

# Facts about our innovations

## – what you should know about Metsä Group's development projects, innovations and the products

As part of our parent company Metsä Group, we create global well-being by promoting the bioeconomy and circular economy through innovative products and services. Metsä Group aims to be a frontrunner in developing new, increasingly efficient ways of using wood and innovating more valuable products ourselves and in the partner networks. In the demo plants of Metsä Group's innovation company Metsä Spring, we develop new business operations based on Nordic wood. Metsä Spring also helps startup-companies by providing them with financing, competence, cooperation networks, as well as with a responsible raw material.



### REVOLUTIONISING SUSTAINABLE TEXTILES

Metsä Group is conducting a pre-engineering for the first commercial Kuura® textile fibre mill. The pre-engineering is expected to continue until the summer of 2026. The project entity consists of four parts: pre-engineering of the first commercial mill, the development of the Kuura® fibre production process, work done with customers to facilitate market entry, and tasks related to project financing. The application for an environmental permit is part of the factory's pre-engineering package.

Kuura® textile fibre is a new product developed by Metsä Group, in which Finnish wood is converted into a unique textile fibre with high added value – without fossil fuels. Such textile fibres can be used to make both clothing and a variety of technical textiles. According to a [recent study](#), Kuura®'s climate impact is significantly lower than that of competing fibres.

Kuura® textile fibre is made from softwood pulp sourced from responsibly grown forests. During the pre-study, the environmental impact will be assessed through a comprehensive life cycle assessment. The potential mill

sites in Äänekoski or Kemi could leverage renewable energy and closed cycles from neighboring bioproduct mills. If realised, the mill could employ around 250 people with an annual production capacity of approximately 100,000 tonnes.

### BIODEGRADABLE ALTERNATIVES TO PLASTICS

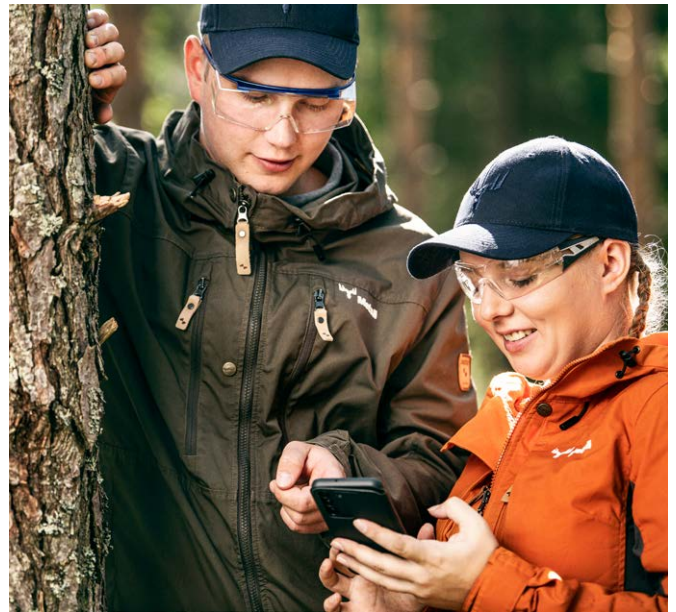
Muoto® (Finnish for Form) represents Metsä Group's innovative approach to creating a biodegradable alternative to plastic packaging. This three-dimensional fibre product, made from wood fibres, offers a versatile, renewable, and recyclable packaging solution. Muoto® is designed to replace plastic in various applications, particularly in food packaging.

The product is completely fossil-free. It is produced directly from our wet wood-fibre pulp at Metsä Group's demo plant in Äänekoski, with the entire production process integrated into one line to maximise resource efficiency and minimise waste. The raw material for Muoto® is traceable to Nordic forests, ensuring full supply chain transparency.

## AI APPLICATION FOR FOREST HEALTH

We utilise advanced technology in Metsä Group's value chain to safeguard our natural resources. In collaboration with CollectiveCrunch, Metsä Group has developed an award-winning AI application designed to detect insect damage in forests. This innovation won the international Quality Innovation Award (QIA) 2023 for its ability to identify damages, caused by spruce bark beetles, for example, before it becomes visible to human eye.

The application utilises artificial intelligence, machine learning, and open data to preserve forest health and carbon sinks in the face of climate change. It allows for precise damage detection and optimised wood trade and harvesting schedules, significantly enhancing operational efficiency. Since June 2023, Metsä Group's wood supply personnel have been using this application, and it is also available to forest owners through the Metsäverkko mobile application.



## ADVANCED AI AND MACHINE VISION FOR WOOD HANDLING

The Kemi bioproduct mill was built using the best available technology (BAT) and even more advanced methods, the mill includes unique solutions such as an entirely novel wood handling method.

The bioproduct mill's production process begins with wood handling, receiving its wood raw material primarily by rail along a new private electric track. The autonomous and AI-based equipment for the reception, storage, and process feeding of wood material is the first in the world. This system, powered by renewable electricity generated by the bioproduct mill, supports Metsä Group's fossil-free 2030 strategy.

Two great woodyard cranes highlight the advanced technology used at the Kemi bioproduct mill. These electric and autonomous cranes unload wood from trains and trucks using artificial intelligence and machine vision.

The cranes improve the environmental, material, and energy efficiency of wood processing. They reduce wood waste, operate more quietly than current telehandlers, and minimise the need for additional work machines on-site. Furthermore, the systematic placement of functions, electric wood unloading equipment, and noise reduction measures ensure a sustainable and community-friendly operation.

