



## PESMEL MATERIAL FLOW HOW

Handling & Packing Systems for Metal Industry

**PESMEL**

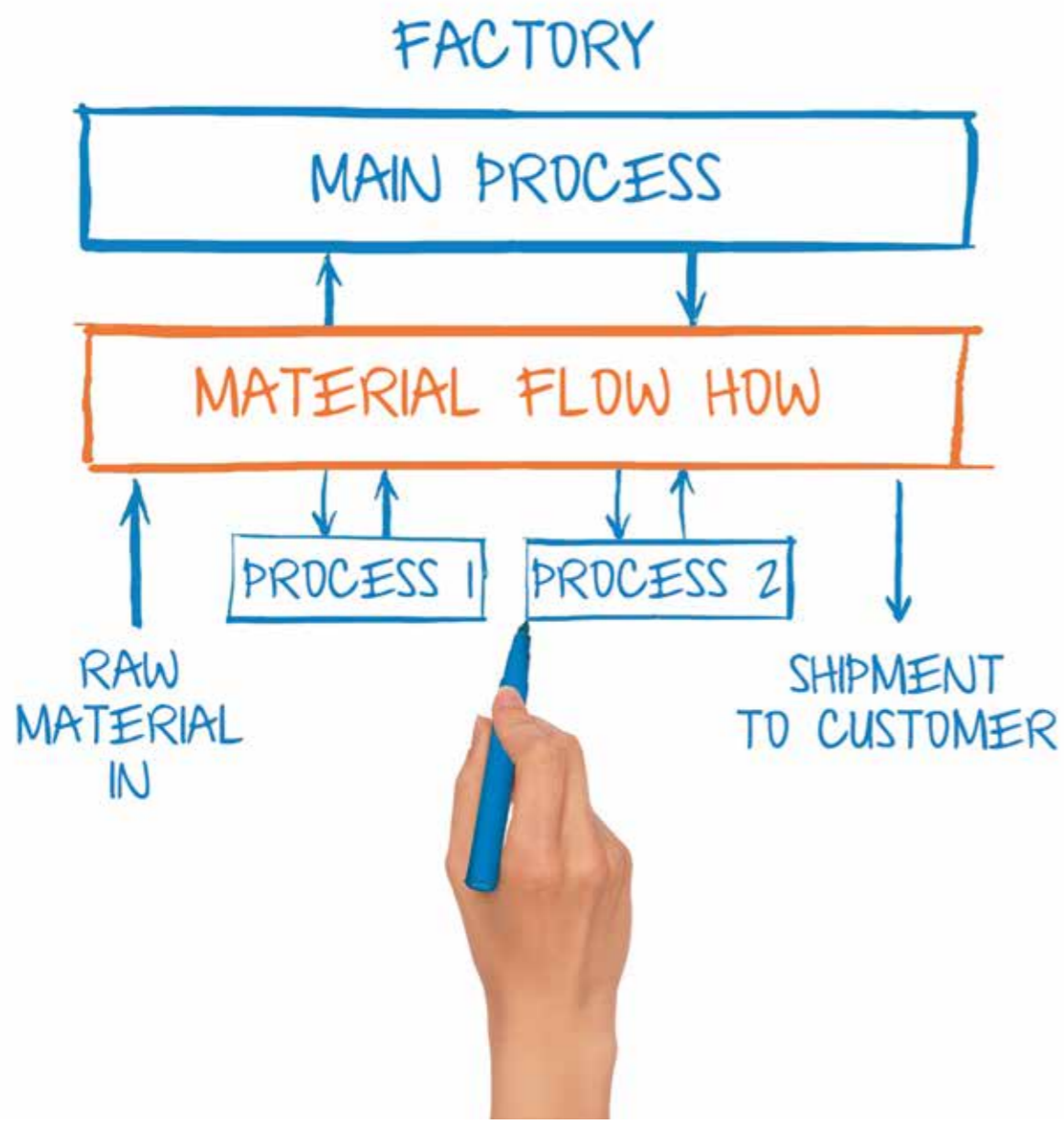
# Material Flow How® -Concept

The idea behind the Material Flow How® -concept is to arrange production and material flows so that production efficiency is maximized and needed equipment minimized.

