

PESMEL MATERIAL FLOW HOW
Handling & Packing Systems for Metal Industry

PESMEL 自动化物流及包装系统
自动化物流及包装系统在金属行业的应用

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 Pesimal 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.

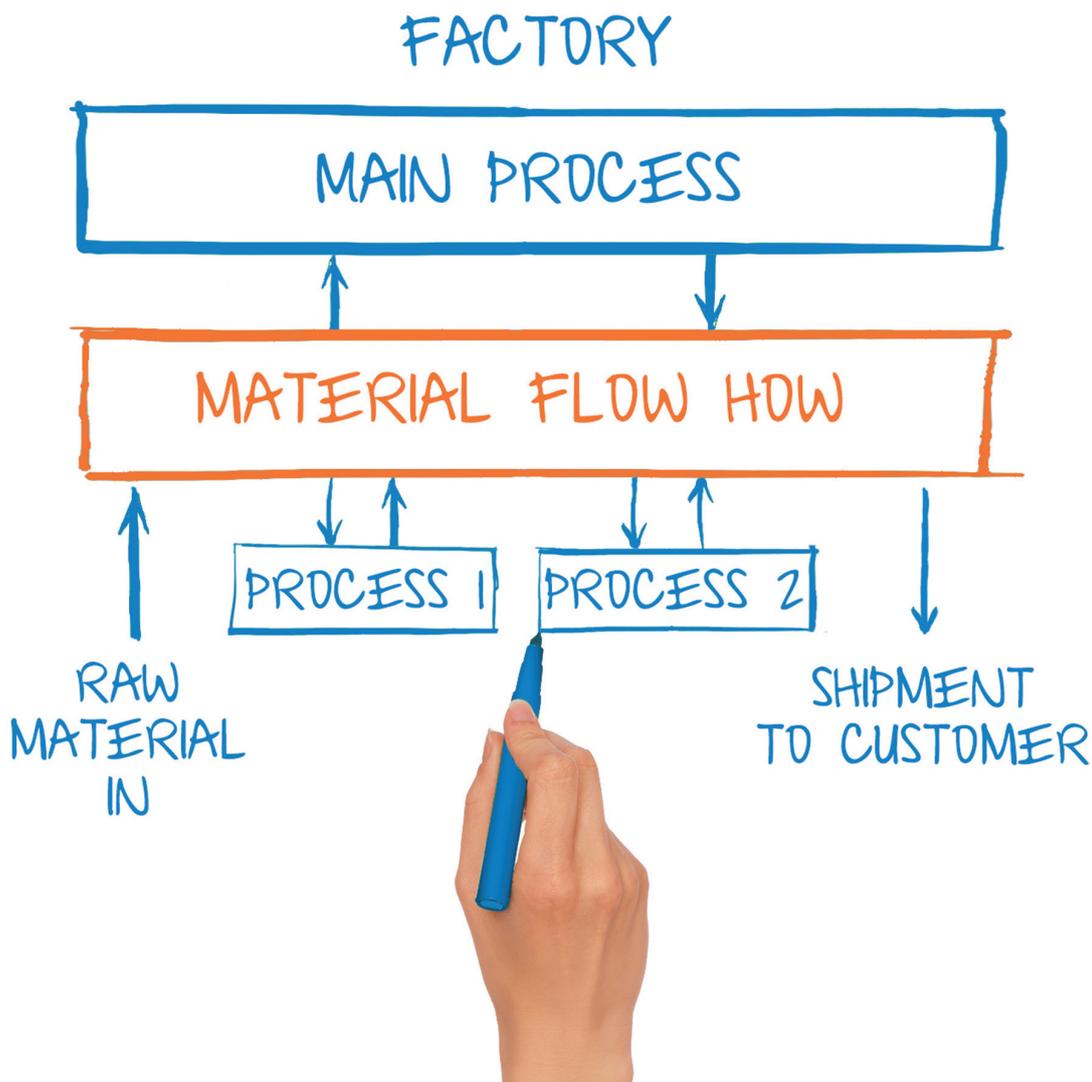
Material Flow How® ——工厂一体化物流理念

Material Flow How®是一种生产物流管理理念，旨在用最少的设备实现生产效率最大化。

Material Flow How®的实现从建立仿真模型开始，验证生产工序是否正确、物流是否顺畅，并找出其中的瓶颈。

理念中包含的主要部分是AS/RS（自动存取系统）、厂内物流系统和包装系统，它们都集成于Pesimal Control MOM生产运行管理系统中。

理念的设计实施完全由PESMEL自己完成，包括机械、电气、PLC和ICT，所有设备集成在同一个功能系统内，操作和维护会更容易。



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

- Handling
- Storing
- Packing
- Dispatching
- Loading



Material Flow How® 理念涵盖工厂里的所有物流功能:

- 产品流转
- 储存
- 包装
- 发货
- 装车



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 diagnostical 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.

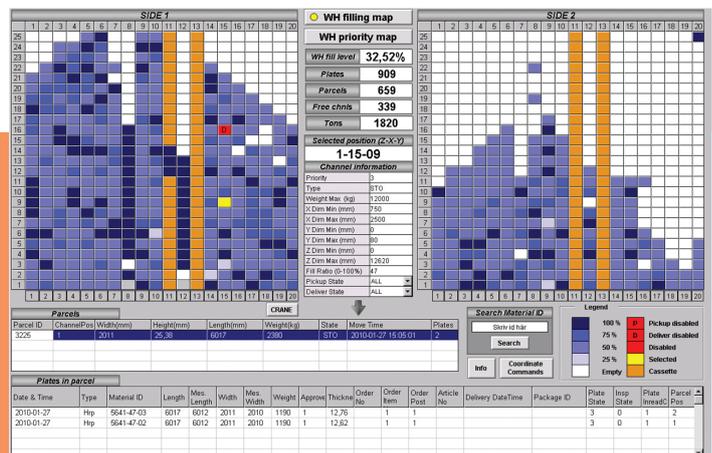
