



PESMEL COIL PACKING

World Leader in Fully Automatic Coil Packing Solutions

PESMEL

The Purpose of Packing



We don't always realize how important the package is for a product. Packing preserves your product quality, and ensures the end user receives a clean and undamaged product.

First impression of the quality of your product is created by the appearance of the package. As manufacturing technologies develop, quality requirements for raw materials increase, and create higher requirements for packing.

Today, environmental issues such as recycling, and saving materials and energy are increasingly important. Packaging can be done with 100% recycled materials, using 30% less materials, and without VCI chemicals. At the same time packing quality can be improved.

Good quality packing brings you cost savings and strengthens your brand in the market.

THE PACKING PROCESS

Packing can be divided into two phases: **moisture protection** and **mechanical protection**.

1. Moisture protection

Firstly, the product needs to be protected against moisture and rust. This protection works in two directions: the product is protected against both inside moisture and outside humidity, even rain.

2. Mechanical protection

The product must also be mechanically protected against damages during handling, storing and transportation. The scale and type of these processes determine the level of mechanical protection.

PESMEL COIL PACKING IN A NUTSHELL

Our coil packing line is highly efficient and flexible. The line is fully automatic with pre-programmed (or manually fed) packing codes. The line can pack different sizes and types of packages without requiring setup. The line can serve several slitters or production lines simultaneously.

Thanks to fully automatic operation, the packing line requires only material filling. Normally, when driving with full capacity, the material filling frequency is no more than once a shift/machine.

Our coil packing line reduces packing costs. Instead of using pre-cut packing materials, our line cuts and optimizes materials according to the coil size. This means there is considerably less need for different size materials and for packing space.

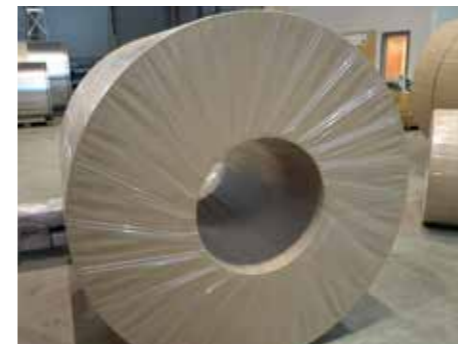
Choose the Pesimal Coil Packing Line for cost-effective packing of your product, with excellent protection and elegant appearance.

Quality

Today's TEW (Through Eye Wrapping) technology allows a 100% more effective packing than the traditional folding method.

The traditional folding method does not create an airtight package, resulting in VCI evaporation. Once the VCI has evaporated, the coil is no longer protected against outside moisture and corrosion.

In TEW technology, the coil is wrapped through the coil eye with crêpe paper and PE film. The crêpe paper absorbs the moisture inside the coil as the PE film stretches, making an airtight package that protects effectively against outside humidity.



TEW technology packed airtight coil (crêpe paper and PE film).



Manually packed coil (VCI paper) - VCI evaporates because of air circulation.

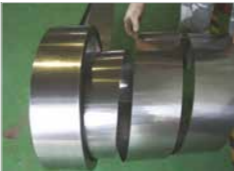



Water drops on a TEW technology packed coil eye.

COMPARISON OF PACKING METHODS

Temperature differences, the production processes, or coiling procedures can cause moisture to build up inside the coil. It can be absorbed by crêpe paper, which has a moisture absorption ability of 30 g/sqm.

Stretch film makes the package airtight and thus protects the coil against outside moisture, dirt, and impurities. Stretch film forms a uniform, seamless coating around the coil.

TEW TECHNOLOGY	TRADITIONAL PACKING WITH FOLDING
	
Moisture protection by TEW technology	Traditional moisture protection by folding
Air tight package	Not air tight, VCI disappears
Storing time more than 24 months	Storing time less than 6 months
Fully recycable packing materials	Laminated packing materials
Operator safe packing, no VCI	Operators involved with VCI
Automated, no operator involvement	Manual/dangerous working phases

Efficiency

Automation with quality machines makes for more effective coil packing in many ways. It boosts capacity and generates significant material savings.

