and to provide authority to the state to permit the development of timber clusters close to ports in Andhra Pradesh – ITTO

Study on wood varnishes



Effects of surface roughness on varnish adhesion strength of wood materials.

A study to understand the effects of surface roughness of wood material on the adhesion strength of varnish layers was recently carried out and the results published in the September 2016 issue of the Journal of Coatings Technology and Research.

Test samples of Beech, Scots Pine and Cherry wood species were prepared and sanded with 80, 120, and 180 grit abrasives. The surface roughness values of specimens were determined using a stylus-type profilometer according to the ISO 4287 standards.

Then, water-based, polyurethane, and acrylic varnish were applied to the surfaces of the samples and the layer adhesion strength determined. The highest adhesion strength value was found in Cherry, while the Scots Pine had the lowest value.

For the varnish types, polyurethane (PU) varnish types gave the highest value, while the lowest value was obtained from the water-based varnish. Looking at interactions between adhesion strength and surface roughness, the water-based varnish had the strongest correlation with adhesion strength (69%) and acrylic varnish also had a similar result (67%), while PU varnish had the weakest result (33%).

Weathering of translucent coatings on Beech

German researchers from Georg August University of Göttingen recently conducted a study with the aim of a improving the weathering performance of modified wood and to maintain its colour stability.

Beech wood boards (*Fagus sylvatica* L.) modified with thermosetting N-methylol melamine and phenol-formaldehyde, partly with a dye added, were coated with a translucent water-borne acrylic binder and a formulation containing the same binder and UV-protective agents.

The applicability of the coating on the modified boards was similar to that of untreated control boards, but the drying times were prolonged. Capillary water uptake of modified, uncoated and coated boards was clearly lower than that of respective controls.

Dry and wet adhesion of the coating film and the proportion of wood fracture were higher on the modified substrates than on the controls, but no clear difference was observed among the modified boards.

The colour stability during weathering depended in the modification and coating. Untreated and NMM modified samples became lighter, while PF-modified boards turned darker.

The weathered coating on the modified boards, particularly with PF resin, showed less blistering, flaking and cracking than that on the controls. The coating on all resin-modified boards maintained higher adhesion during weathering than the controls.

UV-PA stabilised the colour and adhesion on all boards compared to the single binder formulation. The study shows that wood modification with NMM and PF improves the weathering performance of wood coated with acrylic coatings. Combined modification with staining can diversify the optical appearance of wood coated with translucent finishes.

Koeppel elected new Eumabois President

The Eumabois general assembly, hosted in Luzern (Switzerland) in September this year, elected Mr. Juergen Koeppel, CEO at Leitz GmbH, as its new President. He will succeed Mr. Ambrogio Delachi.

Mr. Luigi De Vito, Director of SCM Group's machinery division, will support the board with his international experience as Vice-President.

The new board members are: Mr. Luigi De Vito (Vice-President of Acimall), Mr. Samuel Hanni (Swiss Association, HBT),

Mr. Wolfgang Rohner (Austrian Association, FMFI), Mr. Mustafa Sabri Erol (Turkish Association, AIMSAD) and Mr. Erich Zeller (Swiss Association, HBT).

Koeppel said after his election: "The new board can build on a solid worldwide network and reputation. We will continue to strive for a strong and successful European industry with an international orientation".

In addition to the exhibition focus – Eumabois successfully works on a calendar of worldwide reference shows for the woodworking industry – the umbrella association of woodworking machinery manufacturers in Europe will strengthen technical lobbying and speak with one strong voice in the European Union, he said.

Arkema expands in powder coating resins in India

Arkema has announced plans to construct a new leading class polyester powder resin manufacturing facility, the first of its kind in India, on its existing resin platform in Navi Mumbai, Maharashtra.

The project, which represents an investment of approximately US\$15 million and is targeted for completion in 2018, includes a new manufacturing unit and a dedicated new laboratory to provide both application development and technical support.