The implementation of Material Flow How starts by building a simulation model, by which different production procedures and material flows are examined and bottlenecks analyzed.

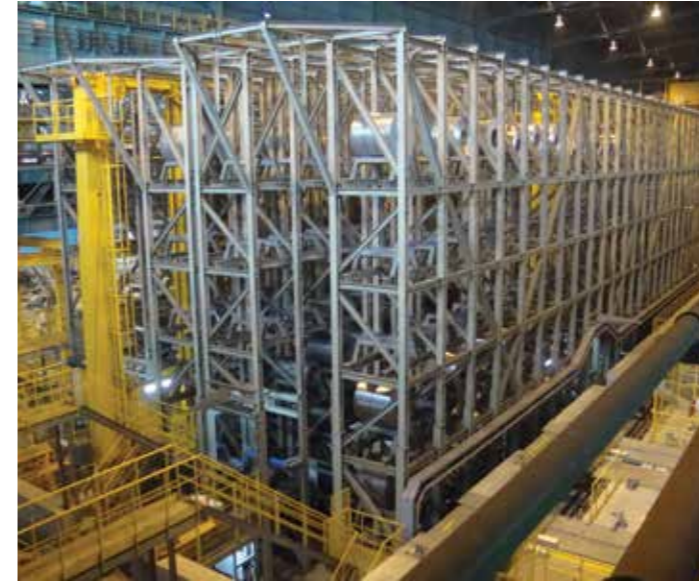
The main components of the concept are automated AS/RS (automated storage and retrieval system), internal logistics and packing systems, all fully integrated to Pesmel Control MOM (manufacturing operations management) system.

Our concept is completely in-house engineered, including mechanical, electrical, PLC and ICT engineering. This process results in one functional system that is easy to operate and maintain.



Material Flow How® -concept includes all logistical functions inside the mill:

- Handling
- Storing
- Packing
- Dispatching
- Loading



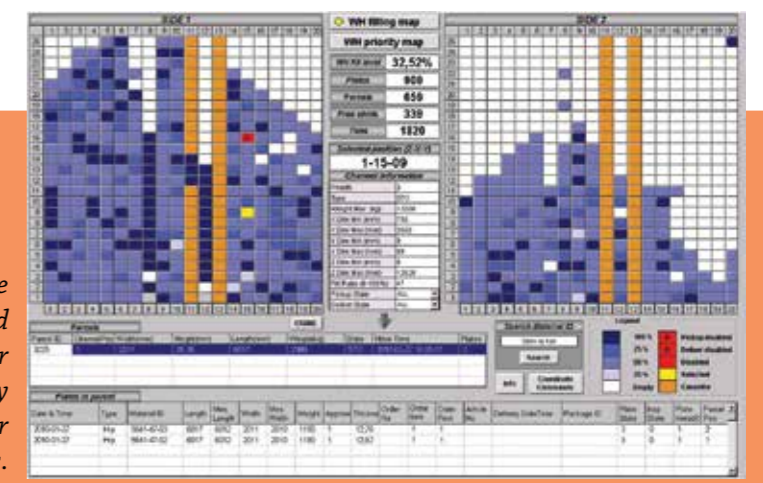
## WMS (Warehouse Management System)

Pesmel WMS integrates and controls material flows between production, storage, logistics, packing and shipping.

Computer control system is controlling the storage and logistic functions and can be fully integrated with the mill's existing network and upper level control systems. The control system receives internal orders for different processes or customer orders for shipment.

Main task for WMS is to control the material flows between different processes and optimize the storage and logistical functions.

This increases the total capacity of the system and decreases the operating costs. Wide range reporting and diagnostic functions are included into the system.



*Pesmel storage systems are controlled automatically and unmanned by Pesmel's own server PC-based WMS with the necessary number of client PCs for operator terminals.*

# Coils

We provide a single source for handling, packing and storing of aluminium and steel coils. Each system is built from tested modules according to customer needs.

Our logistical systems are based on carriages like lifting and four-way carriages. Carriage system is fast and accurate solution providing redundancy and flexibility for re-routing in case of production change.

