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Metsa Fibre Boosts Accuracy, Speed of Wood-Pulp Shipments

Metsä Fibre, a Finnish producer of wood pulp used to manufacture paper and cardboard, reports that it has improved efficiency at its four mills, reduced shipping errors and increased the visibility of its goods within the supply chain, thanks to a newly deployed radio frequency identification

system. The solution, provided by Vilant, was taken live in December 2011, following a pilot of the technology at Metsä Fibre's pulp mill in the city of Rauma. In January of this year, one of Metsä Fibre's customers—a paper mill—began reading the RFID tags in order to document the receipt of pulp shipments, as well as storing that data and sharing it with Metsä Fibre. Thanks to RFID readers installed on forklifts and at a conveyor portal, the company is afforded better data regarding where particular grades of pulp are located, without requiring its staff to manually write down serial numbers.

Metsä Fibre's four pulp mills produce a variety of pulp grades, which are formed into bales and are then shipped from Finland, typically via seagoing vessels, to paper mills and other customers throughout Europe and around the world. During that process, the bales may remain in storage prior to shipping, at Metsä's own mills and at port warehouses. Although the company produces more than 20 different grades of pulp, the bales can often look similar. Thus, the firm reports, ensuring that the correct bale is included in the proper shipment can be a labor-intensive process.



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"Prior to the RFID installations, dispatching was based on visual identification at each storage point," says Tarja Nousiainen, Metsä Fibre's VP of key accounts and pulp supplies. This, she explains, was accomplished by printing serial numbers on the bales. "The problem was that these

markings have not been very clear and readable. In addition, all the handlings and identifications, as well as reporting, have been based on manual data in each storage point on the way to the customer mills.”

Metsä Fibre began looking into RFID solutions as early as 2005, but determined that using passive ultrahigh-frequency (UHF) RFID tags in the presence of wood pulp would not be easy. The company selected Vilant because of its willingness to perform the necessary research and development to ensure that an RFID system would function within that environment. Most passive tags could not be easily read through the pulp, according to Ville Kauppinen, Vilant’s CEO, and initial read ranges were, at most, a half meter (1.6 feet). Working with numerous RFID tag vendors, Vilant found that several EPC Gen 2 passive UHF tags—specifically, Smartrac’s DogBone tag and a custom-made model from Confidex—could be interrogated through pulp bails at a read range of up to 5 meters (16.4 feet).

After a new bale—which typically measures approximately 90 centimeters by 60 centimeters by 60 centimeters (35 inches by 24 inches by 24 inches)—is created as part of a wood pulp order, it passes down a conveyor belt. An Impinj Speedway Revolution R420 reader automatically encodes an RFID tag, which is then inserted into the bale. The Vilant software forwards that tag’s ID number to Metsä Fibre’s own management system, where it is linked with existing data regarding that bale, such as the type of pulp that it consists of. The Speedway Revolution readers come loaded with Vilant Engine software, which manages read data before forwarding it to the back-end system. Vilant’s Device Manager software controls all of the interrogators, sharing read data with Metsä Fibre’s own back-end software.

Bales are stacked in groupings of eight to form a shipping unit, and are tied together with wire before being transported by forklift into the warehouse to await shipment. The forklift is equipped with an onboard computer containing a Speedway

Revolution reader that captures each bale tag's ID as soon as the shipping unit is lifted. Forklift operators can view which items they are picking up on a touchscreen, as well as input details into the system—such as which bales are being moved into storage, and which are bound for the loading dock for pickup. At the time of loading into a truck or a train, the shipping units are again identified by the forklift reader as each one is lifted. That information is compared with the order data, thereby verifying that the correct products are being shipped to the proper customer. If, at any time, the wrong bales are moved, or if any bales are about to be loaded onto the incorrect trailer, the back-end software will determine that mistake and display an alert on the back-end system for the forklift staff and management.

At the seaports (two are located in Finland, on the exporting side, and one is in Germany, where goods are received), members of the port operations staff employ forklift readers from Impinj, along with handheld models supplied by either Nordic ID or Motorola Solutions, to interrogate tags on pulp bales as they arrive or are placed onto a vessel. That data can then be shared with the Metsä Fibre Web-based software, in order to create an electronic record of what was received and then shipped out of each port.

After a shipment leaves the importing port, the final tag reading takes place at the customer's site—typically, a paper mill. (At present, only a single paper plant is utilizing the system, though Metsä Fibre declines to provide its location.) As the pulp bales are consumed for the manufacturing of paper products, each bale is identified via an Impinj portal reader, installed on a conveyor.

Since the system's installation in December, Nousiainen says her company has seen an improvement in order shipment accuracy, since the tagged items cannot be erroneously sent to the incorrect customer simply because one bale looks very similar to another. What's more, the management can now

receive information much more efficiently regarding a particular order's status and a specific bale's location. Because each bale can be identified automatically, she says, the system also decreases the amount of manual work that might previously have been spent searching for orders, or identifying a particular bale.

In the future, Nousiainen says, Metsä Fibre hopes to provide status information to customers with regard to the time and date that an order was filled or shipped.

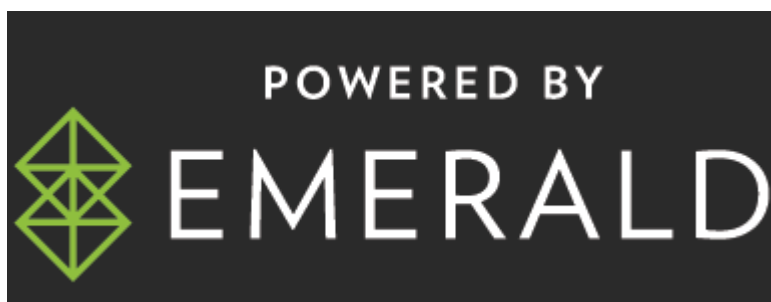
Metsä Fibre intends to employ RFID technology at all of its production units, Nousiainen adds, and at all ports and sites at which it maintains pulp storage facilities. "This solution is meant for worldwide usage," she states. "We are convinced that the usage of RFID tags will become general-solution in the pulp business, since the benefits are very clear."



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