The new facility will support customers in the fast growing powder coating market. It will produce polyester powder resins marketed under the 'Reafree' trade name. The principal use for polyester powder coatings includes a wide range of industrial coatings along with automotive and architectural applications.



Arkema's manufacturing site in Navi Mumbai.

Nippon launches 'Wood Art'



Nippon Paint (India), a producer of high-quality paints and coatings for automotive refinish, industrial and decorative sectors, has tied up with Italy's IVM Chemicals, a leading wood coatings company, to bring to India a unique range of wood coatings.

Under the new Wood Art division, this partnership will promote and market Nippon Paint's existing wood coating products based on Japanese technology, as well as IVM Chemicals' leading international brands in the wood coatings market in India.

The array of transparent and opaque wood finishes brought forward by this alliance ranges from traditional coatings like NC and melamine to advanced products such as polyester (lamination), polyurethane and water-based products.

The tie-up brings multiple wood coating possibilities through its diversified colour portfolio, unique tinting solutions, supporting products like aerosols, putties and polishes, non-paint ancillaries such as masking papers and tapes, abrasives and sanding tools as well as niche products like special effects and more.

Nippon Paint is also setting up two service centres in Delhi and Mumbai to support sampling, colour tinting, training and other techno-commercial services to clients.

HIFF to debut in Cochin this December

The Furniture Manufacturers and Merchants Association of Kerala (FuMMA) is organising the first annual Hindustan International Furniture Fair (HIFF) from 10-12 December, 2016, at the Lulu International Convention Centre in Cochin.

It will showcase the best and the latest

furniture trends and aims to bring synergy with the global furniture industry. With over 1,00,000 square feet of display area the three-day fair will attract interior designers, representatives, distributors, developers, manufacturers, architects, retailers, product designers, and visual merchandisers from India and abroad.

As one of the most significant events in the Kerala furniture industry it will serve as an ideal B2B platform for entrepreneurs, consultants, decision makers and trade delegations to meet, brainstorm, showcase and forge meaningful business partnerships. For more information visit www.hiff.in.

Egger HQ design wins US award



Photo courtesy: Egger Holzwerkstoffe

Egger's headquarters in Tirol, Austria, has won the American Architecture Prize. Architect Bruno Moser (inset) has already received several awards for the architecture of this building.

The Breitenbach-based architect, Mr. Bruno Moser, won the bronze medal in the American Architecture Prize for his work on the architecture of the Egger headquarters. The award ceremony took place in October in New York.



The prize is given annually by an independent jury to international projects on the basis of form, function and innovation. Thanks to the high degree of pre-fabrication in wood construction, the building was completed in just 12 months.

The design of the building envisaged using modular wood frame construction and consisted

of two four-level buildings made of pre-fabricated wood modules, connected to each other via a glass-covered atrium.

The company's entire range of wood-based products – including melamine-faced boards for furniture and interior design, laminates, compact laminates, Eurolight lightweight boards, and edging, as well as laminate flooring – was used for the construction.

Egger is a full-range supplier for the furniture industry, interior design, wood construction and wood-based flooring (laminate, cork and design flooring) industries.

ADB funding boosts strategic development of Eastern India

The Asian Development Bank (ADB) is providing a package of loans and grants to support part of India's planned East Coast Economic Corridor (ECEC) that, on completion, will create efficient infrastructure for expanded trade links with South and South-East Asian countries.

The ADB says that, on completion, the Visakhapatnam-Chennai

industrial corridor section of the ECEC, connecting four economic hubs and nine industrial clusters, will mark the first industrial corridor developed along India's coast.

