PESMEL COIL PACKING

World Leader in Fully Automatic Coil Packing Solutions
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’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.

<table>
<thead>
<tr>
<th>TEW TECHNOLOGY</th>
<th>TRADITIONAL PACKING WITH FOLDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture protection by TEW technology</td>
<td>Not air tight, VCI dissapears</td>
</tr>
<tr>
<td>Air tight package</td>
<td>Storing time more than 24 months</td>
</tr>
<tr>
<td>Storing time more than 24 months</td>
<td>Fully recyclable packing materials</td>
</tr>
<tr>
<td>Fully recyclable packing materials</td>
<td>Operator safe packing, no VCI</td>
</tr>
<tr>
<td>Operator safe packing, no VCI</td>
<td>Automated, no operator involvement</td>
</tr>
<tr>
<td>Automated, no operator involvement</td>
<td>Manual/dangerous working phases</td>
</tr>
</tbody>
</table>

Quality

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**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 minimal 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 Pesmel Coil Packing Line for cost-effective packing of your product, with excellent protection and elegant appearance.

**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.

**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.

**THE PACKING PROCESS**

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

1. **Moisture protection**

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2. **Mechanical protection**

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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.

The advantage of automated packing can be summed up in a few simple statements:

1. Reduced number of packers
2. Significant output volume increase
3. Significant reduction of transportation and storage space
4. Significant reduction of material costs
5. Significant reduction of labor costs
6. Significant improvement of product protection
7. Significant reduction of error rate
8. Significant improvement of quality and order compliance

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**
- **Cryopaper + stretch film**

### Mechanical Protection

<table>
<thead>
<tr>
<th>Series</th>
<th>Handling Method</th>
<th>Handling Times</th>
<th>Transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Handling with hooks</td>
<td>1-3, handling automatically</td>
<td>Internal use in mill or location nearby</td>
</tr>
<tr>
<td>20</td>
<td>Handling with hooks</td>
<td>2-4, handling automatically</td>
<td>Standard transportation vehicle with stands</td>
</tr>
<tr>
<td>30</td>
<td>Handling with hooks</td>
<td>3-6 handlings</td>
<td>Truck/train transportation horizontally</td>
</tr>
<tr>
<td>40</td>
<td>Handling with hooks</td>
<td>3-6 handlings</td>
<td>Truck/train transportation horizontally</td>
</tr>
<tr>
<td>50</td>
<td>Handling with hooks or chains</td>
<td>4-8 handlings</td>
<td>Truck/train transportation horizontally or vertically, maritime transportation, continental and intercontinental</td>
</tr>
<tr>
<td>60</td>
<td>Handling with hooks or chains</td>
<td>4-8 handlings</td>
<td>Truck/train transportation horizontally or vertically, maritime transportation, continental and intercontinental</td>
</tr>
<tr>
<td>70</td>
<td>Handling with hooks or chains</td>
<td>4-8 handlings</td>
<td>Truck/train transportation horizontally or vertically, maritime transportation, continental and intercontinental</td>
</tr>
<tr>
<td>80</td>
<td>Handling with hooks or chains</td>
<td>4-8 handlings</td>
<td>Truck/train transportation horizontally or vertically, maritime transportation, continental and intercontinental</td>
</tr>
</tbody>
</table>

### 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

Automated outer edge protection (overlapping, 30% more waste)
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:

- M60: Coil Packing Line
  - Capacity: 8-12 Coils/h
  - Operators: 6-8/line
  - Space requirement: 10 x 40 m
  - Key point: Best moisture protection

- 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

- 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: F60 + Fully automatic continuous high capacity

- 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

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.
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.

1. TEW TECHNOLOGY

Through the 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.

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

Add-on features in TEW

With add-on features 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.

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.

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.

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.
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.

3. AUTOMATIC EDGE PROTECTIONS

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

The same principle applies in all Pesmel 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.

4. INTEGRATED AUTOMATION

Pesmel’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.

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