In traditional packing, the annual cost of packing materials can easily be higher than the investment in an automated packing line. Automated packing can **reduce packing material costs by 30%**.

Automated packing significantly increases the output volume. In manual packing, one operator packs one coil/hour. The **automated packing line** makes **over 20 packages/hour** with one supervisor.



Automated body wrapping with board and steel



Outer edge protection machine



Automated outer edge protection



Inner edge protection machine

MATERIAL SAVINGS

Automation saves materials in many ways:

1. Optimized material consumption
2. Minimized storage space
3. Packing materials manufactured on site from big material coils



Automatically inserted outer edge protection



Manually inserted outer edge protection (overlapping, 30% more waste)

Packing Levels

Pesmel has a selection of internationally approved, most common, and recommended packing codes.

The packing levels define different moisture protection alternatives, and eight different packing codes for mechanical protection. More information in the Pesmel Packing book

MOISTURE PROTECTION		
Stretch film	VCI + stretch film	Crep paper + stretch film

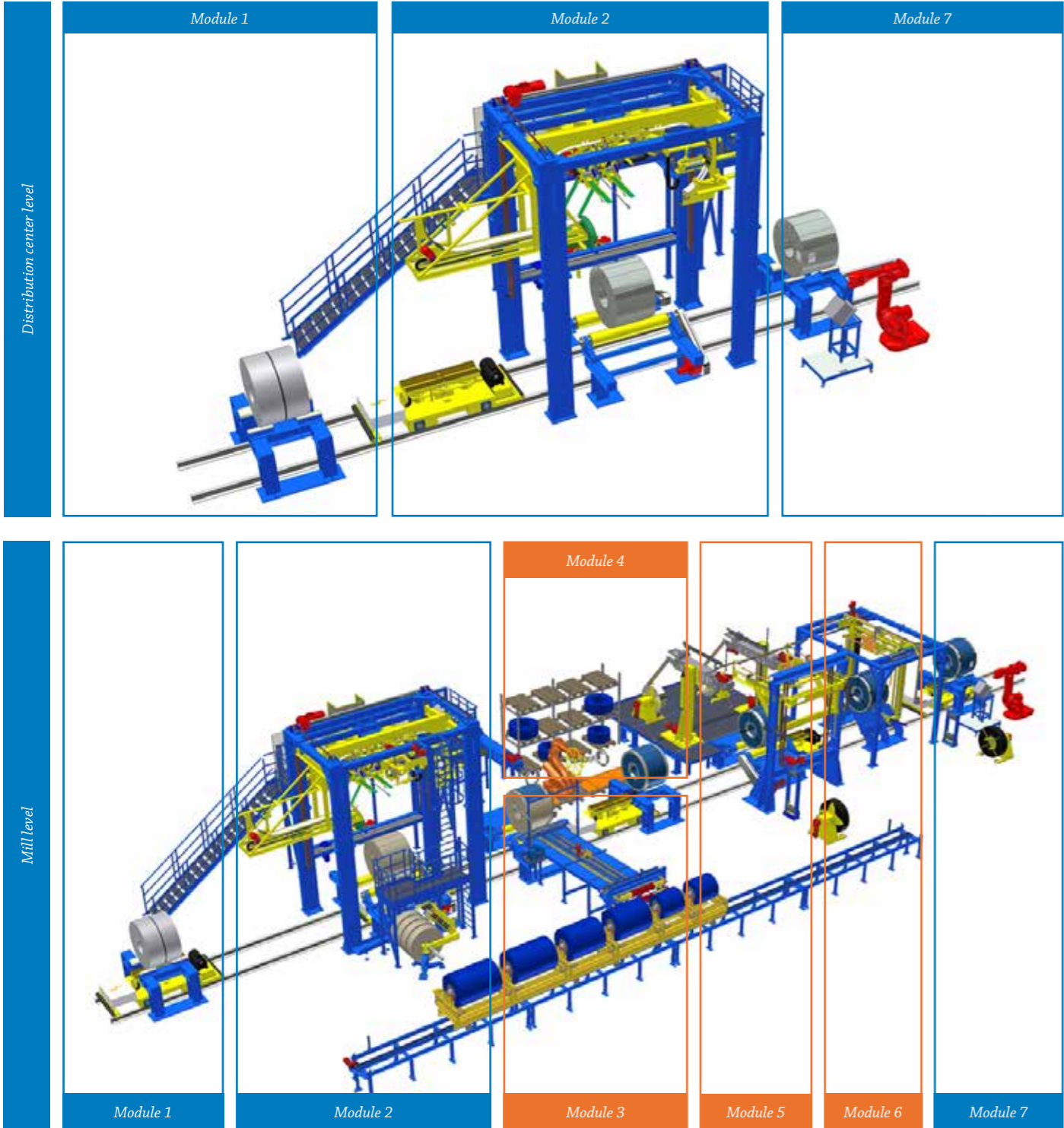
MECHANICAL PROTECTION				
Series				
	10	20	30	40
Handling method	Handling with hooks	Handling with hooks	Handling with hooks	Handling with hooks
Handling times	1-3, handling automatically	2-4, handling automatically	3-6 handlings	3-6 handlings
Transportation	Internal use in mill or location nearby	Standard transportation vehicle with stands	Truck/train transportation horizontally	Truck/train transportation horizontally
Series				
	50	60	70	80
Handling method	Handling with hooks or chains	Handling with hooks or chains	Handling with hooks or chains	Handling with hooks or chains
Handling times	4-8 handlings	4-8 handlings	4-8 handlings	4-8 handlings
Transportation	Truck/train transportation horizontally or vertically, maritime transportation, continental and intercontinental	Truck/train transportation horizontally or vertically, maritime transportation, continental and intercontinental	Truck/train transportation horizontally or vertically, maritime transportation, continental and intercontinental	Truck/train transportation horizontally or vertically, maritime transportation, continental and intercontinental