Pesmel packing systems are a highly efficient and flexible solutions for coil packing. Line can pack different sizes and types of packages without any setups. This combined to high capacity enables the packing line to serve several slitters or production lines simultaneously.

Automated high-bay storages are used as a production buffer and shipment storages. Computer controlled high-bay storage is the most efficient way to store coils.

Pesmel Material Flow How -concept for coils gives operational efficiency and savings with the following main features:

#### Storage:

- Simplified layout with minimal number of equipment.
- High-bay storage footprint is 1/3 of traditional floor storage.
- Handling capacity of stacker crane is three times higher than overhead crane's.

#### Packing:

- Best rust prevention in the market with TEW technology (crep + film).
- 20-30 percent savings in packing materials.



TEW wrapping with crep paper and plastic.



1.

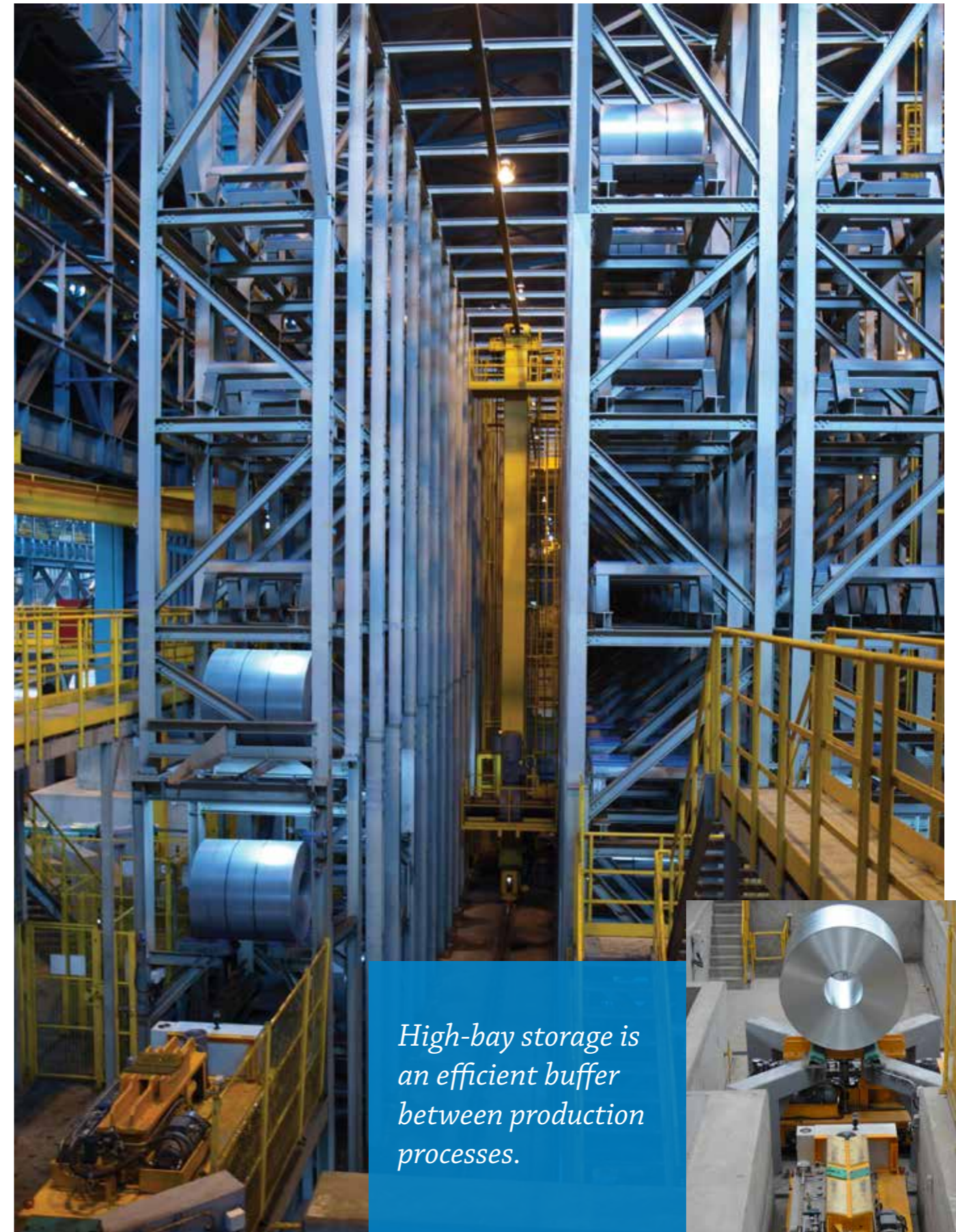


2.



