



PESMEL SHEET PACKING LINE

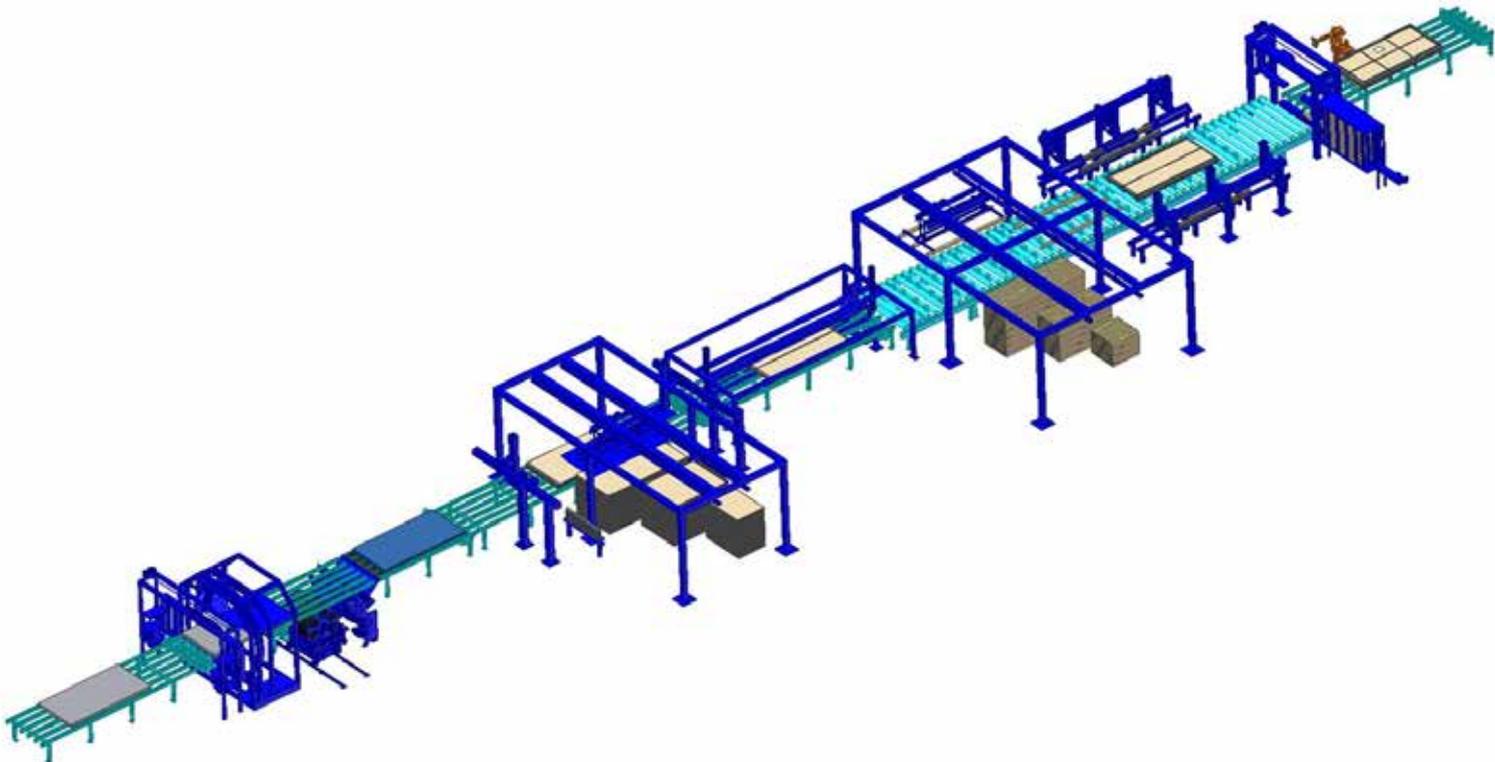
Fully Automatic Sheet Packing Solutions

Pesmel Sheet Packing Line is designed to protect metal sheets against moisture, dirt and damages. The key equipment in the line are Longitudinal Steel Wrap system, equipped with Edge Wrapping. This system is especially designed for sheet packing and it gives an excellent protection to products heading for storage and transportation.