The corridor will ultimately extend from Kolkata, in Bengal in the East of India, to Tuticorin, in Tamil Nadu, near the southern-most point of the country – ITTO

FII-India celebrates 4th anniversary



(L-R) Mr. Pranesh Chhibber, Country Director, FII-India; Mr. Gurpreet Singh of Aakar Architects; Mr. Peter Bradfield, Technical Advisor, Canadian Wood; Mr. Michael de Jong, Finance Minister, British Columbia; Mr. Jordan Reeves, Consul General of Canada in Mumbai; Mr. Ankush Seth of Mobel Techniks; Mr. Srikanth Srinivasan, President (Procurement) for Puravankara Projects; Mr. Michael Loseth, CEO of FII; and Ms. Nirmala Thomas, Director (Market Development) for FII.

Canadian Wood, represented in India by Forestry Innovation Consulting India (FII) Pvt. Ltd., celebrated its fourth anniversary in India on October 25, at its display centre in Mumbai.

Present at the event were Mr. Michael de Jong, Minister of Finance, British Columbia, and senior industry leaders from real estate, architecture and woodworking in India. The evening was hosted in partnership with the Consulate General of Canada in Mumbai.

The event also showcased success stories of usage of Canadian wood in major residential projects in India.

Mr. Pranesh Chhibber, Country Director, FII-India, said that while India's total forest cover is approximately 7 million square km, which is 21.34% of its total land area, it had suffered rampant deforestation in the last century.

"With higher consumption, fuelled by increasing affluence of its middle class, the trends indicate the country will have to rely on imports to meet its needs. Canada is thus well positioned as a long term reliable source," he said.

FII-India, funded by the government of British Columbia, Canada, represents Canadian wood in India and works closely with architects, manufacturers, importers and real estate developers to provide technical and procurement assistance. (www.canadianwood.in)



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Rules for correct machine cleaning and maintenance

- The machine and working area must be kept clean from working scrap and anything that could hamper the working cycle or access to the machine itself.
- The machine must be cleaned daily.
- Make sure that no material not needed by the machine can gather on it preventing safe operation and causing danger to the operator during the normal working cycle.
- Sliding guides, sliding bars and movement screws must be kept clean from any working residuals that can be an obstacle for correct machine movements and damage machine efficiency. Do not use detergents or lubricants.
- Make sure the machine is lubricated regularly. Grease the drilling head through grease nipple A (Fig. 1)
- Check the electric system safety with the condition of the electric cables. Make sure there are no signs of wear and tear.
- Check the clamping of the various mechanical components.
- Check the air pressure- air supply must have 6 kg/cm² pressure.
- Check the lubricant oil level in the air filter and top up if necessary.

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Problems /Causes / Remedies

Problems	Causes	Remedies
Drills do not work	-the motor does not work - motor burnt	-push the motor start push button. -release the emergency push button -check the fuse -check the air pressure -replace the motor
The motor works but the drills does not	-possible failure of gears, keys or drive joints	-replace them or call technical service staff
The hole is not accurate	-improper drill locking -drill wear -work piece improperly blocked	-check locking -replace -check clamp units, their seals and working air pressure
Drilling head jerking	-working residuals on sliding rod -sliding rods not parallel	- clean the sliding rod properly -check the mounting of sliding rod B(Fig2)
The hole distance or board thickness hole size not proper	- position indicator reading not matching as the setting is not proper -screw / nut thread damage	-adjust the position indicator, as per size. (As shown in Fig.2 & 3) -replace the screw / nut
Drilled pieces are not parallel to the reference bar	-incorrect parallelism of the drills in relation to the reference stop	-check the heads in relation to the stop and the parallelism of the line of head 1 with head 2.
Drilling head when raised does not reposition	-air pressure insufficient -air cylinder limit switch contacts damage. -limit switch not in position	-adjust the required air pressure -replace with new contact - make the proper adjustment