PESMEL库房由基于服务器的库房管理系统（包括必要数量的客户终端）自动控制，无需人员干涉。

WMS----库房管理系统

PESMEL库房管理系统集中控制生产线线间的物料流转、仓库、物流设备、包装和发货系统。

计算机控制系统控制储存和物流功能，它可集成于工厂现有的网络和更高层级的控制系统，从不同的生产工艺线接收不同的工序指令或客户发货订单。

WMS系统的主要任务是控制产品在各生产线间的流转、优化库存和物流功能，以提高系统产能、降低运行成本。系统包含多样化的报表和诊断功能。



Applications on 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.

在卷材产品上的应用

我们为钢/铝卷的物流、包装和储存系统提供一站式服务，模块化的功能可根据客户需求量身配置。产品物流主要采用小车运输，例如提升小车和四路小车。小车系统运行高效而精确，为适应生产中的变化提供了足够的冗余性和灵活性。



TEW wrapping with crep paper and plastic.
穿心缠绕：皱纹纸+缠绕膜

PESMEL 卷材包装系统高效而灵活，可自动混包不同尺寸和不同包装方式的产品，故而一条包装线可服务于多条上游生产线。自动高架库既可用作中间库，也可用作成品库。计算机控制的高架库是储存卷材的最佳方式。



Coil carriages are used for flexible handling.
线上使用运卷小车运卷，灵活自如。



Through eye wrapping system, minimum coil eye 400 mm.
可应用穿心缠绕技术包装的卷眼直径低至400mm.



Outlook of the package gives the first impression of the product quality.
精美的产品外观反映一流的产品质量。

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.