Pesmel system feature is flexibility. The sheets are automatically piled on stacks by weight, height or number of sheets. Piling by number of sheets and thus making customized piles is adding customer value as the packages are ready to be shipped directly to the customer. The system is able to customize the package, for example

smaller sized sheets can be piled on patterns and packed as a bigger package. For sensitive materials paper is automatically inserted between every sheet.

The camera inspection of the surface adds quality value to the line. The operator can monitor from the safe distance, see defects and choose, if rejecting is necessary. The pictures can be saved on a hard disk and used as quality securing, if reclamations or transport damages are claimed.



Working Procedures

1. Loading Station

The Basic Pesimal Packing solution is a fully automatic line including tracking, level 2 control system and PesInterface connected to MIS, as a standard for all functions.

Measuring the sheets by PesProfile in the beginning of the line makes it possible to handle different sheet sizes and customer packing requirements automatically without any set ups. The right packing method is received from the tracking information fully automatically, as well as the

various of choice for required packing. The PesWeighing is scaling the stack weight. All the information is compared to the information received from MIS.

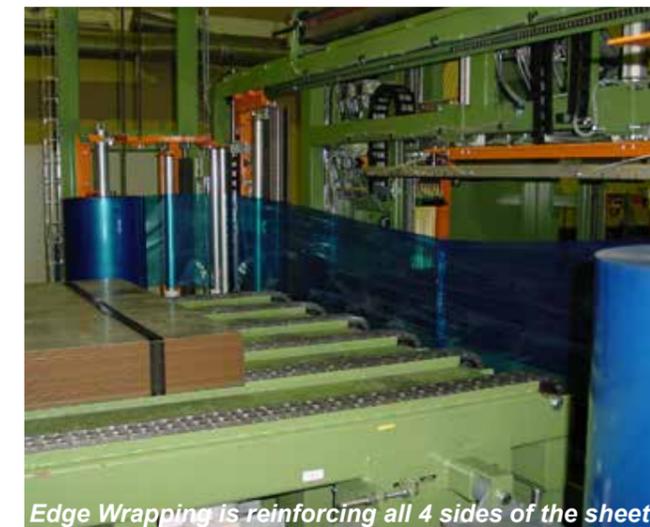
In the Steel Wrap station, the sheets are wrapped without a cradle in order to reach a very tight package. Protections against mechanical stress are added automatically as the packing specification requires. If required, manual functions can replace the automatic functions in some tasks.

2. Wrapping Station

Pesimal Packing Line starts with wrapping station, which gives the protection against moisture and dirt. The station is equipped with following main equipment: Edge wrapping machine and Longitudinal wrapping machine.

The wrapping starts by edge wrapping. This machine is reinforcing all 4 sides of the trimmed plate stack with thick film. According to Pesimal philosophy "having the material there, where it's needed the most", the machine is in the same time making moisture and dirt protection properly and saving the packing costs by optimizing the use of packing material.

Immediately after the edge wrapping, Longitudinal Wrapping starts. The ring type wrapper is making an "airtight" package, which gives an excellent protection against moisture and dirt. Optionally the wrapping machine can be equipped with 2 packing materials.