Fig. 1

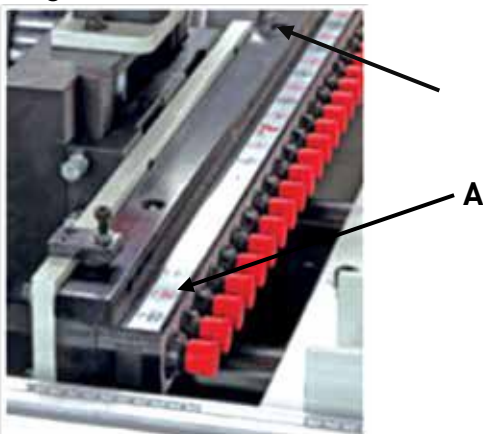


Fig. 2

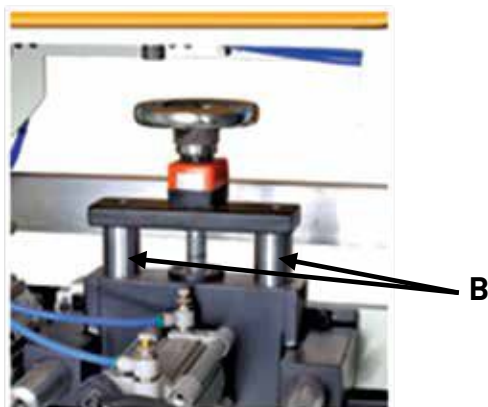


Fig. 3

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Dr. Dieter Brucklacher, the long-standing Chairman of the Management Board of Leitz GmbH in Oberkochen (Germany), passed away on September 27, after a short illness. He was 77 years old.

His wife, Ms. Monika Brucklacher, and his daughter, Dr. Cornelia Brucklacher (now Chair of the Leitz Advisory Council), the business management and all employees of the Leitz Corporate Group – comprised of Leitz GmbH, Boehlerit GmbH in Kapfenberg (Austria), Bilz GmbH in Ostfildern (near Stuttgart, Germany) and all their national subsidiaries – mourn a special person and an outstanding entrepreneur.

Dieter was born in 1939 in Oberkochen. He studied physics at the University of Stuttgart and Karlsruhe (Germany) from 1959 to 1965. From 1966 to 1974, he worked as a scientific employee for 'Institut für Material und Festkörperforschung mbH' in Karlsruhe.

Dieter was appointed Managing Director in 1975. In addition to his management tasks he crowned his academic career with a doctorate in engineering sciences at the Faculty of Mechanical Engineering at the University of Karlsruhe.

In 1982, Dieter took over the position of Chief Executive Officer at Leitz. With his strategic vision he expanded the traditional company from one to two company groups: one specializing in machine tooling for wood and plastics



and from the 1990s tooling for metals processing.

Since the 2000s, under the direction of Dieter, the company groups Leitz and LMT have become worldwide operating enterprises and are world market leading leaders in their segments. Dieter was active in the company until his last day.

Dieter gained worldwide reputation in his industries through his activities. In 1997, he was elected President of the Baden-Württemberg association of VDMA (Mechanical Engineering Industry Association). In 2007 he became President of VDMA in Frankfurt.

The same year he rose to chair the

Federal Association of German Industries (BDI) and of the Confederation of the German Employers' Associations (BDA), both headquartered in Berlin.

The knowledge and experience of this successful entrepreneur were highly sought after both nationally and internationally. In 2002, Dieter was appointed honorary professor of the Nanjing Forestry University in China. He joined the supervisory bodies of many renowned companies.

In 2008, he was awarded the German Federal Cross of Merit (1st class). In 2014 he was awarded the honour of 'Award German Mechanical Engineering' for his life's work.

Also a friend and patron of music and the fine arts, Dieter had become known far beyond the borders of his region. Out of his love for jazz, he established the International Music Festival 'Jazz Lights', which will take place for the 27th time next spring.

Leitz is a family business in its fourth and fifth generation of the Brucklacher family. Founded in 1876 in Oberkochen, the Leitz Corporate Group today is a leading manufacturer of machine tools for the processing of wood, wood materials, plastic and composite materials.

