

Delivering innovative wood solutions

Avant Wood's advanced technology enhances the density and quality of wood while addressing sustainability

BY FATIHAH MANAF

In today's rapidly changing world, sustainability is crucial for consumers, businesses, and governments. However, the timber industry has traditionally been associated with unsustainable practices, hurting the environment.

Avant Wood recognises this challenge and is committed to providing innovative, eco-friendly solutions of the highest quality. By leveraging cutting-edge technology and a deep commitment to sustainability, Avant Wood is leading the industry towards a greener future.

"As a global forerunner in wood modification, our company can convert practically any wood species to meet market requirements. For example, Revotropix Paulownia grows quickly and stores carbon well. Still, its low density has made it challenging to use in certain applications, such as the construction industry," said Pekka Ritvanen, founder and chief executive officer of Avant Wood.

"However, with our Avant Wood technology, we can enhance the timber's properties for various applications worldwide."

Avant Wood provides innovative Thermo Mechanical Timber Modification solutions (TMTM™) and associated process control software and hardware technology. The Avant Wood TMTM™- FinestWood brand name and LOCK-WOOD trademark are protected globally.

MODIFYING THE PROPERTIES OF PAULOWNIA

When using wood, he said it was crucial to first address its high initial moisture content to prevent mould and termite damage. This can be achieved through drying.

"The thermal modification method is rapidly gaining popularity. Enhancing the mechanical properties of the timber, such as strength, hardness, dimensions, and stability, involves a complex interplay of various factors.

"By densifying the timber, we can increase its mechanical strength properties accordingly. The higher the density, the better the strength properties"

Avant Wood has collaborated with Ecopeneer to test and develop Revotropix Paulownia, achieving specific properties suitable for various applications. The two companies have been working together for about a year.

They are now entering a phase where Avant Wood will deliver their technology and machinery to Malaysia to improve the utilisation of Paulownia and other wood species for their materials and efficiency.

"Paulownia is very lightweight, with a density of around 250m³, but we can increase its density through our mechanism. Additionally, we can simultaneously dry the timber, improve and enhance its mechanical properties, and perform thermal modification to give the wood a darker colour," explained Ritvanen.



Pekka Ritvanen, Founder of Avant Wood and Sami Sillgren, CFO of Avant Wood.



Pekka Ritvanen.

SCALABLE TECHNOLOGY WITH LIMITLESS POTENTIAL

Ritvanen said Avant Wood's products and solutions were globally scalable. The company has conducted numerous tests with customers in Europe, New Zealand, Australia, Indonesia, and Vietnam.

"There is tremendous potential in Malaysia for our technology. The country boasts numerous wood species, including acacia and rubber wood, which can be utilised efficiently.

"However, the biggest potential lies in the palm oil industry. Oil palm trunks (OPTs) are typically considered waste and pose a challenge for the palm oil industry. But with our technology, we can convert empty fruit bunches and OPTs into excellent materials suitable for various applications," Ritvanen elaborated.

He mentioned that oil palm could be found in Malaysia, Indonesia and some parts of Africa and that the annual volume of trunks from plantation clearings amounts to over 100 million m³. Treating

it as waste results in carbon emissions through rotting or burning, which releases CO₂ or methane gas.

"Our solution can transform this waste into end products that bind CO₂ and harmful gases, preventing them from being released into the atmosphere for many years."

GIVING CUSTOMERS THE FLEXIBILITY

According to Ritvanen, conventional mechanical wood processing produces only a few standard products as commodities and sells them globally. However, Avant Wood's approach is different, allowing customers to request specific wood products and modify the timber accordingly.

The company's advanced system is flexible, and modification parameters can be accessed based on customer needs, which sets its technology apart from conventional wood techniques.

"The customers can specify the desired output of the modified timber; in some cases, they may want an annual production. Knowing the wood species, we can determine the modification speed and estimate the batch size required to meet the desired annual volume capacity.

"Our integrated system offers several advantages over conventional methods, as all the processes are integrated into one. For instance, it may take up to a year for Eucalyptus to dry using traditional methods before it can be marketed as a wood material. In contrast, our system can achieve this in a week or less, cutting the production time by up to 80 or 90 per cent. This offers customers greater flexibility," he explained. ●