



Pesmel will deliver a distribution center for Metsä Group's new bioproduct mill in Äänekoski, Finland. The distribution center will be implemented using the new TransBale concept, which has been developed in cooperation with Metsä Group since 2013 and will be the first delivery of its kind in the world.

# The world's first automated pulp distribution center to be delivered by Pesmel

**T**he construction of the distribution center will begin in summer 2016, and its commissioning will take place in spring 2017, after which all of Metsä Group's 1.3 million tonnes of pulp production will be distributed through Pesmel's facility. The core of this automated distribution center is high-bay storage with two fully automated stacker cranes. The system buffers and sorts pulp bale units by product type and customer order, and controls all dispatch operations.

## **An innovative, all-inclusive delivery**

Compared to typical high-bay storage that uses a pallet racking system with several stacker crane aisles where only two pallets can be stored in each, TransBale is deep-lane storage where six pulp bale units can be stored in each storage channel. This makes it possible to store larger amounts of material in a smaller space. The pulp bale units are stored on steel C profiles, and the shuttle car moves the bales from the bottom, which is gentler than the

typical way of moving them by the steel wire that holds the bale units together.

Pesmel's delivery includes the following:

- In-feed conveyor
- RFID code system for identifying incoming products
- Construction of the shelving according to the EN 1090 standard
- Two stacker cranes
- Out-feed conveyor
- Roof and wall elements
- Sprinkler system
- Pesmel WMS warehouse management system

## The pulp distribution center in numbers

- Measurements: 100 meters long, 35 meters high and 30 meters wide
- Handling capacity: 6 to 12 pulp bale units per crane, 1,000 tonnes per hour
- Storing density: 9–10 t/m<sup>2</sup>
- Total capacity: 25,000 tonnes in an area of 3,000 square meters
- Three main distribution channels for pulp:
  - » 800,000 tonnes are transported as export units by train to Vuosaari harbor to international markets,
  - » 400,000 tonnes are transported by train and trucks directly to customers mainly in Finland
  - » 100,000 tonnes are refined in different units in the mill area.

### Pesmel WMS plays a significant role

The distribution center is equipped with the Pesmel WMS warehouse management system, due to which the warehouse inventory is real-time and fully automatic. The WMS plays a big role in the operations of the distribution center as it is connected to both the production automation system and the mill's SAP system. Based on the product and dispatch information obtained from these systems, the WMS controls automated train and truck dispatch and loading operations. With automatic loading, trucks are loaded in five minutes, and a train with 22 cars carrying 1,400 tonnes can be loaded in three hours. In addition to loading efficiency, automation minimizes work safety risks and damage to the equipment and products.

### The benefits of the TransBale concept

There are several benefits to utilizing the TransBale concept that make it a strong solution in many respects.

### Cost efficiency

The automation of the distribution center lowers operating costs significantly, because there is less need for forklift drivers and supervisors in loading. The functionality can be supervised by the operator at the mill. The high-bay construction enables increased production capacity without the need for additional investments in the distribution center. The high-bay concept requires less space for building, and it is easy to expand the shelving upwards if future needs dictate without substantially disturbing the operation of the facility.

The Pesmel WMS allows adjustable sorting capacity, which means that there is no longer any need for preliminary sorting, as the stacker crane and WMS keep track of the storage location of each pulp bale unit. This enables the optimal use of space, regardless of how many different grades of pulp are produced.

### Reliability

The construction is a rack-supported building, which means that instead of being located inside another building, the roof and wall elements are attached to the frame of the shelving. The construction has been designed to function even in winter conditions: it is unheated and fully unmanned, with the exception of maintenance measures.

The simple construction ensures reliable operation with the integral shelving, two cranes and chain conveyors. Thanks to the real-time inventory enabled by Pesmel WMS, the delivery process is also very reliable. The

orders are delivered on time and to the correct place as human errors in stock bookkeeping and dispatch have been eliminated. Also, the availability of the 24/7 HelpDesk ensures that the system operates reliably.

### Safety

The fully automated dispatch center functions without forklifts; they are only needed in loading the cargo. The elimination of busy traffic inside the facility is a major safety factor. Also, the pulp bales are handled extremely carefully as the shuttle car moves the bales from the bottom.