Pesmel Material Flow How在卷材生产中的应用高效而经济，具有如下特点：

仓库：

- 设备少，布置简洁
- 占地少，仅为传统平面库的1/3
- 堆垛机的运卷效率比天车高3倍

包装：

- 运用穿心缠绕技术（皱纹纸+缠绕膜），达到最佳防锈效果
- 节省20-30%的包装材料



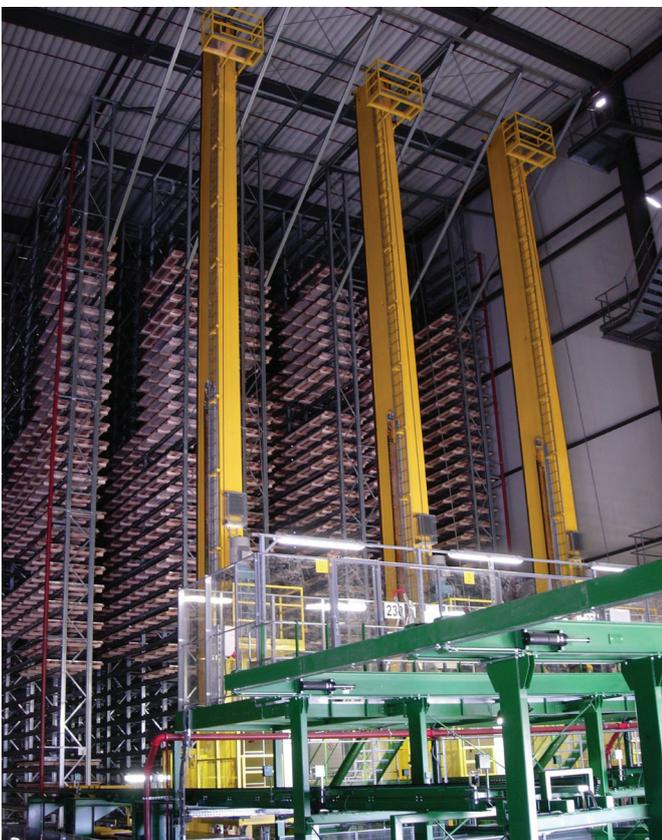
High-bay storage is an efficient buffer between production processes.

高架库是各工艺生产线之间的有效缓冲。





TransPallet can handle heavy plates and sheets up to 24 meters long.
TransPallet可存取长达24m的宽厚板。



Automated sheet storage as a shipment storage.
作为成品库使用的自动板材库。

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 long. 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.

自动板材高架库既可用作中间库，也可用作成品库，存储技术的选择基于产品特性和系统布局。

PESMEL Transpallet 仓库可存取长达24m的板材，它自深巷式专利技术研发而成。仓库的尺寸可在长、宽、高三个方向上调整。

伸缩叉存取式仓库是另一种高架库解决方案，它的最大优点是所有的产品都是立取即得。

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.

PESMEL板材包装线设计用于金属板材的防潮、防尘和防损伤保护。它针对板材的特点专门设计，从储存到发货运输过程中给予产品可靠的保护。

进入包装线的板材可根据重量、高度或张数自动堆垛，堆垛形式也可根据客户要求量身定制，例如可将小板材按一定样式堆垛后包装成一个大包。对于敏感材料，系统可自动加装层间衬纸。

Automated sheet packing system includes the following main functions:

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

自动板材包装包含以下功能：

- 幕帘包裹
- 横向缠绕
- 托盘在线制作
- 上托盘
- 护角加装
- 打捆
- 标签
- 码垛



Sheet packing is started by applying cover sheet.
板材的包装从幕帘包裹开始。



Automatic pallet manufacturing makes the pallets according to sheet dimensions.
根据板材尺寸自动在线制做托盘。



Automatic palletizing.
自动上托盘。



Edge protection feeding is integrated to strapping station.
护角加装集成于打捆站。

Applications on Strips

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 to avoid the risk of 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).