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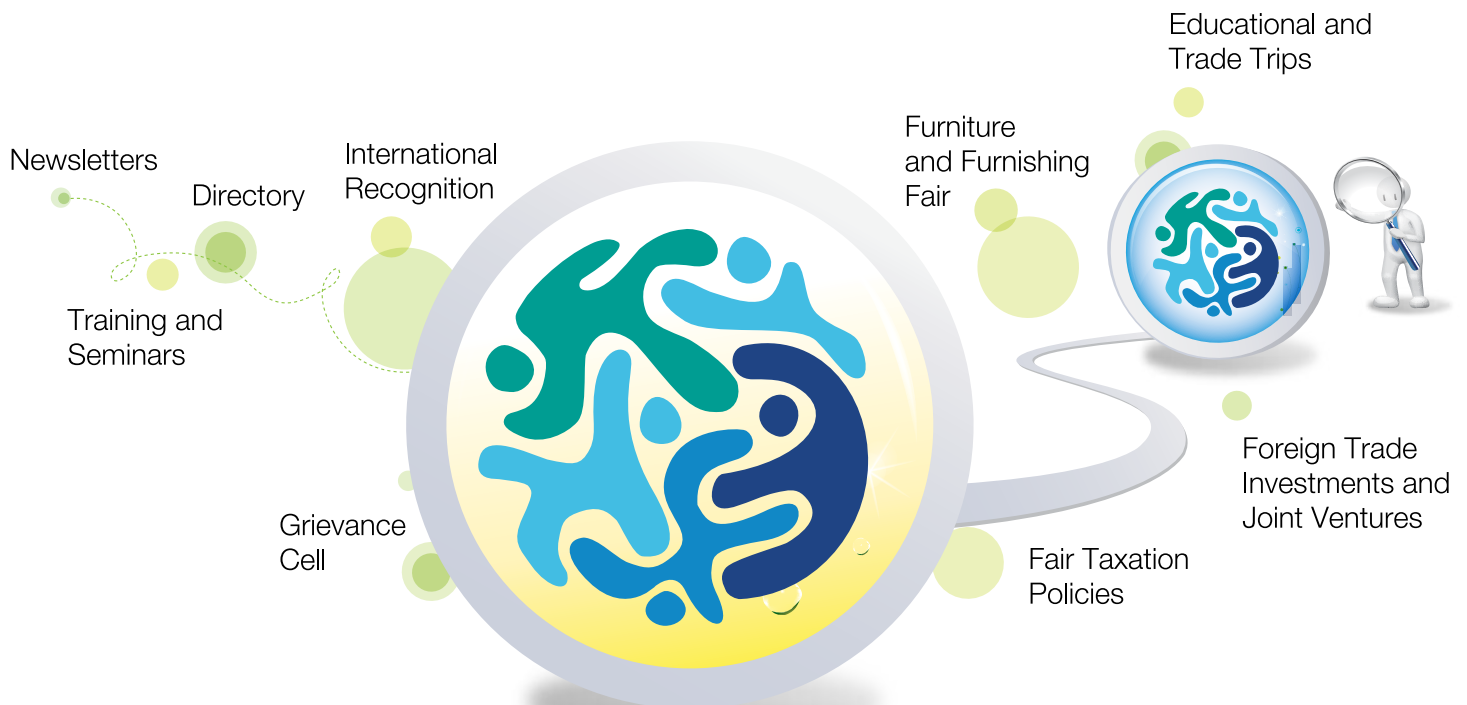


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HIFF (Hindustan International Furniture Fair)

10-12 December, 2016

Venue: Lulu International Convention Centre, Cochin, India

The first annual Hindustan International Furniture Fair (HIFF), organised by the Furniture Manufacturers and Merchants Association of Kerala (FuMMA), will showcase the best and the latest furniture trends and aims to bring synergy with the global furniture industry. It will be an ideal platform to launch new products, make new contacts and source raw materials, equipment, machinery and technology.

