

# Pesmel Material Flow How

– tailored solutions for paper mills and converting plants



Material flow-related conveying, packing and storing operations are internal logistics that are vital for smoothly flowing mill processes. These processes demand a different set of skills; know-how of material flow – Material Flow How. Jouni Räisänen and Kaj Fahllund put their heads together to find the best solution to the customer.

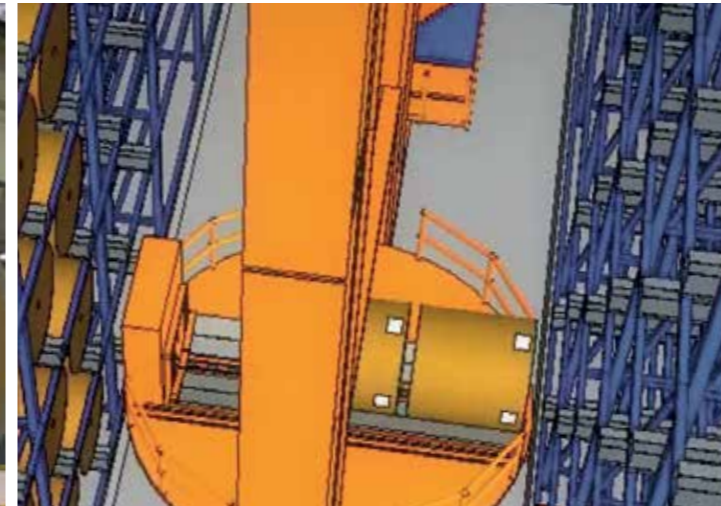
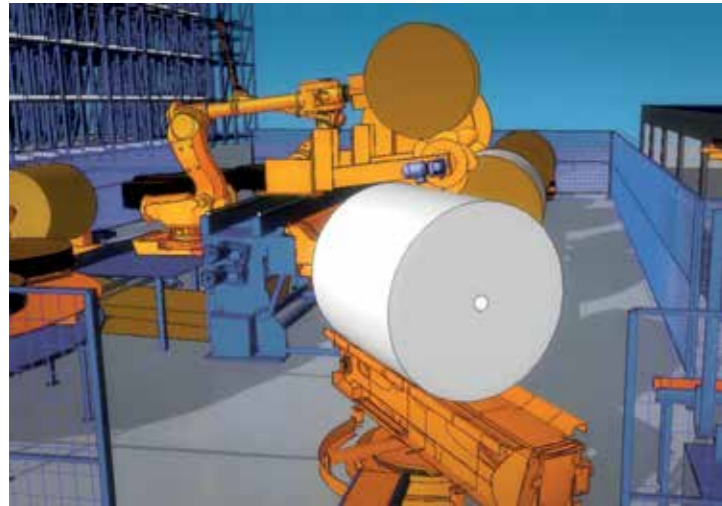
Pesmel relies on its extensive experience and know-how when providing material handling systems for paper mills and converting plants.

In any paper mill, the processes can be divided into three main areas – fiber preparation, paper making machinery and finishing material flow – a tricycle that works best when correctly balanced. In this instance, material flow means everything from the slitter winder deck to the mill's shipping dock. Of these three main areas, pulping and paper making are process technologies to which the paper makers are educated for, whereas the finishing material flow is left with less attention. However, material flow-related conveying, packing and storing operations are internal logistics that are vital for smoothly flowing mill processes. These processes demand a different set of skills; know-how of material flow – Material Flow How.

The key to cost-effective internal logistics is a well-engineered system layout that saves space and minimizes the amount of equipment utilized. In order to create this, a vision of an optimal system is required as a basis for the material flow layout engineering. A common layout engineering mistake is to place too much focus on details at an early stage by jumping directly to component application. This hinders your ability to see the big picture – what is really needed, and why.

It's safe to say that no two mills are identical, so therefore logistics system layouts are always separately tailored for each mill using base modules. This requires in-depth understanding of processes and engineering, as well as a flexible attitude when searching for the optimal solution. At Pesmel, we are specialized in the creation of layout concepts for paper mill internal logistics, specifically for how material moves inside the mill. Pesmel has developed the concept of Material Flow How that comprises solutions for roll handling, packing, storing and dispatching – all combined with tailored engineering. >>





PHOTOS: PESMEL

### System engineering of a functional mill concept

The production of goods take naturally the center stage at paper mills, but attention must be paid to internal logistics in order to avoid bottlenecks in the production process. The system engineering of a paper mill begins by defining the must-dos for the internal logistics: specific grade-related handling requirements, the needed buffering capacity between production and shipping, packing method selection based on the mill's actual needs as well as the preferred automation level.