Fire safety in the TransBale distribution center is exceptional compared to typical storage facilities. In a typical storage building, the sprinklers are located in the ceiling, so if a pulp bale that is located lower in the shelving starts to smolder, it is difficult to extinguish it. In TransBale, there are thousands of sprinklers integrated into the shelving, which enables effective extinguishing.

### Environmental friendliness

The TransBale concept supports environmentally friendly principles. The system works 100% on the energy produced by the Metsä Group mills, so no fossil fuels are used. In addition, the stacker cranes store the energy that is produced when the cranes lowers. This energy is supplied to the mill's own electricity network. Also, because fewer forklifts are needed, less fuel is consumed. TransBale's optimized, efficient use of space minimizes the need for storage space. •



Tony Leikas, president and CEO of Pesmel, and Timo Merikallio, the project director from Metsä Group, sign the agreement on the TransBale distribution center for the bioproduct mill in Äänekoski.

# TransBale honed to top shape with Metsä Group

Matti Alanen, Vice President of Logistics Finland at Metsä Group tells us about the cooperation with Pesmel and why they chose us and the TransBale concept.

## **How easy was it to choose the supplier for the distribution center? Which aspects did you consider when choosing Pesmel?**

The selection process was not just a selection between different system suppliers, but also a selection between various technical and functionally quite different storage and handling solutions. The further the preliminary survey progressed, the more the benefits of TransBale became clear.

Factors favoring Pesmel included the company's fine references in forest and other heavy industries, Pesmel being a Finnish company, and experiences of previous solution deliveries to other Metsä Group production plants.

## **What benefits can you see in Pesmel's solution?**

TransBale provides an excellent chance to develop the product delivery pipeline as a whole, not just the dispatch operations at the mill. During the preliminary planning stage, the entire product delivery chain was modelled and the share of cost elements created during the different stages identified. After this, we sought a solution that would enable us to manage these material flows of 1.3 million tonnes in total in the most cost-efficient and reliable manner. TransBale will also provide us with better tools for planning and grouping deliveries in a proactive manner, further benefiting the logistics pipeline outside the mill.

## **How do you see the fact that the delivery is the first of its kind in the world? For instance, will this bring you more visibility? And does the pioneer position bring any uncertainties with it?**

The choice of TransBale for the bioproduct mill is a fine practical demonstration of Metsä Group's pioneer position within the industry. One of our values is renewal, which strongly challenges us to continuously develop our operations. Selecting high-bay storage together with the related material handling and logistical solutions is a fine example of this.

We believe that after completion, the new and innovative solution will attract a lot of interest within the industry, and we are sure to receive requests for a visit.

Before the selection was made, the solution was carefully investigated from the perspective of usability, among other considerations. We studied other solutions of the similar type already in use, with the primary intention of gathering other users' experiences of the operational reliability of high-bay storages. The distribution center to be delivered to the bioproduct mill will be a seamless part of the mill's production machinery, and its reliability must be top class.

## **What has the development work for the TransBale concept been like with Pesmel?**

Detailed planning work was started right away, and Pesmel deserves credit for its fine overall knowledge of the forest industry.

We soon reached an understanding of the most significant technical details. Ideas and alternatives for technical solutions were discussed quite openly at that time.

At the moment, the planning work has already progressed far and is primarily divided into matters related to the construction work and definitions for the WMS (Warehouse Management System). The construction stage at the mill site is just about to begin.

We cannot find anything to complain about in our cooperation. Pesmel's team has been working actively, and we have proceeded with TransBale as planned. •



PHOTO: METSÄ GROUP

## **Metsä Group's new bioproduct mill**

Metsä Group, part of Metsä Group, is building a bioproduct mill in Äänekoski, Finland in the area of their existing pulp mill. It is the largest investment in the history of the forest industry in Finland. The bioproduct mill's annual pulp production will be approximately 1.3 million tonnes, of which 800,000 tonnes will be softwood pulp and 500,000 tonnes hardwood pulp.

The softwood pulp will be exported mainly to Europe and Asia. In addition to premium pulp, the mill will produce much more electricity than it will need, as well as tall oil and turpentine, among other bioproducts. All side streams from the bioproduct mill are planned to be utilised in the ecosystem that will be formed by various companies around the mill.