www.hiff.in

ACETECH

15-18 December, 2016

Venue: Pragati Maidan, New Delhi, India

20-22 Jan, 2017

Venue: Gujarat University Exhibition and Convention Centre, Ahmadabad, India

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EVENTS CALENDAR

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18-21 January, 2017

Venue: Banamax Centre, Mexico City, Mexico

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NEPAL WOOD

10-12 February, 2017

Venue: Bhrikuti Mandap, Kathmandu, Nepal

The third edition of this exhibition aims to bring all woodworking professionals, architects, designers, furniture manufacturers, engineers, material suppliers and technology providers under one roof for displaying and sourcing products. The construction industry is amongst one of the fastest growing sectors in Nepal and comes with a promising future.

www.nepalwood.in

DELHIWOOD

1-4 March, 2017

Venue: India Expo Center and Mart, Greater Noida, Delhi, India

DelhiWood has become the premier destination for woodworking professionals visiting biennially from across the globe. It has become Asia's only dedicated business-to-business meeting place for the entire woodworking ecosystem. The event offers 20,000 square metres exhibition space, 450-plus exhibitors from 30 countries. The three-in-one knowledge and technology sharing platform will have the Sourcing Forum, Furniture Distributors' Summit and Architects' Seminar as concurrent events.

www.delhi-wood.com

WOODSHOW

7-9 March, 2017

Venue: Dubai World Trade Centre, Dubai, United Arab Emirates

The Dubai WoodShow, the largest trade fair for wood products in West Asia, is organised in association with Eumabols, representing major European manufacturers of machines and accessories for woodworking. This year the show will record the participation of Turkey and India pavilions over and above last year's participants.

www.dubaiwoodshow.com

IFFS

09 - 12 March, 2017

Venue: The Singapore Expo

With over three decades of experience since its inaugural event in 1981, the International Furniture Fair Singapore is regarded by industry experts as Asia's premier sourcing platform and design-led exhibition. The event will feature a comprehensive range of furniture, furnishing, decorative accessories, interiors and fittings by a diverse portfolio of exhibitors, as well as offer an unparalleled access to the latest technological machinery development.

www.iffs.com.sg

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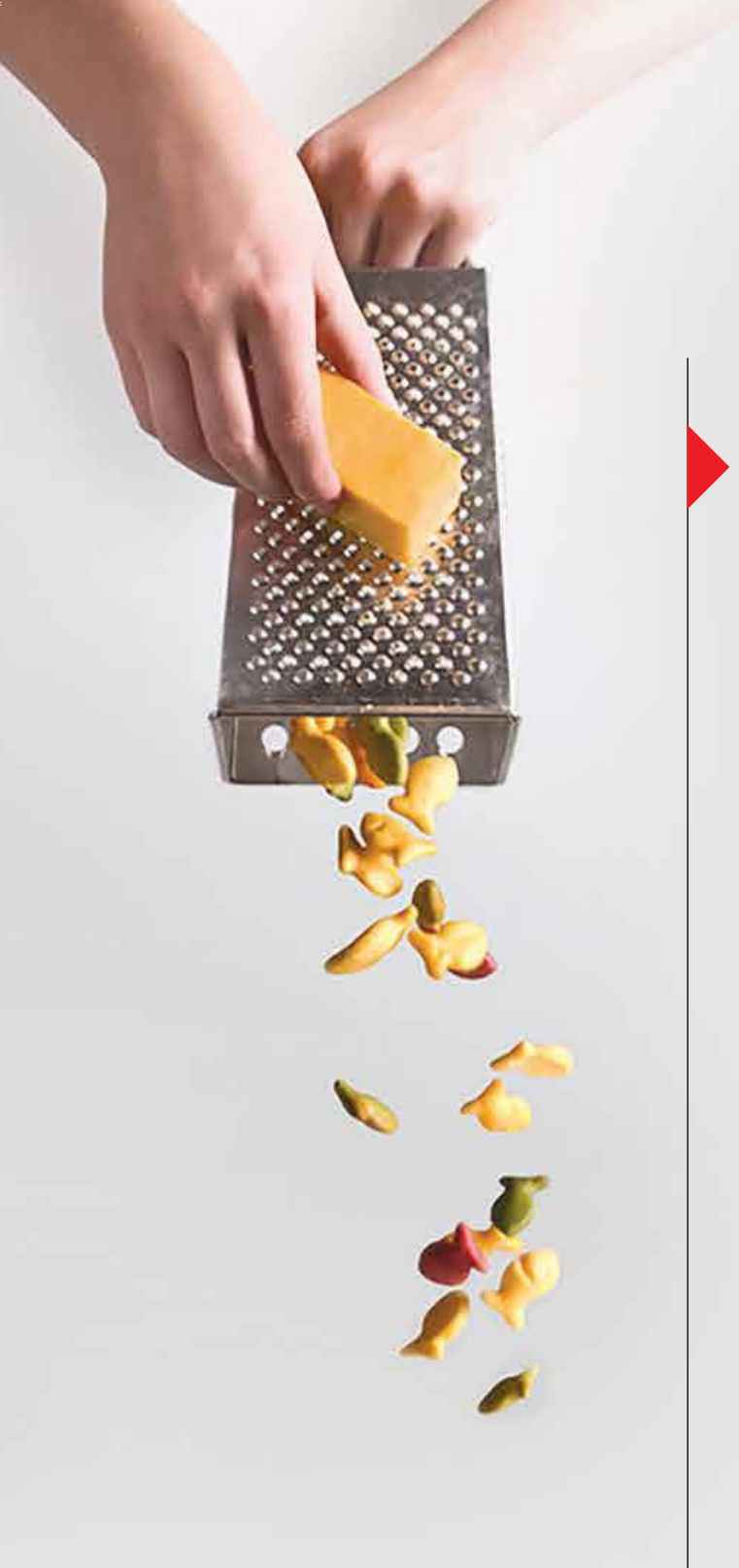
FIMMA BRAZIL