Chain and Roller Conveyors at the sheet packing line entry

Ring type Longitudinal Wrapping Machine finalizes the moisture and dirt

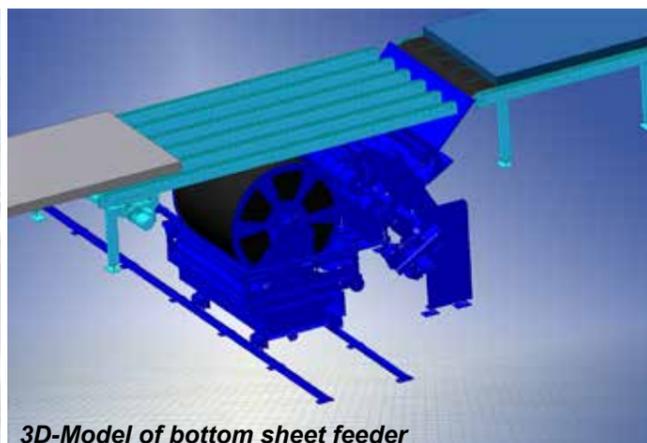
3. Bottom protection feeding

Mechanical protection starts by feeding the bottom protection under the ready wrapped sheet stack. The station is equipped with following main equipment: Bottom Protection Feeding unit and Roll Magazine.

The 2-4 mm thick canal or solid plastic is fed automatically from between the conveyors with synchronized speed. The correct length is cut automatically according to sheet dimensions received from the tracking information. As an option, the station can be equipped with movable magazine carrier.



Bottom sheet feeder with canal plastic



3D-Model of bottom sheet feeder

4. Top cover installation

Top cover installation is made by manipulator. Correct length combination is installed automatically according to the package length. The station is equipped with the following main equipment: Top cover manipulator.

As an option, the front and end edge protectors can be installed by applicators, placed in the same station. The installation is made after the top cover is installed.

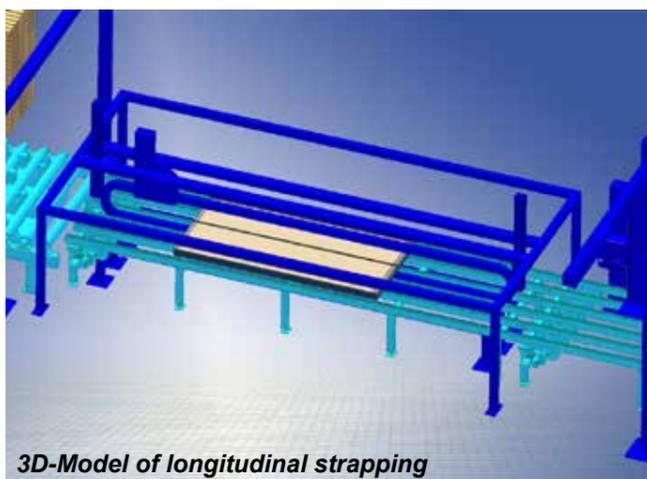
5. Longitudinal Strapping

Automatic longitudinal strapping is attaching added materials and tying up the sheets on stack. The station is equipped with the following main equipment: Movable Longitudinal Strapping Machine and Chain conveyor with integrated strap canals.

The amount and location of straps is generated automatically from tracking information according to packing code.



Top cover applicator



3D-Model of longitudinal strapping

6. Side edge protection and longitudinal runner wood feeding

After the longitudinal strapping, the sheet stack is driven to the side edge protection station, where the longitudinal runner woods are fed and side edge protectors are installed. The station is equipped with following main equipment: Runner wood manipulator, stack lifter and side edge protection applicators.

The sheet stack is lifted off the conveyor and longitudinal runner woods are driven under the stack. The manipulator automatically feeds correct length and combination of woods to the conveyor.

The side edge protection applicators are installing the protectors according to package length. Optionally the station can be equipped with edge protection formers, which manufacture the correct length protectors according to the tracking information.