3.

1. Coil carriages are used for flexible handling.
2. Through eye wrapping system, minimum coil eye 400 mm.
3. Outlook of the package gives the first impression of the product quality.



High-bay storage is an efficient buffer between production processes.



# Sheets



Automated high-bay storages for sheets are used as production buffer and shipment storages. Selection of the technology is dependant on the product as well as the system layout.

Pesmel Transpallet is developed to handle plates and sheets up to 24 meters of length. Transpallet is based on patented deep lane technology. The storage is adjustable in all three axis: width, length and height.

Telescopic fork type storage is another solution of automated high bay storage. Great advantage of high bay storage is that all products are available from top to bottom.

*Automated sheet storage as a shipment storage.*

Pesmel sheet packing systems are designed to protect metal sheets against moisture, dirt and damages. The system is especially designed for sheet packing and it gives an excellent protection to products heading for storage and transportation.

In the packing line the sheets are automatically piled on stacks by weight, height or number of sheets. The system is able to customize the package, for example small sized sheets can be piled on patterns and packed as a bigger package. Sheets piled according to customer orders are ready to be shipped as they exit the packing line. For sensitive materials, paper is automatically inserted between every sheet.

## Automated sheet packing system includes the following main functions:

- Cover sheet wrapping
- Longitudinal wrapping
- Pallet manufacturing
- Palletizing
- Edge protection feeding
- Strapping
- Labeling
- Stacking



1. Sheet packing is started by applying cover sheet.
2. Automatic pallet manufacturing makes the pallets according to sheet dimensions.
3. Automatic palletizing.
4. Edge protection feeding is integrated to strapping station.

# Strip coils

Pesmel strip packing lines are designed especially for sensitive, high value products. Due to the high capacity, one line can serve several slitters.