28-31 March, 2017

Venue: Bento Gonçalves, Brazil

FIMMA consolidates the wood and furniture industry of the region under one roof for four days and creates conditions for exhibitors and visitors keep the focus on solidifying partnerships. It hosts more than 600 exhibiting brands, and receives visitors from more than 40 countries.

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Formaldehyde is a matter of concern



L-shaped office work station.

Pic: Amazon Wood, Pune

By Nitin Vaze

The reclassification of formaldehyde by the International Agency for Research on Cancer as “carcinogenic to humans” has triggered enormous concern globally. Office furniture is a functionally needed utility value, keeping in view the ergonomic design for good working conditions.

Good lighting and aesthetics enhance office interiors. One of the most neglected aspects in India is the awareness to keep the level of formaldehyde emissions to acceptable levels in office interiors. These are released from the furniture, more particularly from wood-based panels used in the fabrication of furniture, such as plywood, block board, particle board and medium density fibre board (MDF).

Formaldehyde exposure potentially causes a variety of adverse health hazards, such as eye, nose, throat and skin irritation, coughing, wheezing and allergic reactions (see Table). Long-term exposure to high levels of formaldehyde has been associated

with cancer in humans. Formaldehyde can affect people differently.

Some people are very sensitive to formaldehyde at a certain level, while others may not have any noticeable reaction to the same level.

Formaldehyde levels in indoor air can vary depending on temperature, humidity and air exchange rate within the indoor space. In addition, several studies have shown that, in the presence of ozone, formaldehyde levels increase; therefore, the outdoor and indoor ozone levels are also relevant.

Formaldehyde levels in internal office spaces may change with the season, day-to-day, and day-to-night. Levels may be high on a hot and humid day and low on a cool, dry day.

Measuring formaldehyde emissions from individual consumer products is difficult because a variety of products in the office can release formaldehyde, or trap formaldehyde emitted from other sources. Products with greater emissions and larger surface areas in the office will most likely have a

greater contribution to indoor air formaldehyde levels.

We keep this in mind when categorising different product types:

Wood-based products: Pressed wood (hardwood plywood, particle board and MDF) especially those containing UF resins, may be a significant formaldehyde source.

