

Breakthrough in kitchen furniture production: Biocomposites challenge chipboard

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Biocomposites challenge chipboard as furniture material. Researchers at VTT Technical Research Centre of Finland have developed a kitchen furniture framework material from plastic polymers reinforced with natural fibre. The new material reduces raw materials consumption by 25 per cent and the carbon footprint of production by 35 per cent.

"The frames are lighter by nearly a third because they contain more air," says VTT's Research Professor Ali Harlin. "Wastage during production is also reduced. This is a generational shift that revolutionizes both manufacturing techniques and design."

According to Harlin, the framework for the kitchen of the future will be compression moulded or extruded - familiar methods in the [plastics industry](#). The result is a component of exact dimensions, which does not need to be cut or drilled after production. Even the screw-holes are there when the component comes off the production line.

The natural fibre reinforcement in biocomposites can be sawdust, pulp, flax, hemp or peat. The new material is significantly stronger than chipboard and has excellent moisture resistance.

VTT has developed this new material in cooperation with the Finnish kitchen fitments maker Puustelli. Professor Harlin believes that furniture companies will be attracted to the new production technique, because it

will enable them to save on production and transport costs. The investments in new machinery will pay themselves back in a few years according to Harlin.

Industrial designer Juhani Salovaara, designer of the Puustelli composite kitchen, says that the starting point for the design was to achieve the smallest environmental impact and the largest degree of domestic origin possible.

"People have already heard of local food. We wanted to create the local [kitchen](#)."

The composites used in Puustelli kitchens are manufactured by the Finnish forest industry enterprise UPM. According to Salovaara, the degree of domestic origin of biocomposite furniture frames is in the region of 90 per cent. The material's breaking strength and moisture resistance are top class. It is also significant for the end user that the furniture's formaldehyde discharge is clearly diminished.

Professor Ali Harlin thinks it likely that the innovation will also be of interest outside Finland. Some European furniture makers have tried composites, but their production techniques are based on traditional cutting.

According to Harlin, VTT will continue developing biocomposites and charting new applications for them.

"One point of interest lies in whether biocomposites could be used in cars and other vehicles. In that field, weight is money even more than in [furniture](#)."

Provided by VTT Technical Research Centre of Finland

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