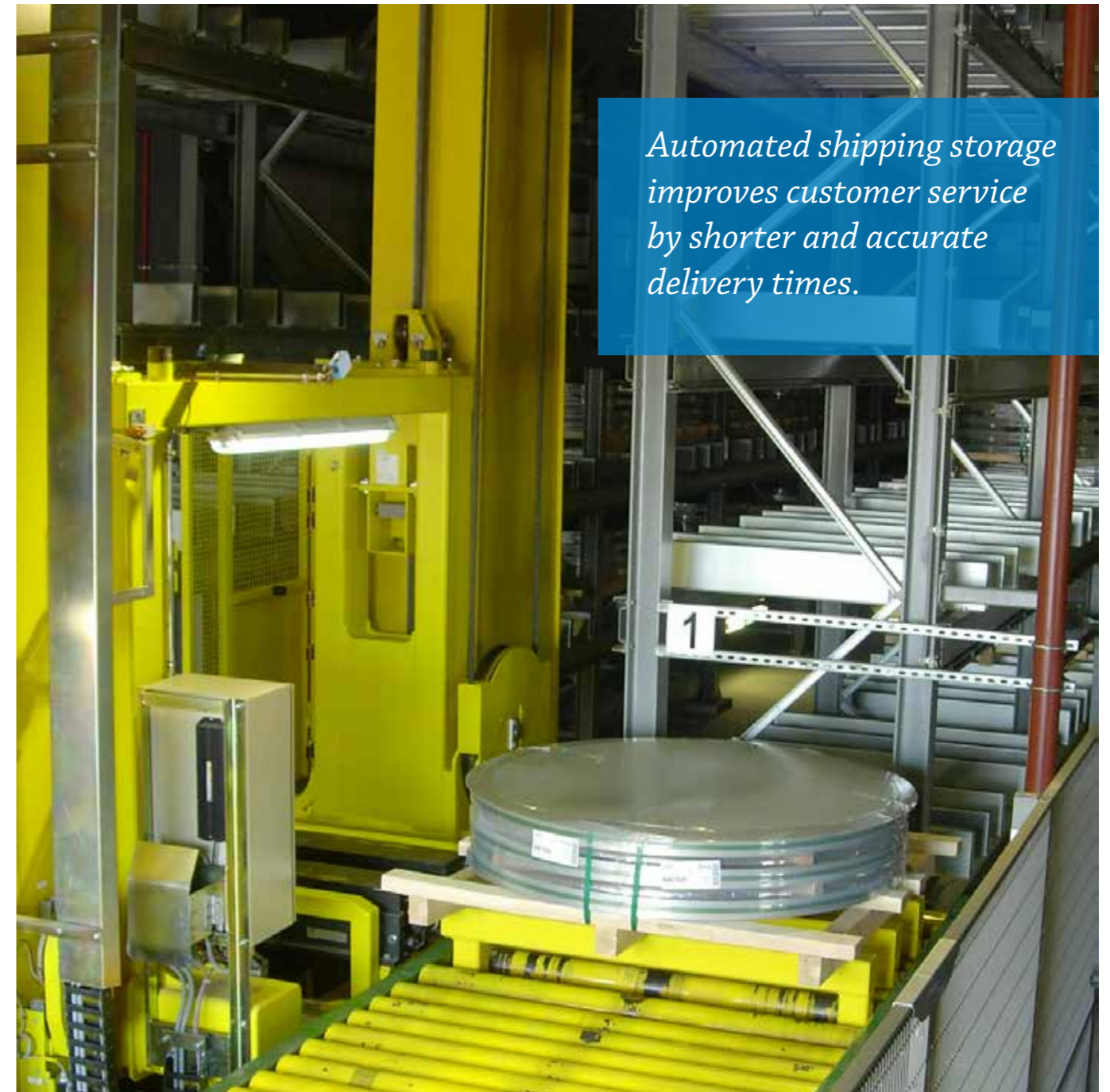
Pesmel's technical solution to strip packing is based on the latest technology to minimize the handling of unpacked material. The surveys made with the leading manufacturers of strip and rolled products – especially for thin, rolled and soft materials like copper and aluminum – has shown that the handling and moving of material during the packing process is mainly causing the product damages.

Flexibility is the keyword in Pesmel packing lines for strip coils. The lines are designed to handle different size and shape of strips and palletize them in different patterns, all in same line. The packing line itself can make and choose the required packing materials automatically from different pre-programmed packing codes (all codes can easily be created or modified by operator).

## Automated high-bay storage for strip coils

- Automated shipping storage improves customer service by shorter and accurate delivery times.
- Computer controlled system ensures error-free deliveries.
- Automated high-bay storages have proven to increase selling up to 15%.

*Automated shipping storage improves customer service by shorter and accurate delivery times.*



1. Strips are picked from turnstile individually or in stacks.
2. Sensitive handling by vacuum gripper.
3. Pallet wrapping with top sheet applicator.



# Wire Rod Coils

We have innovative systems for wire rod coils. TEW (through eye wrapping) with suitable combination of fabrics and film is tested to be durable packing method in intercontinental transportation.

Pesmel TransCoil is a new way for storing wire rod coils. Almost limitless handling and sorting capacity separates this storage from other alternatives. Wire rod coil stream in and out can be up to 200 coils per hour per stacker crane.



*TEW (through eye wrapping) with fabric and film.*

# Long Products

Pesmel high bay storage for beams and bundles can be applied as a production buffer or shipment storage. Storage is using telescopic fork type stacker crane. Great advantage of high bay storage is that all products are available from top to bottom.

Long product storages are always special, custom tailored solutions, Pesmel professionals are ready to assist you in your specific case.



1.



2.



*TransCoil channel vehicle can handle multiple coils simultaneously.*



*TransCoil utilises the same technology Pesmel has used in paper industry storages for over 20 years.*

1. Storage inload/unload conveyors.

2. AS/RS for long products is normally using cantilever racking.

*Material Flow How®*

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