Wallpaper/ paints: Moderate levels of formaldehyde are released initially after application. Some paints are now found with low-VOC (volatile organic compounds) formulations.

Other materials: Formaldehyde can be created from the chemical reaction between ozone and other VOCs during the use of personal computers, laser printers and photocopiers.

Re-emitters: Because they are porous, products such as carpets or gypsum board do not contain significant amounts of formaldehyde when new. However, they may trap formaldehyde that is emitted into the air from other products and later release it into the indoor air.

Formaldehyde exposure can cause a variety of symptoms and potential adverse health effects. A person's ability to smell a chemical odor, such as formaldehyde, does not always mean that the levels of the chemical are of concern, or will cause an adverse health effect. Therefore, some people can smell formaldehyde before being adversely affected by it.

You can reduce exposure to high levels of formaldehyde by installing wood floors or finishes that are not 'acid-cured', which is a type of finish that is formaldehyde-based. When installing pressed-wood products - such as particle board, MDF or hardwood plywood - for construction of office furniture and interiors, ensure that it is stamped in compliance with E1 emission norm at the most minimum.

Several safety standards are in currency across the globe, but the main ones are CARB (California Air Resources Board) P1&P2, the North American voluntary standards ANSI, the E2, E1 or E0 European emission standards (most imported products from Asia are E2 or worse), and the F-star emission standards set by the Japanese Industrial Standards. (See table for classification).

There are panel products even lower than E1 such as E0, or CARB P2 available in market. Attention and concern is required from all office furniture manufacturers to purchase wood panels having the minimum E1 certification for the safety and health concern of the people working in the office environment for which they supply the furniture made in their factories. Buyers also must make conscientious decisions while ordering furniture.

The writer is a well known figure in the world of panel products in India and abroad, having been in the business for several decades. His company, Sleek Boards (India) LLP, is one of the country's leaders in marketing a variety of technologically advanced panel products.



Common adverse effects on health from formaldehydes

Affected Areas/Systems	Potential adverse health effects
Eyes	• Stinging, burning, itching • Excessive tearing
Nose and Throat	• Stinging, burning, itching • Sore throat • Running nose • Blocked sinuses • Sneezing • Cancer
Respiratory	• Chest tightness • Wheezing • Asthma
Skin	• Allergic contact dermatitis • Skin rashes, blisters and flaking dry skin
Neurological	• Headaches • Mood changes (depression, irritability) • Insomnia • Attention deficit • Nausea • Impairment in dexterity, memory, equilibrium

International composite board emission standards.

Composite Board Emission Standards	Product	Formaldehyde Emission Limits	E1333 Equivalent
CARB-P1	HWPW	0.08 ppm	0.08 ppm
	PB	0.18 ppm	0.18 ppm
	MDF	0.21 ppm	0.21 ppm
CARB-P2	HWPW	0.05 ppm	0.05 ppm
	PB	0.09 ppm	0.09 ppm
	MDF	0.11 ppm	0.11 ppm
ANSI A208.1, A208.2	PW	0.2 ppm	0.20 ppm
	PB	0.3 ppm	0.30 ppm
	MDF	0.3 ppm	0.30 ppm
E2	PW	30 mg/100 g	0.38 ppm
	PB	30 mg/100 g	0.38 ppm
	MDF	30 mg/100 g	0.38 ppm
F** / E1	HWPW	0.12 mg/m ³	0.14 ppm
	PB	0.12 mg/m ³	0.14 ppm
	MDF	8 mg/100 g	0.10 ppm
F*** / E0	HWPW	0.5 mg/L	0.07 ppm
	PB	0.5 mg/L	0.07 ppm
	MDF	0.5 mg/L	0.07 ppm
F**** / SE0	HWPW	0.3 mg/L	0.04 ppm
	PB	0.3 mg/L	0.04 ppm
	MDF	0.3 mg/L	0.04 ppm

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