在带材产品上的应用

PESMEL带材包装线采用最先进的技术，尽量减少对未包装带材的取放和运输，避免被损坏的风险。

灵活性是PESMEL带材包装线的最大特点。同一条包装线可包装不同尺寸、不同形状的带材，并进行不同样式的再堆垛。根据预设的包装代码，包装线可以自动选择所需的包装材料进行包装（包装代码可由操作员生成和修改）。

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 sales up to 15%.

自动带材高架库

- 自动成品仓库通过缩短和精确发货时间提高客户服务质量。
- 计算机控制系统可确保发货“0”错误。
- 事实证明：应用自动高架库可帮助提高销量多达15%。

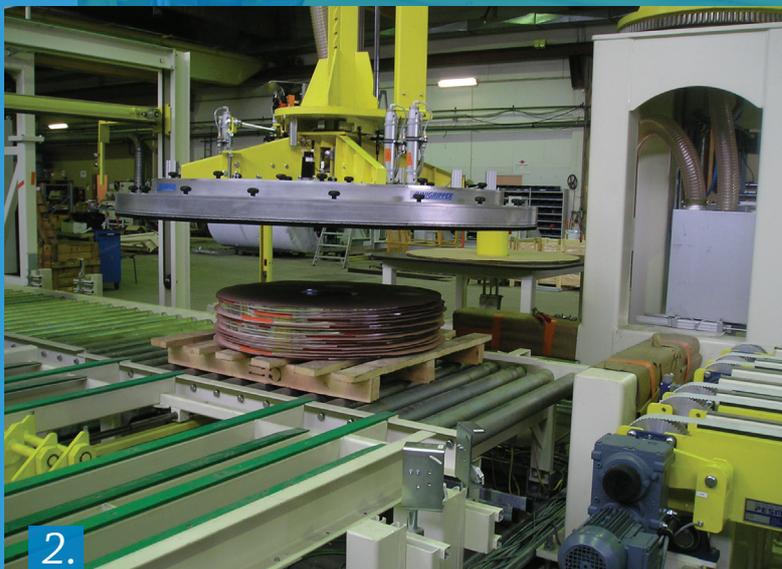
1. *Strips are picked from turnstile individually or in stacks.*
从十字臂单卷或成垛取走带材。
2. *Sensitive handling by vacuum gripper.*
用真空吸盘吸取敏感的产品。
3. *Pallet wrapping with top sheet applicator.*
带顶帘的托盘缠绕。





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

自动成品库通过缩短和精确发货时间提高客户服务质量。



Applications on 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.

在线材卷产品上的应用

对线材卷的包装，我们也有创新，用编织带和缠绕膜对线材卷穿心缠绕的包装可耐远洋运输的考验。

PESMEL TransCoil是存储线材卷的新方式，巨大的存取和分选能力是它区别于其它系统的最大优势。单台堆垛机的出入卷能力可达200卷/h。



TEW (through eye wrapping) with fabric and film.
用编织带和缠绕膜对线材卷穿心缠绕。



TransCoil channel vehicle can handle multiple coils simultaneously.
TransCoil小车同时可存取多个线材卷。



TransCoil utilises the same technology Pesmel has used in paper industry storages for over 20 years.
PESMEL在造纸行业应用TransCoil技术已超过20年。