Modularity of lines

Pesmel packing lines are built from standard modules, each with its own control system. Thanks to modularity, the packing line can be built to optimally meet the customer's needs. The packing line configuration is created by selecting the level of packing and the degree of automation.

Modulized packing lines can easily be expanded or the automation level increased to meet new requirements.

Pesmel packing lines are in operation in distribution centers and large mill complexes.



EXAMPLE OF 60 SERIES PACKING LINE AUTOMATION ALTERNATIVES:

<p>M60: Coil Packing line Capacity: 8-12 Coils/h Operators: 6-8/line Space requirement: 10 x 40 m Key point: Best moisture protection</p>	<p>S60: Coil Packing Line Capacity: 10-15 Coils/h Operators: 5-7/line Space requirement: 20 x 40 m Key point: M60 + Packing material optimization</p>
<p>A60: Automatic Coil Packing Line Capacity: 15-20 Coils/h Operators: 3-4/line Space requirement: 20 x 40 m Key point: S60 + More capacity with less operators</p>	<p>F60: Fully Automatic Coil Packing Line Capacity: 20-30 Coils/h (depending on code) Operators: 1-2/line, only supervising Space requirement: 20 x 40 m Key point: A60 + Fully automatic continuous high capacity</p>

GOLDEN RULES FOR DESIGNING A FULLY AUTOMATED PACKING LINE:

- Think of the **complete process** and evaluate the level of packing
- Do not build on your old process, just think about the **result** you need to achieve
- Pay attention to the **handling process**, especially for unpacked products
- Focus on how to **achieve cost savings**; study new possibilities

Palletizing

When considering mechanical protection, palletizing is a good option if your product is sensitive, or the delivery chain includes lots of handling.

Pallets offer good mechanical protection without packing the product heavily.

Palletized products can also be handled with standard forklifts. Palletizing can be done horizontally or vertically. By adding cardboard or lids, you can further improve the package.