### Pesmel's cutting-edge solutions

When Pesmel's specialists make their first visit to the customer's site, the customer may not necessarily be able to put into words what they want or even know exactly what they need. In these situations, the service provider's sensitivity to interpret the customer's needs is emphasized. Pesmel's specialists have the ability to listen to the customer and, thanks to their expertise in the field, truly understand what they mean. When the connection between the customer and the service provider is uncomplicated, it is possible to start looking for the optimal layout concept.

In fact, it is common that there is not only one possible layout solution, but several. Our consultants visit the mill to assess the current situation. They have the ability to see beyond the current state and envision what is possible to realize in that environment. Pesmel's advantage is that we are able to deliver tailored solutions that include all aspects of the mill's material flow process. We are able to see the big picture and to provide the most suitable alternatives across the entire finishing process. Conversations with customers with a genuine understanding are a prerequisite for finding and selecting the

most suitable solution for each case. The key is to start this communication early enough, before making other decisions that will limit the number of layout options.

At Pesmel, we differentiate ourselves from our competitors in the concept engineering phase with our 3D illustrations and animations, enabling us to verify and demonstrate solutions in a very tangible manner. Three-dimensional layout concepts are much easier to understand when compared to a stack of 2D illustrations, even for engineers who have spent most of their careers with two-dimensional illustrations. Our 3D illustrations are the first steps on the path which can end up to full-scale simulations with actual production data.

A simulation study is a vital tool for assessing the practical situation and planning the layout concept at an early stage of the project. The real situation is simulated with real product measures, capacities and equipment layouts in order to identify the possible bottlenecks and to analyze the total capacity of the mill. With this information the customer is able to optimize the purchase, often with big savings in the actual machine purchase. A simulation study also gives guidelines to what kind of roll-handling, packing, storing and dispatching systems should be build. The study also creates a foundation for an upper-level control system and helps to plan and execute it in practice with a production-oriented approach.

### Strong and experienced resources

Because Pesmel's experts are all in-house, the system engineering process is more flexible and easily controlled. All the phases of the delivery – system engineering, manufacturing and assembly of the machinery, installation of the system – are overseen by Pesmel's own skillful personnel.

When the whole system is delivered by one supplier, all parts "talk" with each other and the production flow can be guaranteed.

### Pesmel FlowCare helps in optimizing the mills' operations

IoT, the Internet of Things, means the connection between various equipment, vehicles and buildings that is created with sensors, software and network connectivity. This makes it possible to collect and exchange data between the various objects and to remotely monitor and control them. The collected data can be refined into usable form through analysis, and it is possible to create different kinds of reports and other resources which help to improve the mills' production and cost-efficiency.

A paper mill is full of sensors that are controlled by programmable logic controllers (PLCs). With the help of IoT, it is easier to collect and analyze data than ever before. For example, the mill's service manager can use IoT software to identify and anticipate the equipment's and system's need for spare parts and maintenance, as well as planning maintenance schedules. With the help of the software, maintenance personnel no longer needs to constantly make inspections on the equipment, which makes the work of the maintenance personnel easier and creates cost savings. In addition, operating expenses are lowered when fewer personnel are needed to ensure the reliability of the mill.

Pesmel delivers the FlowCare IoT software as part of the system delivery. FlowCare is a part of Material Flow How together with machinery and other equipment, automation and data systems. FlowCare primarily works in the mill's internal network and is fully operated by the customer. The software can be downloaded to a smart phone, tablet or PC,

and the customer can use it to follow the operation of any single machine in the mill and the technical operation of the mill, find bottlenecks in production, spot the maintenance needs of the equipment in advance and optimize the timeliness of maintenance work. The software is intended for the customer's own use. With FlowCare, the customer can collect and analyze equipment data for operative and maintenance purposes. Pesmel does not collect or use the data collected from the processes and production, instead the customer analyzes the data and makes their own decisions based on that. This is part of Pesmel's customer-oriented service. •

### Pesmel's Material Flow How

- The ability to understand customer needs
- The ability to find alternative options for the mill layout
- Concept simulations
- Flexible solutions and services
- The solutions cover the whole material flow, from slitter winder deck to the shipping dock
- FlowCare software (IoT) included in the delivery to optimize the operation of the mill