Applications on Long Products

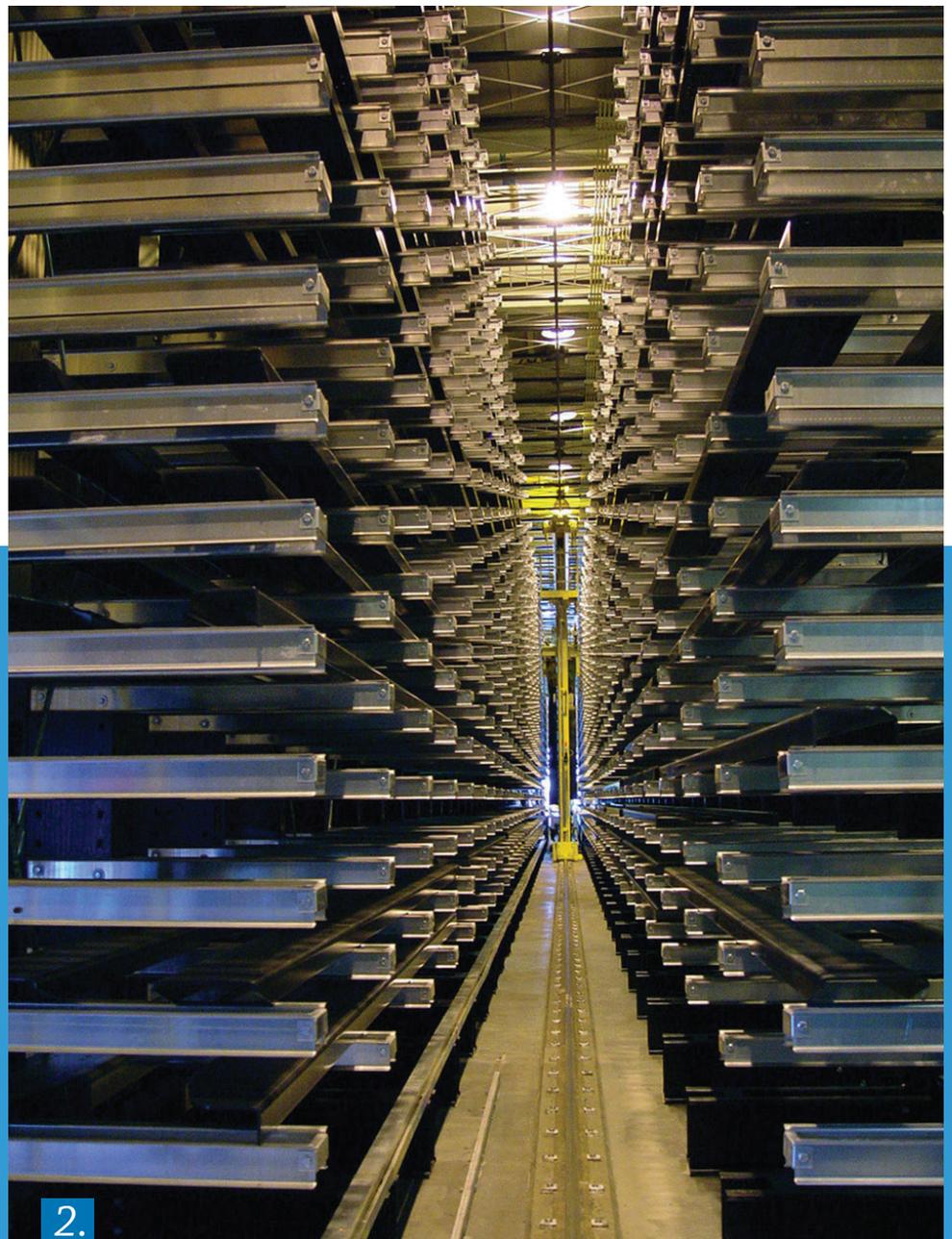
Pesmel high bay storage for beams and bundles can be applied as a production buffer or shipment storage. Storage is using telescopic fork type stacker crane. Great advantage of high bay storage is that all products are available from top to bottom.

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

在长材产品上的应用

PESMEL长材高架库既可做中间库，也可做成品库。仓库使用伸缩叉式堆垛机，所有产品都是立取即得。

长材高架库都是为客户量身定制的解决方案，PESMEL的专业人员时刻准备为您服务。



1. *Storage inload/unload conveyors.*
仓库输入/输出运输机。

2. *AS/RS for long products is normally using cantilever racking.*
长材库通常采用悬臂式支架支撑产品。

Material Flow How®

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