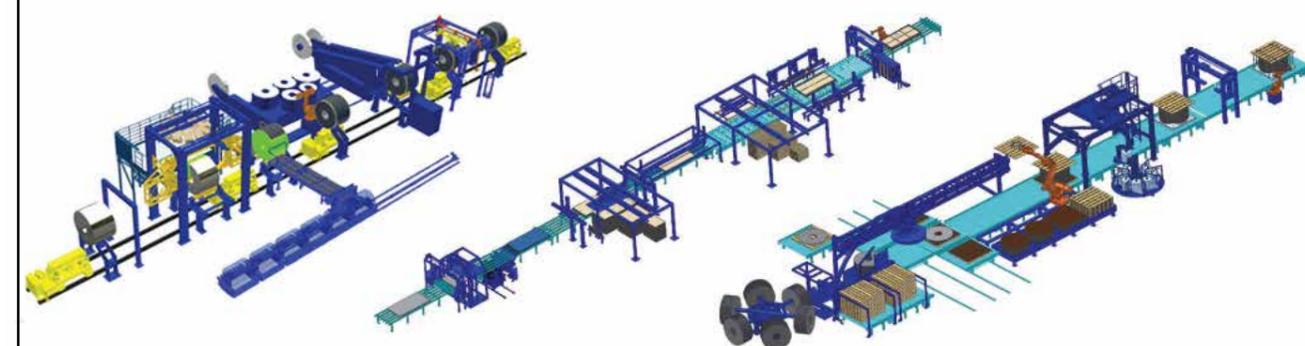


Runner woods automatically driven underneath the



Package with runner woods and edge protections

Pesmel has also automatic coil and strip packing lines available



COIL PACKAGING

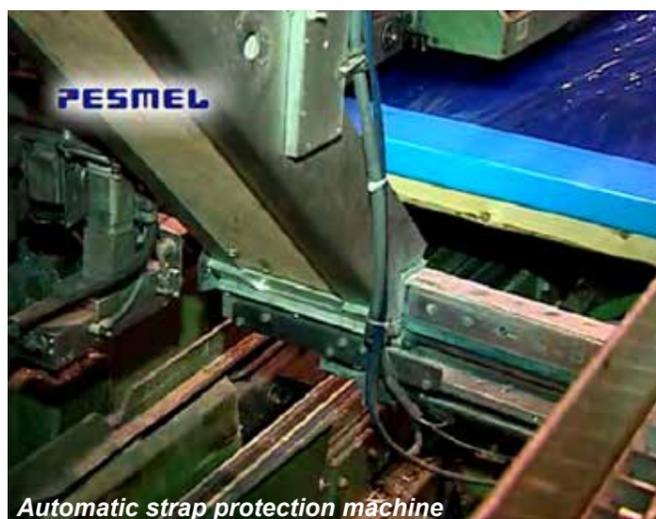
SHEET PACKAGING

STRIP PACKAGING

7. Lateral strapping and runner wood feeding

Lateral runner woods and straps are added automatically in this station. The station is equipped with following main equipment: Runner wood feeding system, Lateral strapping machine and Runner wood magazine. The number and location of runner woods and straps are generated automatically from tracking information according to the packing code.

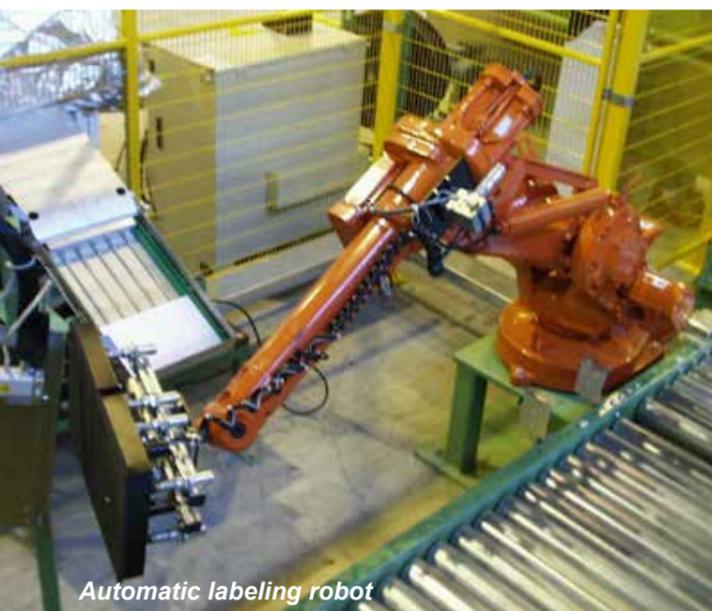
As an option the station can be equipped with long wood handling system, which is automatically sawing the correct length runner woods according to package width. Short pieces of wood are extended automatically by nailing unit and thus the usage of wood is optimized.