Key technologies

Automated coil packing consists of a few solutions that are key in achieving the best quality and efficiency.

The evolution of packing started in 1998 with TEW technology, which is still the heart of the system. After years of development and introducing new functions, we are now in the 4th generation of packing systems.

The 4th generation packing system, introduced in 2012, is a result of global development and cooperation with customers using the best available technology.

The system is based on user experiences in the USA, Europe, and Asia, as well as moisture protection research in South East Asia.

FUNCTIONS OF AUTOMATED COIL PACKING:

1. Carriages for transportation
2. Inspection (measuring, weighing, identification)
3. TEW
4. Body wrapping
5. Eye protection
6. Headers
7. Edge protections
8. Strapping & labelling
9. Labelling

1. TEW TECHNOLOGY

Through eye wrapping technology is a solution for wrapping coils with crep paper and PE film. According to user experiences and laboratory test, the TEW technology is the best available protection against rust.

The machine can be configured with different functions according to the amount of protection needed. TEW single is for wrapping PE film, and TEW combo is for crep paper and PE film utilizing two material carriages.



Through the eye wrapping with paper and PE film

Add-on features in TEW

With add-on functions the efficiency and user friendliness of TEW technology can be further improved.

Integrated edge protection can be used as an additional protection under the moisture protection.

Automatic film roll changing (ARC) for PE film and material winder (MW) for crep paper enable the machine to run unmanned continuously.



Integrated edge protection for sharp edge and sensitive materials



Automated PE film changing device with 12 film rolls



Automatic material winder winds correct sized rolls for wrapping

Environmental friendly materials

Environmental sustainability is an important part of the development of new packing methods. Pesmel's packing systems are designed to use packing materials that qualify to today's environmental requirement.

The packing materials we recommend to be used in our packing systems are PE film and crep paper. These materials are easy to recycle and many of them are already manufactured from recycled materials.

Coil packing with TEW technology is tested, in the laboratory and in practice to give the best moisture protection to coils. This packing method does not require any VCI chemicals.

Coil opening takes 1-2 minutes. The package is safe to open since the packing materials do not contain any chemicals.



Key technologies

2. BODY WRAPPING

The body wrapping machine provides mechanical protection in a flexible and easy way. Instead of using pre-cut materials, the machine creates optimized and correct size protection from large material coils.

The body wrapping machine automatically selects the correct width in the material magazine, and cuts it to the coil size. This means simpler packing and significant cost savings, thanks to minimal material usage and a smaller material inventory.



Body wrapping magazine for steel and board rolls



Body wrap sealing with glue



Automated body wrapping with plastic

3. AUTOMATIC EDGE PROTECTIONS

Automatic steel edge protection machines form protection on-line according to the coil dimensions.

The same principle applies in all Pesimal machines. Material usage is minimized, and only raw material needs to be loaded into the machine. This means cost savings thanks to lower material consumption and smaller storage inventory.



Automated outer edge protection with strapping

4. INTEGRATED AUTOMATION

Pesimal's packing line controls are based on the WinCC system. It is built on a server computer and can be used by clients on standard PCs connected to the WinCC server through a network.

Using the system is easy, thanks to full system control, real time information of the packing line, and advanced, operator friendly HMIs. Multilingual solutions are available.

The WinCC system is fully integrated with device and line control automation and PLC's. WinCC is used for monitoring, controlling, diagnostics and troubleshooting. This increases system uptime and decreases operating costs.

WinCC can communicate with Mill Information Systems (MIS) for data exchange.



Line supervision is made with WinCC monitoring system

WINCC MAIN FEATURES:

- Communication between operator and system devices (HMI = Human - Machine interface)
- Displaying system and devices status
- Controlling system and devices
- Updating load tracking data for clarifying errors (add/modify/delete load data in the PLC)
- Maintaining system parameters and other basic data
- Displaying and handling event and alarm information
- Communication with the MIS

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