Automatic strap protection machine



Strapping of package



Automatic labeling robot

8. Labeling and unloading

Finally the packed sheet stack is labeled by a robot. Pesimal Automatic Labeling finalizes the packing operations. The ready packed and labeled sheet stack can be picked and transported from the unloading conveyor by a logistic system, crane, fork-lift or by some other method. PesInterface, connected to the mill information system (MIS), tells that the sheet package is ready for pick up.

Pesimal Logistic and Warehousing

From the unloading station, the sheets can be taken into our Logistic and/or Warehousing system (High Bay Storage).

Technical data

Areas of application

Packaging of sheets

Line Features

Drives	Frequency drives, Servo in wrapping machine
Interfaces	PesInterface, connected to MIS
Tracking	Yes, PesTrack
Measuring Station	Automatic Inspection by PesProfile
Weighing	PesWeighing, commercial scale
Edge wrapping	Fully automatic, seaming with heat resistors
Longitudinal wrap	Fully automatic, adjustable parameters
Bottom Protection	Automatically according to dimension and code
Top Cover	Vacuum based handling, fully automatic
Longitudinal strap	Fully automatic according to packing code
Side edge	2 fully automatic applicators, one on each side
Runner wood	Fully automatic, magazine for different lengths
Stack lifter	Hydraulic, Integrated to conveyor
Lateral strapping	Fully automatic according to packing code
Runner wood feed	Integrated to strapping machine, 6 place magazine
Labelling	ABB Robot, self adhesive labels
Transport in line	By Chain and Roller conveyors
Capacity	Up to 40 Stacks/hour
Electrics and Automation	
Operating	PesMonitoring, WinCC system and PesOperator
Control system	Simatic S7
Communication	Wired through
Power feed	Wired through
Operator control	Control panels (HMI) outside of fences
Motor voltage	To be confirmed

Main Fuse	160 A
Consumption	30 kW/h
Hydraulics	
Pressure	Max.160 bar
Pneumatics	
Pressure	5 bar minimum working pressure
Air consumption	1400 NI/min
Packing materials	
Wrapping	Stretch film
Bottom protection	Canal plastic, Solid plastic, Cardboard paper, Steel
Top Cover	Plywood, Plastic
Longitudinal strap	Plastic, Steel
Longitudinal woods	Wood, Plastic
Side edge protection	Steel, plastic, paper
Runner woods	Wood, Plastic
Lateral strapping	Plastic, Steel
Labeling	Self adhesive labels, copy paper with hot melt glue

For other materials ask the suitability

Option Machines

- PesID (BCR or RFID), PesID
- PesVision quality control system, PesVision
- PesWireless HMI (PDA type remote for operating)
- Robotized piling of sheets
- Paper insert between layers
- Paper covering equipment before wrapping
- Twin head for longitudinal wrapping machine (2 different materials, same time)
- Double head machine for high capacities (2 sledges with same material)
- Automatic film changing for longitudinal wrapping
- Magazine for canal plastic coils (suitable for lines handling frequently different sheet widths)
- Lower side edge protection
- End edge protection
- Whole cradle adding
- Integrated short corner protection to lateral strapping
- Sawing and nailing unit for using long wood in runner wood feeding
- Machine to produce steel edge protection from strip

Space Requirements

Width of the fully automatic sheet packing line varies from 15m to 20m

Length of the line varies from 50m to 100m depending on pile length, capacity and selected options.



PESMEL OY
P.O. Box 14 (Pantaneentie 3)
FI-61801 Kauhajoki
Finland

Tel. +358 207 009 600
Fax +358 207 009 601
pesmel@pesmel.com
www.pesmel.com